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TABLE OF CONTENT

**Yolanda, Sumarni, Murti W.**

THE INFLUENCE OF CORPORATE SOCIAL RESPONSIBILITY THROUGH LAW AND ECONOMIC ASPECTS; pp. 3-10

Crossref DOI: 10.18551/rjoas.2018-08.01

**Umsohy M.I., Ananda C.F., Wahyudi S.T.**

THE EFFECT OF CAPITAL ALLOCATIONS ON ECONOMIC GROWTH, HUMAN DEVELOPMENT INDEX AND POVERTY IN NORTH MALUKU OF INDONESIA DURING 2010-2016; pp. 11-18

Crossref DOI: 10.18551/rjoas.2018-08.02

**Hendri, Susetyo D., Kadir S.A., Yuliana S.**

INFLUENCE OF INVESTMENT, LOCAL EXPENDITURE AND FISCAL AUTONOMY TOWARDS ECONOMIC GROWTH IN SOUTHERN SUMATERA OF INDONESIA; pp. 19-25

Crossref DOI: 10.18551/rjoas.2018-08.03

**Badruzaman J.**

STOCK PRICE ANALYSIS BEFORE AND AFTER THE ISSUANCE OF FINANCIAL STATEMENTS: SURVEY ON BASIC AND CHEMICAL INDUSTRIES AT INDONESIA STOCK EXCHANGE; pp. 26-30

Crossref DOI: 10.18551/rjoas.2018-08.04

**Yusuf M., Hanafi A.**

IDENTITY CONGRUENCE AS MEETING-POINT OF BETWEEN EXPECTATION-CONFIRMATION, SOCIAL IDENTITY, SOCIAL EXCHANGE AND PLANNED BEHAVIOR THEORIES TO EXPLAIN ISLAMIC CONTRIBUTION INTENTION: A CASE STUDY AT SHARIA BANKS IN LAHAT, PALEMBANG OF INDONESIA; pp. 31-41

Crossref DOI: 10.18551/rjoas.2018-08.05

**Nurhayati W.R.**

THE EFFECT OF PRODUCT INNOVATION AND INNOVATION PROCESS ON PERFORMANCE OF MANUFACTURING COMPANIES LISTED IN INDONESIA STOCK EXCHANGE DURING 2014-2016; pp. 42-49

Crossref DOI: 10.18551/rjoas.2018-08.06

**Putri A.K.**

INTELLECTUAL CAPITAL AND ABNORMAL STOCK RETURN: A CASE STUDY OF LQ-45 INDONESIA; pp. 50-53

Crossref DOI: 10.18551/rjoas.2018-08.07

**Langga A.S.W., Popo A.T.**

TURNOVER AND INCOME RATE VARIANCE OF SMALL AND MEDIUM ENTERPRISES AND ITS EFFECTS ON SMALL ENTERPRISES' BRAND IDEOLOGY; pp. 54-67

Crossref DOI: 10.18551/rjoas.2018-08.08

**Anggoro D.D.**

ANALYSIS OF E-TAX IMPLEMENTATION IN MALANG CITY OF INDONESIA: A REVIEW BASED ON THE TEN GUIDING PRINCIPLES OF GOOD TAX POLICY; pp. 68-74

Crossref DOI: 10.18551/rjoas.2018-08.09

**Octaviani T., Gayatri, Astika I.B.P.**

THE ABILITY OF DAYAK CULTURE TO MODERATING THE EFFECT OF BUDGET PARTICIPATION IN BUDGETARY SLACK; pp. 75-80

Crossref DOI: 10.18551/rjoas.2018-08.10

**Luciana D.M.A.I., Soewarno N., Isnalita**

IMPACT OF ENTERPRISE RESOURCE PLANNING SYSTEMS ON THE ACCOUNTING INFORMATION RELEVANCE AND FIRM PERFORMANCE; pp. 81-87

Crossref DOI: 10.18551/rjoas.2018-08.11

**Sugiasuti R.H., Dzulkirom M., Rahayu S.M.**

EFFECT OF PROFITABILITY AND LEVERAGE TOWARD DIVIDEND POLICY AND FIRM VALUE; pp. 88-96

Crossref DOI: 10.18551/rjoas.2018-08.12

**Aspirandi R.M.**

FIRM VALUE CREATION THROUGH INTELLECTUAL CAPITAL AND CORPORATE SOCIAL PERFORMANCE WITH MEDIATED OF FINANCIAL PERFORMANCE USING ISLAMIC MANUFACTURING SECTOR AS SUPPLEMENTARY ANALYSIS; pp. 97-103

Crossref DOI: 10.18551/rjoas.2018-08.13

**Elfita R.A.**

THE EFFECT OF EMOTION ON ENTERPRISE RESOURCE PLANNING SYSTEM QUALITY WITH USER EXPERTISE AS MODERATION VARIABLE; pp. 104-112

Crossref DOI: 10.18551/rjoas.2018-08.14

**Mukhlis M., Suwaryo U., Deliarnoor N.A., Kartini D.S., Rusli B.**

COLLABORATION VERSUS COORDINATION: A DILEMMA ABOUT STATE ACTORS' POSITION IN A POLICY; pp. 113-119

Crossref DOI: 10.18551/rjoas.2018-08.15

**Wagiman S., Budiyanto, Suwitho**

THE EFFECTS OF ORGANIZATIONAL CULTURE, WORK COMMITMENT, AND COMPETENCE ON EMPLOYEE SATISFACTION AND PERFORMANCE IN PT BANK RAKYAT INDONESIA (PERSERO) TBK; pp. 120-137

Crossref DOI: 10.18551/rjoas.2018-08.16

**Kamlasi Y.D.**

THE ROLE OF SERVICE EMPATHIZE TOWARDS PUBLIC SATISFACTION: A CASE STUDY AT POPULATION AND CIVIL REGISTRATION AGENT OF SOUTH CENTRAL TIMOR REGENCY; pp. 138-142

Crossref DOI: 10.18551/rjoas.2018-08.17

**Setiawati A.A.S.M.D., Budiarta I K., Ratnadi N.M.D., Sari M.M.R.**

THE ROLE OF CORPORATE SOCIAL RESPONSIBILITY DICLOSURE IN MODERATING THE EFFECT OF CAPITAL STRUCTURE ON FIRM VALUE; pp. 143-148

Crossref DOI: 10.18551/rjoas.2018-08.18

**Adhiapsari N.M.A.**

THE EFFECT OF MANAGERIAL ABILITY ON FIRM PERFORMANCE WITH EARNING MANAGEMENT AS INTERVENING VARIABLE; pp. 149-155

Crossref DOI: 10.18551/rjoas.2018-08.19

**Sabrina L., Yazid M., Maryadi**

THE PROBLEMS AND UTILIZATION OF CREDITS AND THEIR EFFECT ON THE INCOME OF OIL PALM FARMERS IN MUSI BANYUASIN REGENCY OF INDONESIA; pp. 156-159

Crossref DOI: 10.18551/rjoas.2018-08.20

**Handoyo S.D.W., Sudana I P., Budiasih I G.A.N.**

THE EFFECT OF EXPERIENCE, COMMITMENTS, ORIENTATION OF ETHICS AND ETHICS CULTURE ORGANIZATION ON SENSITIVITY ETHICS OF AUDITOR IN PUBLIC ACCOUNTANTS FIRM IN BALI; pp. 160-166

Crossref DOI: 10.18551/rjoas.2018-08.21

**Pravitasari N.P.**

EFFECT OF ACCOUNTING INFORMATION SYSTEM FOR INTERNAL CONTROL «SIPPUH ONLINE» IN PT. DWIMAJAYA UTAMA; pp. 167-171  
Crossref DOI: 10.18551/rjoas.2018-08.22

**Maharani Y., Wahyudi T., Azwardi**

FACTORS INFLUENCING VOLUNTARY AUDITOR SWITCHING AND AUDIT FEE AS A MODERATING VARIABLE: AN INDONESIAN CASE STUDY; pp. 172-178  
Crossref DOI: 10.18551/rjoas.2018-08.23

**Amir A.F.**

THE CONDUCT OF PSYCHOTROPIC USER BY UNDERAGE CHILD IN KENJERAN SECTOR POLICE AND TANJUNG PERAK DOCKYARD RESORT POLICE JURISDICTION; pp. 179-182  
Crossref DOI: 10.18551/rjoas.2018-08.24

**Danuardi P.B.**

THE STRATEGY OF TRAFFIC POLICE TO INTERCEPT VEHICLE USED BY UNDERAGE STUDENTS IN KEDIRI SECTOR POLICE JURISDICTION; pp. 183-187  
Crossref DOI: 10.18551/rjoas.2018-08.25

**Arini R.M.**

CORPORATE SOCIAL PERFORMANCE, FEMALE DIRECTORS, OWNERSHIP CONCENTRATION AND HUMAN RESOURCE MANAGEMENT PRACTICE; pp. 188-193  
Crossref DOI: 10.18551/rjoas.2018-08.26

**Adp D.R.**

THE DESIGNATION AUTHORITY OF ACTIVE POLRI OFFICER AS ACTING GOVERNOR OF INDONESIA; pp. 194-198  
Crossref DOI: 10.18551/rjoas.2018-08.27

**Arif S.A.**

EFFECT OF PERCEIVED EASE AND USEFULNESS TO THE USE OF E-BUDGETING SYSTEM IN THE REGIONAL GOVERNMENT; pp. 199-206  
Crossref DOI: 10.18551/rjoas.2018-08.28

**Prahatinto M.**

THE STRATEGY OF IMPROVING POLRI HUMAN RESOURCE ACCOUNTABILITY THROUGH RECRUITMENT SYSTEM; pp. 207-210  
Crossref DOI: 10.18551/rjoas.2018-08.29

**Putranto R.T.**

THE OPTIMIZATION OF TAX EXTENSION THROUGH PT. POS INDONESIA IN EAST JAVA SAMSAT OFFICE JURISDICTION; pp. 211-215  
Crossref DOI: 10.18551/rjoas.2018-08.30

**Djarmiko H.**

THE EFFECT OF TAXPAYER UNDERSTANDING ON MSMES TAXPAYER COMPLIANCE; pp. 216-220  
Crossref DOI: 10.18551/rjoas.2018-08.31

**Juniada M.A.**

THE SOCIETY POLICE AND PILLARS PROGRAM TOWARD TRAFFIC OBEDIENCE IMPLEMENTATION IN TANJUNGPERAK RESORT POLICE JURISDICTION; pp. 221-228  
Crossref DOI: 10.18551/rjoas.2018-08.32

**Kumalasari K.P., Fadila C.A.**

THE ULTIMATE PROVISION OF BASED EROSION AND PROFIT SHIFTING ACTION PLAN FOR STEADY TAXATION IN INDONESIA; pp. 229-241

Crossref DOI: 10.18551/rjoas.2018-08.33

**Fadhlihi A.**

STRUCTURE OF OWNERSHIP AND DISCLOSURE OF INTERNET FINANCIAL REPORTING; pp. 242-248

Crossref DOI: 10.18551/rjoas.2018-08.34

**Papilaya F., Mukson, Dwiloka B.**

ANALYSIS OF POTENTIAL DIVERSITY OF STAPLE FOOD FOR LOCAL BUSINESS AND FOOD SECURITY IN KAIRATU BARAT SUB-DISTRICT MALUKU; pp. 249-258

Crossref DOI: 10.18551/rjoas.2018-08.35

**Winarti C.E.**

FACTORS AFFECTING BRAND LOYALTY: A CONSUMER SURVEY AT STARBUCKS COFFEE CAFE IN SETIABUDI BUILDING, SOUTH JAKARTA; pp. 259-266

Crossref DOI: 10.18551/rjoas.2018-08.36

**Siswanto Y.E.W., Kodrat D.S.**

ANALYSIS OF DIFFERENT PERCEPTIONS ON REFUND, RESCHEDULE, AND ONLINE CHECK-IN SERVICES OF EFRE TOUR & TRAVEL AND TRAVELOKA; pp. 267-276

Crossref DOI: 10.18551/rjoas.2018-08.37

**Ferayani M.D., Sari M.M.R., Suardikha I M.S., Wirajaya I G.A.**

THE EFFECT OF EDUCATION ON VILLAGE TREASURER PERFORMANCE WITH MOTIVATION AND TRAINING AS MODERATION VARIABLES; pp. 277-282

Crossref DOI: 10.18551/rjoas.2018-08.38

**Setiadi A., Daryanto A., Fahmi I.**

THE EFFECT OF THE MARKETING MIX ON CUSTOMER SATISFACTION IN BUILDING CUSTOMER LOYALTY: A CASE STUDY OF PT. PUPUK SRIWIDJAJA; pp. 283-291

Crossref DOI: 10.18551/rjoas.2018-08.39

**Rohi S.P., Sudiro A., Irawanto D.W.**

THE INFLUENCE OF ORGANIZATIONAL CULTURE ON THE EMPLOYEE PERFORMANCE MEDIATED BY WORK ETHIC: AN EMPIRICAL STUDY AT PT BANK NEGARA INDONESIA (PERSERO) TBK KEDIRI BRANCH, EAST JAVA; pp. 292-301

Crossref DOI: 10.18551/rjoas.2018-08.40

**Budistiawan R., Suryani T.**

THE EFFECT OF SERVICE QUALITY ON CUSTOMER LOYALTY WITH CUSTOMER SATISFACTION AND TRUST AS THE INTERVENING VARIABLES AT PT BANK TABUNGAN NEGARA PERSERO TBK OF SURABAYA BRANCH OFFICE; pp. 302-308

Crossref DOI: 10.18551/rjoas.2018-08.41

**Dimayanti Sukiswo W.H.**

EFFECT OF INTERNAL AUDITOR INDEPENDENCE, AUDIT COMMITTEE AND INSTITUTIONAL OWNERSHIP TO THE INTERNAL CONTROL DISCLOSURE: A CASE STUDY CASE OF MANUFACTURING IDX COMPANY DURING PERIOD OF 2014-2016; pp. 309-316

Crossref DOI: 10.18551/rjoas.2018-08.42

**Ismawati I., Mustadjab M., Hanani N., Syafrial**

FACTORS DRIVING REMITTANCES BY MINANGKABAU'S MIGRANTS TO SENDING HOUSEHOLDS IN RURAL AREAS; pp. 317-326

Crossref DOI: 10.18551/rjoas.2018-08.43

**Lifianthi, Oktarina S., Rosana E., Sari D.W.**

FACTORS THAT INFLUENCE ALLOCATION OF EMPLOYEE TIME TOWARDS PALM OIL PRODUCTIVITY FOR PLASMA FARMING IN THE DISTRICT OF MUSI BANYUASIN; pp. 327-332

Crossref DOI: 10.18551/rjoas.2018-08.44

**Nematian A., Bogo A.**

INFLUENCE OF NANO-IRON FERTILIZER AND VERMICOMPOST SUPPLEMENT ON THE PHYSIOLOGICAL AND VEGETATIVE PARAMETERS OF BLACK RASPBERRY IN IRAN; pp. 333-337

Crossref DOI: 10.18551/rjoas.2018-08.45

**Widiyanto A., Wijayanto D., Saputra S.W.**

BIOECONOMIC ANALYSIS OF HAIRTAIL FISH RESOURCES (TRICHIURUS SP.) IN THE WATERS OF KEBUMEN REGENCY; pp. 338-346

Crossref DOI: 10.18551/rjoas.2018-08.46

**Diharjo E.S., Boesono H., Fitri A.D.P.**

ANALYSIS OF FISH AUCTION EFFICIENCY IN KENDAL DISTRICT, INDONESIA; pp. 347-352

Language of article: English

**Kusuma N.P.D., Herawati E.Y., Sambah A.B.**

TYPE COMPOSITION OF EEL SEED (ANGUILLA SPP.) IN DUMOGA CREEK, BOLAANG MONGONDOW; pp. 353-360

Crossref DOI: 10.18551/rjoas.2018-08.48

**Vicente D., Wahjuningsih S., Isnaini N.**

EFFECT OF YOUNG COCONUT WATER AND EGG YOLK EXTENDER RATIO AND LENGTH OF STORAGE AT LOW TEMPERATURE ON SPERM MOTILITY AND VIABILITY OF BALI BULL; pp. 361-366

Crossref DOI: 10.18551/rjoas.2018-08.49

**Saefudin A., Syah T.Y.R., Erni N.**

OPERATIONAL STRATEGIES FOR START-UP BUSINESS OF PEKING-DUCKS POULTRY INTEGRATED TO ECO-GREEN; pp. 367-379

Crossref DOI: 10.18551/rjoas.2018-08.50

**Nendissa D.R., Anindita R., Hanani N., Muhaimin A.W.**

BEEF MARKET INTEGRATION IN EAST NUSA TENGGARA OF INDONESIA; pp. 380-387

Crossref DOI: 10.18551/rjoas.2018-08.51

**Acquah De-Graft H.**

COMPARING OLS AND QUANTILE REGRESSION ESTIMATION TECHNIQUES FOR PRODUCTION ANALYSIS: AN APPLICATION TO GHANAIAN MAIZE FARMS; pp. 388-394

Crossref DOI: 10.18551/rjoas.2018-08.52

**Aysuvakova T.P.**

THE INFLUENCE OF AGROCHEMICALS AND BIOLOGICALLY ACTIVE SUBSTANCES ON THE GROWTH AND DEVELOPMENT OF LEGUMINOUS PLANTS IN THE EARLY STAGES OF EVOLUTION; pp. 395-401

Crossref DOI: 10.18551/rjoas.2018-08.53

**Ayu I.W., Prijono S., Soemarno, Sebayang H.T.**

SIMULATION OF CLIMATE CHANGE IMPACT OF SOIL MOISTURE AVAILABILITY IN THE DRY LAND CORN FIELDS OF SUMBAWA REGENCY, NUSA TENGGARA BARAT PROVINCE; pp. 402-416

Crossref DOI: 10.18551/rjoas.2018-08.54

**Santoso B., Cholid M.**

DO NEW VARIETIES OF MAIZE AND KENAF COULD IMPROVE GROWTH AND PRODUCTION WHEN CULTIVATED BY INTERCROPPING IN SEASONAL FLOODED AREA OF BONOROWO LAND? pp. 417-422

Crossref DOI: 10.18551/rjoas.2018-08.55

**Kusumah E.P., Agustina D.**

CASSAVA PRICE COMPETITIVENESS AND CULTIVATION INTEREST; pp. 422-427

Crossref DOI: 10.18551/rjoas.2018-08.56

**Permatasari P., Anantanyu S., Dewi W.S.**

THE EFFECT OF MARKETING ON ORGANIC RICE CULTIVATION SUSTAINABILITY IN BOYOLALI REGENCY OF INDONESIA; pp. 428-433

Crossref DOI: 10.18551/rjoas.2018-08.57

**Syawal Y., Sodikin E., Irmawati**

THE APPLICATION OF LIQUID ORGANIC FERTILIZER FROM BANANA PSEUDOSTEM ON GROWTH AND YIELD OF SWEET CORN (ZEA MAYS SACCHARATA); pp. 434-438

Crossref DOI: 10.18551/rjoas.2018-08.58

**Santoso B., Soemarno**

THE CORRELATION MATRIX AMONG VEGETATIVE GROWTH FACTORS OF CANDLENUT PLANTS (REUTEALIS TRISPERMA (BLANCO) AIRY SHAW) IN PRODUCING VEGETABLE OIL FUELS; pp. 439-446

Crossref DOI: 10.18551/rjoas.2018-08.59

**Muthahara E., Sitawati, Suryanto A.**

THE EFFECT OF LIGHT INTENSITY AND PACLOBUTRAZOL ON FLOWERING OF LANTANA PLANTS (LANTANA CAMARA L.); pp. 447-451

Crossref DOI: 10.18551/rjoas.2018-08.60

**Pasang P.M., Yunianta, Estiasih T., Harijono**

STRUCTURE AND MORPHOLOGY OF CELLULOSE FROM COCONUT COIR FIBERS; pp. 452-462

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## **THE INFLUENCE OF CORPORATE SOCIAL RESPONSIBILITY THROUGH LAW AND ECONOMIC ASPECTS**

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### **ABSTRACT**

Various positive and negative impacts (social, economic, and environmental) arise from the establishment of a company in a region. It results in the government issuing laws and regulations to ensure a company's responsibility to the public, especially the community around the company's operating area through real activities. The real activities undertaken by the company are called Corporate Social Responsibility. The implementation of Corporate Social Responsibility can be viewed from the legal and economic aspects. Through the legal aspect, Corporate Social Responsibility is an obligation that must be implemented by the company in accordance with the laws and regulations applicable to the company's operation. Based on the economic aspect, the impact of the Corporate Social Responsibility implementation is a company's reciprocity regarding the community where company operates and the sustainability of the company. This research explores Corporate Social Responsibility for TBK's agricultural sector companies in Indonesia (2012-2017).

### **KEY WORDS**

Corporate social responsibility, law, economics, law.

The European Commission, in 2001, defines corporate social responsibility as a concept in which companies integrate social and environmental concerns in their business operations as well as their voluntary interaction with stakeholders. European business group stakeholders utilized Corporate Social Responsibility (CSR) to legitimize political projects (Kinderma, 2013). in Gana defines Corporate Social Responsibility (CSR) as an organizational strategic decision to volunteer for social factors possessing militative potential in order to fulfill corporate objectives. The concept tends to focus on the company's external environment (Kwesi and Kwasi, 2011). Marianne (2014) stated that local wisdom is a core component in making public policies that strengthen and accelerate the implementation of corporate social responsibility. In Indonesia, Corporate Social Responsibility (CSR) is one of the company activities which is social in nature as regulated in Article 74 of Law no. 40 The year 2007 Regarding Limited Liability Company. This law calls Corporate Social Responsibility (CSR) as the company's commitment to play a role in economic development. The company plays a role to encourage economic growth by considering environmental factors. Thus the company not only pay attention to the benefits gained but also must take into account the social and environmental aspects. Corporate Social Responsibility (CSR) is the contribution that the company provides to society through its main business activities, social investment, philanthropic program, and its involvement in public policy (Wineberg & Rudolph, 2004). According to Garriga and Mele (2004), Corporate Social Responsibility (CSR) is an interrelated four dimensions of profit, political performance, social and ethical demands. Petia et al. (2014) stated that Corporate Social Responsibility (CSR) essentially emerged as an institutional tool, forcing companies to act proactively or reactively.

Currently, Corporate Social Responsibility (CSR) has become a global phenomenon. On July 5th, 2007, the UN Global Compact conference was held. It was attended by over 600 senior corporate executives of the world in Geneva, Switzerland. The goal was to improve business practices with respect to the environment and social inside and outside the company. According to Radhakrishnan et al. (2014), the Corporate Social Responsibility (CSR) law is obliged to observe the economic and market conditions. Bleak economic and market conditions would hamper the long-term effectiveness of Corporate Social

Responsibility (CSR). Anna Blajer (2014), states that Corporate Social Responsibility (CSR) is one of the company's reputation, which possesses a weak relationship with economic performance.

Corporate Social Responsibility (CSR) activities have not been fully realized by Indonesian companies, despite the existing laws governing them. Companies in Indonesia consider that Corporate Social Responsibility (CSR) does not have a clear direction and added no legal sanction for companies that do not run Corporate Social Responsibility (CSR). Based on the Research Center for Governance Institutions and Organization of the National University of Singapore (NUS), companies in Indonesia have a lower quality Corporate Social Responsibility (CSR) compared to Thai and Singaporean companies.

To motivate and encourage Open and Private companies in Indonesia to implement and practice Corporate Social Responsibility (CSR), the government provides Award through ICSRA activities (Indonesian Corporate Social Responsibility Award) in 2017. These activities selected 41 award-winning companies.

Corporate Social Responsibility (CSR) is generally applied by companies in Indonesia in the form of: (1). Direct involvement (self-organizing social activities), (2). Through a company foundation or social organization. (3). Organizing Corporate Social Responsibility (CSR) through cooperation with social institutions/non-governmental organizations (NGOs), government agencies, universities or mass media), (4). Support or join a consortium. The purpose of CSR implementation is expected to provide mutual benefits, in particular, to alleviate poverty in the area surrounding the company's operations.

To alleviate poverty, the involvement of companies is regulated in Law Number 13 the Year 2011 on the Handling of Poor Article 36 which states that the company is required to set aside funds for the poor. According to Yolanda (2017), poverty can lead to uncomfortable life, harmful rights and justice, low bargaining position in world association, and a bleak future for the nation. This situation would disrupt the company's operations and ultimately affected the CSR activities.

## LITERATURE REVIEW

*Corporate Social Responsibility.* In general, Corporate Social Responsibility (CSR) is defined as a form of corporate responsibility to all of its stakeholders, including consumers, employees, shareholders, communities and the environment in all aspects of the company's operations covering economic, social and environmental aspects. Based on this understanding, it can be seen that it involves the relationship between the company with its employees, consumers, shareholders and the environment in which the company operates. The interaction that occurs provides an advantage to the company by conducting Corporate Social Responsibility (CSR) activities, to the community and the developer as a whole.

The advantage gained from Corporate Social Responsibility (CSR) activities for the company is improving the corporate image in the eyes of consumers, as it exhibits the company's concern for the company's operating environment. The benefit gained by the community from Corporate Social Responsibility (CSR) is the development/improvement of the environment and ultimately affect the welfare of the surrounding community. The impact of corporate responsibility on the interests of society can be realized through the implementation of sustainable programs and directly touch the aspects of community life.

According to Belén and Feijóo (2009), the benefits of Corporate Social Responsibility (CSR) are (1) building a reputation as a responsible business (market share and investors), (2). Make business more competitive, (3) build relationships with suppliers and customers, (4) improve work climate, (5). Reduce conflicts (obey the law), (6) build good relationships with local communities, (7) redesign of the parameters of the Green Corporate Social Responsibility (CSR) process. Ezekiel (2013) presented the benefits of the implementation of Corporate Social Responsibility (CSR) as follows: improving brand and reputation, reducing operating costs, attracting new customers, balancing power with responsibilities, reducing government regulations, improving the company's public image, promoting long-term profit, improve relationships with the investment community and better access to capital. ,

improving employee relations, productivity, and innovation as well as stronger relationships within communities through stakeholder engagement. It can be concluded that the objective of Corporate Social Responsibility (CSR) implementation is to provide benefits to the public and the company.

The Company laid four pillars in managing corporate social responsibility. The four pillars are the community economic, education, health empowerment and environmental conservation.

*Legal Aspect.* According to Carroll (2016), companies perform in a manner consistent with the expectations of the government and law, law-abiding corporate citizens, fulfill all legal obligations to community stakeholders, as well as providing goods and services. Thus companies are required to comply with laws and regulations in the company operation site.

In relation to Corporate Social Responsibility (CSR), Lambooy (2014) states that the development of Corporate Social Responsibility (CSR) correlates to international law and European law, corporate law and corporate governance, lawsuit and contract law, procedural law, labor and environmental law, and criminal law. Ananaba and Chukwuka (2016), stated that unsuccessful implementation of Corporate Social Responsibility (CSR) in Nigeria was caused by the absence of government laws on Corporate Social Responsibility (CSR), corruption, political and social inadequacy. A successful implementation of Corporate Social Responsibility (CSR) must be supported by a legal framework for the implementation of Corporate Social Responsibility (CSR).

Existing laws regulating the company's obligation to conduct Corporate Social Responsibility (CSR) enables the companies to possess a legal obligation to implement CSR. It is expected for each company to grow awareness in carrying out social and environmental obligations and responsibilities, not merely improving profit. In addition, the Society expects the company to take account of the economic, environmental, and social impacts of the Company's Corporate Social Responsibility (CSR) operations and activities (Knuutinen, 2014).

Based on the above description, it can be concluded that the laws and regulations that require companies to conduct Corporate Social Responsibility (CSR) aim to provide environmental protection, job security, human rights, economic development, health protection, education, humanitarian disaster relief for the community where the company operates. Thus the law is very important in the implementation of Corporate Social Responsibility (CSR). According to Tarek and Sara (2015), there is a significant relationship between the legal component and Corporate Social Responsibility (CSR). In addition, Corporate Social Responsibility (CSR) activities can reduce social disturbance that often occurs due to environmental pollution. It could also foster community support or security.

*Economic Aspect.* In general, the existence of the company operations has the potential to change the community environment, both negatively and positively. Negative impacts need to be prevented because they can trigger conflicts within the community, which can further disrupt the company's operations and community activities. According to Novrianty (2015), the company must be able to maintain a balanced relationship with the external environment. Xiping et al's (2014) research on mineral companies in China stated that public responsibility outside the company does not show significant interaction with corporate finance performance (CFP), therefore many companies ignore the public interest and became conflict source.

Nazan and Can (2012) stated that Corporate Social Responsibility (CSR) activities are not disturbed in a crisis situation. Placier Klára (2011) and Yasemin (2010) stated that Corporate Social Responsibility (CSR) activities can be disrupted by the economic crisis.

Tarek and Sara's (2015) research stated that the economic component significantly influenced Corporate Social Responsibility (CSR) in Tunisia. Garriga & Mele (2004) stated that the economic objectives of Corporate Social Responsibility (CSR) implementation are maximizing shareholder value; the strategic goal of achieving competitive advantages; and cause-related marketing.

According to Uddin et al (2008), the economic dimension of Corporate Social Responsibility (CSR) should have direct and indirect economic impacts of the organization's

operations on surrounding communities and corporate stakeholders. The impact is seen in The Multiplier Effect, Contribution through taxes and Avoiding Actions that Damage Trust. Murti (2017) stated that increased production will have an impact on CSR activities undertaken by the company.

Garriga and Mele (2004) described each theory on instrumental, political, integrative and ethical Corporate Social Responsibility (CSR) used in terms of profit, political performance, social demands, and ethical values. They recommended that business and communities relationships should integrate the four theories of Corporate Social Responsibility (CSR). Camelia et al (2011), exhibited that there is a relationship between income change with Corporate Social Responsibility (CSR). There was a significant negative correlation between profitability and Corporate Social Responsibility (CSR) for companies in Europe.

*Return on Asset (ROA)*. ROA provides an overview of how efficient management is in using its assets to generate profits. According to Bank Indonesia Circular Letter no. 13/30 / DPNP December 16, 2011, Return on Assets (ROA) can be formulated as follows:

$$ROA = \text{Profit after Tax} / \text{Total Asset (average)}$$

In addition, ROA is also used to measure the ability of companies to generate profits in the past to then be projected in the future. A large ROA needs to be a concern, because of the high value of the resulting (increase) of the selling price, while some cost components are still valued at the price of distortion.

*Return on Equity (ROE)*. According to Hansen and Mowen (2012), Return on Equity is the ratio between net income after tax and total equity. ROE can provide investors a comparable picture between firms and investment opportunities (Brigham & Ehrhardt, 2005). Yolanda (2017) and Yolanda and Sumarmi (2018) stated that return on equity ratio (ROE) is the company's ability to generate profit with its equity. ROE can be influenced by Current Ratio (CR), debt to equity ratio (DER), net sales growth and total asset turnover (TAT). According to Bank Indonesia Circular Letter no. 13/30 / DPNP December 16, 2011, Return On Equity (ROE) can be formulated as follows:

$$ROE = \text{Profit after tax} / \text{Total Equity (Avg.)}$$

or

$$ROE = ROA \times \text{Financial Leverage}$$

$$\text{Financial Leverage} = \text{Assets} / \text{Shareholders Equity}$$

## METHODS OF RESEARCH

The legal aspect of this research was conducted by analyzing the existing literature from various studies related to the research topic. The economic aspects used secondary data from the financial statements of agricultural companies listed in Indonesia Stock Exchange (IDX) in the 2012-2017 period which consists of 7 companies using the following criteria: companies belonged to the category of agricultural sub-sector listed on the BEI and consistently existed during the study period (2012 -2017); the Company provided financial statement data during the research period (2012 - 2017); the Company did not generate negative earnings during the 2012-2015 period.

Secondary data was used to test the effect of CSR on ROE and ROA. ROA and, ROE influence to CSR of agricultural companies listed on BEI 2011-2016 was analyzed using software Eviews descriptive statistical test, hypothesis test f test, t-test, and chow test. Multiple linear regression (Equation of data panel regression with One Way Model) and coefficient of determination test.

Model Specification of this research is:

$$CSR_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \mu \quad (1)$$

$$ROA_{it} = \beta_0 + \beta_1 CSR_{it} + \mu \quad (2)$$

$$ROE_{it} = \beta_0 + \beta_1 CSR_{it} + \mu \quad (3)$$

## RESULTS AND DISCUSSION

*Legal Aspect.* In Indonesia, Corporate Social Responsibility (CSR) is regulated in Law no. 40 of 2007 which contains the following: (1). Article 1, paragraph 3: Social and environmental responsibility is a commitment of the company to participate in sustainable economic development in order to improve the quality of life and the environment beneficial for the Company itself, local community, and society in general. (2). Article 66 paragraph 2c: Report on the implementation of social and environmental responsibility, (3). Article 74 paragraph 1: The Company that carries on business in the field and/or related to natural resources shall be obligated to carry out social and environmental responsibility, (4). Article 74 paragraph 2: Social and environmental responsibility is an obligation of the company which implementation is carried out with due attention to decency and fairness. (5). Article 74 paragraph (3), the Company that does not perform the obligations shall be liable to sanctions.

In addition to the above Law, the concept of Corporate Social Responsibility (CSR) is also required on: (1) Capital Market Law No. 25 the Year 2007 article 15,17 & 34, Law no. 32 of 2009 on Environmental Protection and Management article 68, (2) of Law no. 22 of 2001 concerning Petroleum and Natural Gas Article 11 and 40 concerning the Company's obligations to build the environment, (3) Law No. 4 of 2009 on Mineral and Coal Mining: IUP (Mining Business License) and IUPK (Mining Business License (4) of Law Number 21 of 2014 on Geothermal Article 65, (5) of Law Number 13 of 2011 on the Handling of Poor Article 36 which states that the Company is required to set aside funds for the poor. (6) Law no. 127 of 2002 on PROPER is the Corporate Performance Rating Program in Environmental Management.

In addition to the above Law, there are several regulations that regulate Corporate Social Responsibility (CSR), namely (1) Government Regulation no. 47 of 2012 on Social and Environmental Responsibility of Limited Liability Companies, (2) Regulation of the Minister of State-Owned Enterprises. PER-08/MBU/2013: on Partnership Program State-Owned Enterprises with Small Business and Community Development Program (BUMN 5/2007), (3). Candy LH No. 05 the Year 2011 concerning PROPER, (4) Government Regulation No 47/2012 on Social and Environmental Responsibility, (5) Permentan no. 11 of 2015 on Indonesia Sustainable Palm Oil Certification System (ISPO), Pnc No. 6 on Corporate Social Responsibility and Economic Empowerment, (6). Permentan No. 19 of 2011. Concerning the Company's obligations in social responsibility and community environment, Indigenous Peoples empowerment/indigenous peoples and local business development.

The legal aspects ought to be fulfilled for the company sustainability. Corporate Social Responsibility (CSR) implementation that ought to be conducted by the companies are as follows:

- Possess ISPO (Indonesian Sustainable Palm Oil) Certification for oil palm plantations. The certification of ISPO (Indonesian Sustainable Palm Oil) or certification of Sustainable Palm Oil Plantation Indonesia was first applied in 2011 through Regulation of the Minister of Agriculture No. 19 of 2011 aimed at plantations possessing factories. In 2015, through the refined Regulation of the Minister of Agriculture No. 11 of 2015, provided that all plantations operating in the Republic of Indonesia are required to possess ISPO certification;
- Possess PROPER certification, this certification shows the measure of the Company's performance achievement by taking into account aspects of the environment. This activity is conducted directly by the Government through the Ministry of Environment and Forestry;
- ISO 26000: 2010, on Social Responsibility.

ISPO Certification, Certification of Corporate Performance Rating Program (PROPER) and ISO 26000: 2010 are not only a form of legal compliance, but also affirming the Company's commitment to implement plantation governance that is not only business-

oriented but considers environmental sustainability in the future. If the rule is violated, it will affect the company's operation sustainability.

*Economic Aspect.* Table 1 exhibits the values of the mean, median, maximum, minimum and standard deviations of all the variables studied: Corporate Social Responsibility (CSR), Return On Assets (ROA) and Return On Equity (ROE) useful for explaining research data.

Table 1 – Descriptive Statistics

n/n	CSR	ROA	ROE
Mean	39.06524	6.392857	10.17833
Median	28.11750	6.450000	10.05000
Maximum	112.3730	20.29000	26.91000
Minimum	9.286000	-1.600000	-5.100000
Std. Dev.	27.33120	4.684208	7.936688

Source: Processed Data.

Based on the table above, it can be described as follows:

- The average value of CSR is 39.06524. The value is average because there is no rule that determines how a company must spend Corporate Social Responsibility (CSR). The amount of value spent is highly dependent on the three pillars conducted by the company which is the social responsibility to the environment where the company operates;
- The average value of Return On Asset of the company is 6, 392857. The positive value attained on the average ROA reflects that the total assets used for the operations of the company are able to generate profits for the company;
- The average Return On Equity value of the firms studied is 10.17833, it shows that the company is very efficient in the use of capital to generate income.

*The influence of ROA and ROE on Corporate Social Responsibility (CSR).* Based on the obtained assessment result of (1) normality test with probability value  $0.0826 > \alpha = 0,05$  means that data is normally distributed, (2). Based on the results of the correlation Matrix test (0.797), it states that this model does not contain multicollinearity problems. (3) Heteroscedasticity test with the white test, Chi-squared 0.2127 Probability value greater than 0.05, it states the regression model is free of heteroscedasticity, and (4) the Autocorrelation Test (Breusch-Godfrey Serial Correlation LM Test), Chi-squared 0,6723 Probability value greater than 0.05, this regression model is free from autocorrelation.

According to Widarjono (2007), determining the most appropriate technique in estimating panel data parameters is to conduct the Chow Test and Hausman Test. Based on the assessment result the chosen method is the random effect because the probability cross-section value in the correlated random effects-Hausman test is greater than 0.05.

The coefficient of determination  $R^2$  (Adjusted  $R^2$ ) is 0.112777, it is stated that 11.28% of Corporate Social Responsibility (CSR) variation can be explained by the independent variable (ROA and ROE) and simultaneously. ROA and ROE were significant at  $\alpha = 10 \%$ . The results of this study are in line with Uadiale and Fagbemi's (2012) and Hussain & Sweis' (2016) results, who stated that there is a strong and positive relationship between the return of asset (ROA) and return on equity (ROE) on corporate social responsibility (CSR). Xiping et al (2014) stated that the CSR Elements (shareholder responsibility performance) has a positive effect on ROE and ROA, and CSR (employee responsibility) has a negative effect on ROE and ROA.

*The Influence of Corporate Social Responsibility (CSR) on ROA.* The assessment result stated that the selected model is the Random Effect Model with probability value from Cross-section random equal to 0,1039 bigger than  $\alpha = 0,05$ . The result of this research is in line with the research of Arshad et al (2015) and Shoukat & Nadeem (2014). However, the results of Lin, Huey & Amin (2017) and Gautam et al (2016) exhibited that CSR has a positive and significant impact on ROA.

*The Influence of Corporate Social Responsibility (CSR) on ROE.* Chow test results and continued with the Hausman test, exhibited chosen method was the Random Effect Model. Test results can be proved with a probability value of Cross-section random 0.3103 greater than 0.05. Using Random Effect method, it was found that Corporate Social Responsibility (CSR) had a positive and insignificant effect on ROE of the company studied. This is in line with Dilvin's (2015) study using the CSR Index and Shoukat & Nadeem's (2014).

## CONCLUSION

This research seeks to determine Corporate Social Responsibility (CSR) from a legal aspect and economic aspect for firms listed in Indonesia Stock Exchange with the provisions of the company to publish financial statements 2012-2017.

Based on the legal aspect, it can be concluded that every company operating in Indonesia must comply to Corporate Social Responsibility (CSR) as stipulated in law, government regulations, ministerial decisions authorized to affect company operation. Every company operation shall be subject to the applicable provisions. Subject to the established rules is the company's compliance with applicable law. Non-compliance will affect the company's operational continuity.

CSR implementation in the economic aspect is described as follows:

- The amount of CSR issued by a company does not depend on the company's ability to generate profits from the management of assets and capital owned by the company. The amount of CSR issued is a social responsibility that must be met from the company's operations in the environment where the company operates.
- CSR activities conducted do not have a significant impact on the company's ability to generate profits/income, although the benefits obtained by companies in CSR activities improve the corporate image in the eyes of society and corporate compliance with the law so that the sustainability of the company's operations run without interruption.
- CSR activities have a positive effect on the company's ability to generate profit/revenue (ROA and ROE).
- ROA value has the positive and insignificant effect to CSR and ROE has the negative and significant effect to CSR. However, CSR variation is very small which is influenced by ROA and ROE.

Based on the results of this study it is suggested that the increase of ROA and ROE values must have an effect on the implementation of social responsibility (CSR) and CSR activities should be able to serve as a source of corporate competitive advantage.

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## **THE EFFECT OF CAPITAL ALLOCATIONS ON ECONOMIC GROWTH, HUMAN DEVELOPMENT INDEX AND POVERTY IN NORTH MALUKU OF INDONESIA DURING 2010-2016**

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### **ABSTRACT**

This study aims to test and analyze: influence of Capital Expenditure Allocation to Economic Growth; influence of Allocation of Capital Expenditure and Economic Growth to Human Development Index; influence of Capital Expenditure Allocation; Economic Growth and Human Development Index to Poverty in Districts / Cities in North Maluku Province. The research method used is panel data regression. The results of this research founded that model 1 influence of Capital Expenditure Allocation have significant influence to Economic Growth. Model 2 Capital Expenditure Allocation has a positive but insignificant influence on the Human Development Index even though the increase is not significant while Economic Growth has positive and significant effect on Human Development Index while model 3 allocation of Capital Expenditure has positive and significant influence to Poverty. While Economic Growth has a negative impact on Poverty, Furthermore, Human Development Index as an indicator of strengthening of human resources has a negative and significant influence on Poverty level in 9 regencies of North Maluku Province.

### **KEY WORDS**

Capital expenditure, growth, human development index, poverty.

Regional development is an integral part of development national implementation based on the principle of regional autonomy and regulation of national resources that provides an opportunity for democratic enhancement and regional performance in establishing a partnership pattern between local government and private sector to create a new job field in order to improve the welfare of the community. Yani, (2002) reveals that one of the affairs given to the region is the income-generating business to the Regional Government and various potentials to be developed in the excavation of new sources of income for the region concerned. In relation to regional development, efforts to realize the successful implementation of fiscal policy of economic development in an area are highly dependent on the quality of development planning in promoting economic growth and human development index (HDI) and in suppressing poverty.

Tamboto, *et al.* (2014) 'Analysis of Local Financial Capability in the Period of Regional Autonomy in Southeast Minahasa District' expected to provide wider empowerment for regions to improve their financial performance and optimize their local potentials so that in turn the local financial capacity becomes better and the regions become more independent. This is in line with the enactment of Indonesia's Law no. 32 of 2004 and Law No. 33 of 2004 on the financial balance between central government and local government is a reform of relations between the central government and local governments. Given the delegation of authority is expected that the regions will be able to perform routine tasks, public services and improve the productive economy in the region.

One of the most important factors for determining fiscal decentralization is the extent to which local governments are authorized to determine allocations for their own expenditures. So that with the allocation of allocations for regional expenditure is believed to contribute to economic growth or all aspects of the economy that ultimately can reduce the poverty level.

The form of government expenditure is one of them is the allocation of capital expenditure in order to provide public facilities that can be a fixed asset area and has a value of more benefits is expected to be a supporting capital in improving the implementation of

various economic activities of the community. In an effort to improve the economy the government through appropriate allocation of capital expenditure by taking into account the scale of priorities and needs of the region which optimally synergize with other expenditure allocations. It is expected to create jobs for the community through a program of development activities that are implemented annually so as to increase the production capacity of goods and services in various activities of economic activities of the community that impact on regional economic growth

This is in line with various studies on capital expenditures made by Danladi *et al* (2015) Resulting that the increase in total government spending by capital and expenditures is continuous, the results show that all are positively related to economic growth. While Nurudeen and Usman (2010) resulted that capital expenditure negatively affects economic growth in Nigeria. However, different results were also found by Hamsinah, *et al.* (2014) conclude that capital spending has no effect on economic growth in South Sulawesi Province.

The paradigm that develops today is that economic development is measured by human development which is seen from the quality of human resources owned. The link between capital expenditure and the Human Development Index is very closely linked to government policies to improve the quality of human resources. This is also in line with research conducted by Sasana (2012) that the realization of regional spending has a positive and significant impact on the Human Development Index. While research Sumiyati (2009) shows capital expenditure has a positive and insignificant influence on the increase Human Development Index. This means that local government expenditure is also intended for education and health services which are the basic services that must be obtained by the community such as the procurement of regional infrastructure and adequate public facilities will improve the quality and quantity as well as improve local productivity, community income, and increase the Human Development Index (HDI).

One strategy to reduce the poverty rate is the development of Human Resources (HR). Human resource development can be done by improving access to the consumption of social services (education, health and nutrition). The decline in poverty levels is inseparable from the role and efforts of the government in alleviating poverty through policies and programs applied to various elements, both central and local governments. Overcoming poverty can not be done separately from other problems.

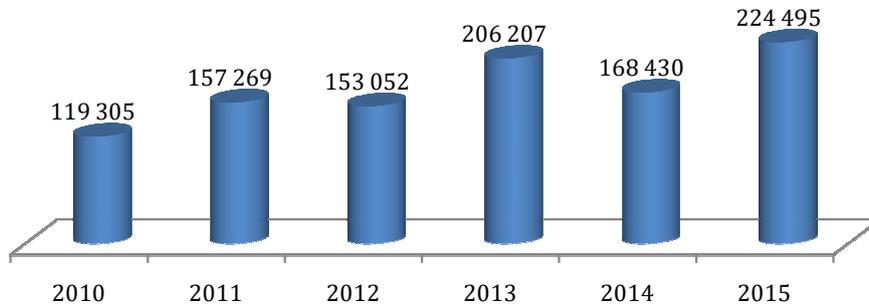
North Maluku Province is one of the provinces located in eastern Indonesia which has a long history of slow development process resulting from horizontal conflict in 1999. As a result of this conflict impacted on all matters not only occur in the aspect of the regional economy but one of them is public facilities and public services in various districts / municipalities in North Maluku Province. With regard to public services, the allocation of capital expenditure is very important to note as it will increase the productivity of the regional economy.

The allocation of capital expenditures issued based on the needs of the region for the smoothness of facilities and infrastructure that is public facilities, as well as the implementation of government duties. Therefore, in the effort to improve the quality of public services, local governments are required to change the composition of their capital expenditure. North Maluku Province continues to grow with the addition of new autonomous regions so the birth of new districts with the average development of capital expenditure allocation in APBD during the period 2010-2015 varies from year to year can be seen in Figure 1 These changes are subject to local development policies adopted.

Average development of city government capital expenditure allocation in Province North Maluku outside Taliabu Island Regency due to new expansion in 2013, can be seen in Figure 1 shows the average allocation of district / municipality capital expenditure in North Maluku Province shows the fluctuation from 2010 to 2013. Fluctuating

capital expenditure allocation can show the implementation of expenditure program of APBD capital expenditure has not been done well because not only in financing of employee facility but also the provision of various public facilities such as infrastructure so as to impact on the improvement of economic activities of the community. Should change the composition

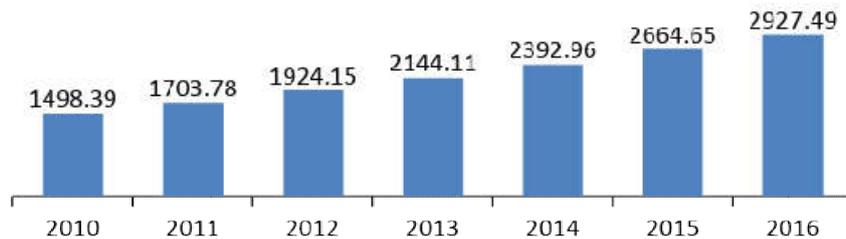
of APBD expenditure for capital expenditure needs to encourage the regional economy needs to be done because the greater allocation of capital expenditure is expected to have a great impact on regional economic growth. Because capital expenditure is productive government expenditure and can be used to boost economic growth and increase the Human Development Index (HDI) in the regions, which in turn is expected to reduce poverty levels.



Source: DGFB 2016

Figure 1 – Average Local Capital Expenditure Allocation Regency of North Maluku Province Year 2010-2015 (in Million Rupiah)

Regional economic growth as measured by the size of GRDP per capita in Kota District in North Maluku Province during 2010-2016 period tends to increase can be seen in Figure 2.



Source: BPS 2016

Figure 2 – Average GRDP with Upper Oil and Gas Basic Constant Price of 2000, District Cities in North Maluku Province Year 2010-2016 (billions)

Economic growth is one of the important indicators in conducting an analysis of economic development in an area. Based on Figure 2 above, can be seen that Performance of regional economic growth as measured from the average GDP of Regency / City in North Maluku Provinceduring the period 2010-2016 tends to increase. In 2010 the average GRDP of regencies / cities in North Maluku Province amounted to IDR 1498.39 mliyar and in 2011 increased to IDR 1703.78 in 2012-2013 again increased to IDR 1924.15 billion, 2144.11 billion. Then in the Year 2014-2015 increased to IDR 2392.96 billion, 2664.64 billion and in 2016 the average GDP of districts / cities in Maluku Province Utara reached IDR 2927.49 billion.

When viewed from the economic growth of districts / cities on average have a relatively increased growth. This is consistent with that of Leasiwa (2016) that high and sustainable economic growth is a key condition for economic development. However, what is expected is whether through a larger allocation of capital expenditure can continue to increase economic growth and will drive the economic activities of society at every district / city, so as to encourage economic growth in the areas concerned and reduce the level of poverty.

Quality human resources are essential in supporting the expansion of regional economic development. The more quality of human resources in the region, it will increase

the growth in a sustainable and improved. The following is the average Quality of regency/ municipal human resources in North Maluku shown through the HDI value in Figure 3.

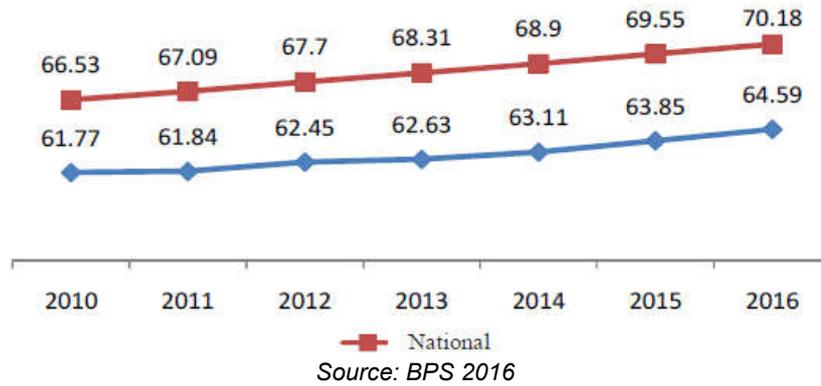


Figure 3 – Average Human Development Index (HDI) District of City in North Maluku Province and National, Year 2010-2016 (%)

Based on the Average Human Development Index (HDI) shown in Figure 3 above shows Factually the index of human development of North Maluku Province in 2010-2016 tends to increase as the trend ratio nationally, but HDI District District in North Maluku Province still in the middle category and achievement is still lower than the achievement of national HDI this indicates that North Maluku province has not plays a strong role as a driver to improve the welfare of the national community, even tend to become a national burden.

This requires the role of local governments in exploring the performance of regional development policies through the implementation of capital expenditure allocations with appropriate programs and in various sectors such as the education sector, income generation which will then affect the improvement of human development index and reduce poverty level.

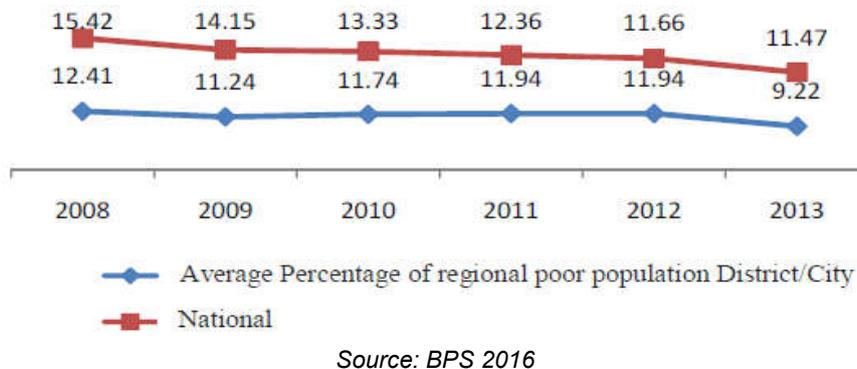


Figure 4 – Average Percentage of regional poor population District / City in North Maluku Province and National, Year 2008-2013 (%)

As for the average Development Percentage Poor people in City District in North Maluku Province can be seen in Figure 4 In 2008 the average Poor population of districts/municipalities in the Province of North Maluku amounted to 12.41 percent and in 2009 decreased to 11.24 percent Then in 2010 increased to 11.75 percent in the next year 2011-2012 again experience increased to 11.94 percent and in 2013 decreased to 9.22 percent. Meanwhile, the percentage of the national poor continues to decline.

Average Percentage of Poor District/Municipality in North Maluku Province from year to year fluctuates so that some programs are needed to minimize the fluctuation rate. Poverty can make a serious enough effect for human development as well as economic growth because poverty is a complex issue. If you look at the condition of the development of capital expenditure allocation, the economic growth and human development index of the North

Maluku City district continue to fluctuate and the difference between the research results between the variables studied so that the fundamental question that needs to be developed for the change is how far the government spending in capital expenditure allocation can increase economic performance of autonomous regions as a whole and able to increase economic growth, Human Development Index (HDI) and reduce the poverty level that ultimately for the improvement of people's welfare.

Therefore, this study aims to investigate:

- The Effect of capital expenditure allocations on economic growth
- The influence of capital expenditure allocation and economic growth on HDI.
- Influence of capital expenditure allocation, economic growth and HDI to poverty.

## METHODS OF RESEARCH

The approach to this research is quantitative research. The type of data used in this study is secondary data using pooled data panel data by combining cross section and time series data, 9 districts/cities in North Maluku Province during the period 2010-2016. Where Secondary data source obtained from Directorate General of Fiscal Balance Ministry of Finance (DJPK) and Central Bureau of Statistics (BPS) Province of North Maluku

Equation model used in this research are:

- a. The model of data equation *cross section* and *time series* is the effect of capital expenditure on economic growth:

$$PE = \alpha + \beta_1 AMB_{it} + \varepsilon_{it},$$

$$i = 1.2..... N; t = 1.2..... T$$

- b. The data model of *cross section* and *time series* is the effect of capital expenditure on economic growth and human development index (IPM):

$$IPM = \alpha + \beta_1 AMB + \beta_2 PE + \varepsilon_{it}$$

$$i = 1.2..... N; t = 1.2..... T$$

- c. The model of cross section and time series data equation is the influence of capital expenditure, economic growth and human development index (HDI) on poverty:

$$Poverty = \alpha + \beta_1 AMB_{it} + \beta_2 PE_{it} + \beta_3 IPM_{it} + \varepsilon_{it}$$

$$i = 1..... N; t = 1.2..... T$$

Where:

- AMB = Allocation of capital expenditure;
- PE = Economic growth;
- HDI = Human development index;
- Poverty = Poverty;
- $\alpha$  = Coefficient of constant;
- $\beta$  = Regression coefficient of independent variable;
- $\varepsilon$  = Error;
- i = Regency / City I;
- t = Period t.

## RESULTS AND DISCUSSION

The overall model is estimated using the reviews program with the following model specifications:

Regression Panel Data Test Result with Method *Fixed Effect* model 1 the influence of capital expenditure allocation on economic growth. Result of model 2 test of influence of capital expenditure allocation and economic growth on index of human development. Result

of model 3 test of influence of capital expenditure allocation, economic growth and index of human development to poverty can be seen through Figure 5 below.

Figure 5 – Calculation Result Estimation with Panel Data

Variabel	Model 1			Model 2			Model 3		
	Growth			HDI			Poverty		
	Coeff	t-sta	prob	Coeff	t-statis	prob	Coeff	t-statis	prob
ABM	0.491	3.941	0.007	0.001	0.070	0.944*	0.099	1.682	0.099*
Growth	-	-	-	0.099	7.989	0.000	-0.670	-4.666	0.000
HDI	-	-	-	-	-	-	-0.661	-0.611	0.544
C	1.684	1.831	0.000	3.387	59.097	0.000	8.856	2.399	0.020
Fixed Effect (Cross)									
_KAB_HAL_BAR-C	-0.208			0.019			-0.048		
_KAB_HAL_TEN-C	-0.534			0.006			-0.403		
_KAB KEP_SUL-C	-0.353			-0.043			0.041		
_KAB_HAL_SEL-C	0.361			-0.093			0.616		
_KAB_HAL_UT-C	0.462			-0.039			0.490		
_KAB_HAL_TIM-C	-0.104			-0.010			0.393		
_KAB_P_MOR-C	-0.767			-0.006			-1.158		
_KOTA_TERNAT-C	1.146			0.097			0.600		
_KOTA_TIDORE-C	-0.002			0.069			-0.531		
R-squared	0.955			0.983			0.947		
Adjusted R-square	0.947			0.979			0.936		
F-statistic	124.085			292.435			82.942		
Prob(F-statistic)	0.000			0.000			0.000		

\* Not significant processed data, (2018).

*Influence of Regional Capital Expenditure Allocation to Economic Growth.* Capital expenditure allocation formed from expenditure the government allocated for investment in public sectors is expected to trigger economic growth, and directly in contact with the interests of the public or society in the region.

Regression equation from result of regression panel data analysis estimation in general equal to 1.684 indicates that if capital expenditure allocation and economic growth have constant value (unchanged) hence economic growth Regency of North Maluku Province is 1.684%. With the value of capital expenditure allocation coefficient is 0.491 indicates that the allocation of capital expenditure has a positive effect on economic growth. This shows an increase in capital expenditure allocation of 1% will increase economic growth in the Regency / City of North Maluku Province increased by 0.491%.

Based on the results of regression analysis panel data illustrates that the allocation of capital expenditure (ABM) gives a positive impact on economic growth in North Maluku province but if seen from per city districts separately showed still relatively low even negative as happened in morotai island district, middle halmahera, sula islands, and western halmahera from these results so that the government is expected to increase the allocation of capital expenditure not only to help smooth the task of government but with the aim of improving public facilities so that by itself can give effect to regional economic growth, this is also supported by the endogenous growth theory which, according to Barro and Sala-i-Martin (2004), states that productive government spending, positively correlated to economic growth. From the results of this study the same as the research conducted by Nopiani, et al. (2016) Whereas capital expenditure variable has positive effect to economic growth, it shows that capital expenditure play a direct role in the effort to increase economic growth. Findings in accordance with Keynesian theory, public expenditure can in itself provide positive results for economic growth.

*The Influence of Capital Expenditure Allocation and Economic Growth To Human Development Index.* Refers to the result of regression analysis of panel data illustrates that capital expenditure allocation (ABM) gives positive impact to human development index and

economic growth also have positive and significant influence to Human Development Index in Regency / City of Province North Maluku.

Regression equation from result of estimation of regression analysis of panel data in general equal to 3.387 indicates that if capital expenditure allocation and economic growth have constant value (unchanged), hence index of human development of Regency of North Maluku Province 3.387%.

Furthermore, the regression coefficient of capital expenditure allocation variables and economic growth, the value of capital expenditure allocation coefficient is 0.001 indicating that capital expenditure allocation has positive and insignificant effect on human development index. this shows that the allocation of capital expenditure is almost partly only in the financing of equipment for the implementation of government tasks so that the allocation of capital expenditure funds, especially in the field of education is reduced, which should be expected to be greater for regional progress and educate the children of the region by means of building construction, adequate for school comfort.

This is in line with research Sasana (2012) that the realization of regional spending has a positive and significant impact on HDI in Central Java. Nor Zebua (2014) shows that Capital Expenditures affecting HDI with a positive and significant direction.

While the economic growth coefficient of 0.099 indicates that economic growth has a positive and significant effect on the human development index. This is the same as expressed by Ranis (2004), mentioning that economic growth has a direct impact on human development improvement through income generation. Increased revenues will increase the allocation of household spending for healthier food and better education. With the increasing of economic growth hence will increase of income per capita of society so that HDI in one region also also increase. Economy, is the greater the human development index.

*Effect of Capital Expenditure Allocation, Economic Growth and Human Development Index on Poverty.* Based on the result of regression analysis, panel data illustrates that Capital Expenditure Allocation (ABM), Economic growth and human development index have an effect on poverty in Regency / Municipality of North Maluku Province.

Regression equation from result of estimation of regression analysis of panel data in general equal to 8.856 indicate that if allocation of capital expenditure, economic growth and index of human development have constant value (unchanged) hence poverty of Regency of North Maluku Province equal to 8.856%.

Furthermore, the regression coefficient of capital expenditure allocation variables of economic growth and human development index, the value of capital expenditure allocation coefficient is 0.099 indicating that the allocation of capital expenditure has positive effect on poverty And not significant to poverty. This means that an increase in capital expenditure allocation of 1% will increase poverty by 0.099%, although the increase is not significant. This indicates that the allocation of capital expenditure does not directly affect the poverty but through economic growth and HDI can contribute to the decline in poverty.

While the economic growth coefficient is -0.670 indicates that economic growth has a negative and significant impact on poverty.

According Kuznet (2001) relationship between economic growth with the level of poverty has a very strong correlation This is in accordance with the existing theory apabila economic growth increases the income of the community increases so that will affect the poverty that decreases. This is in accordance with research conducted by Faturrohim (2011) whereas the GRDP variable has a negative and significant effect on the poverty rate in Central Java. Also in line with the research undertaken by Ingka (2014) the result of research is the variable of economic growth has a negative and significant effect on poverty level in South Sulawesi Province

While the coefficient of human development index is -0.661 indicates that HDI has a negative and significant effect on poverty. This means an increase in economic growth of 1% will reduce poverty in the Regency / Municipality of North Maluku Province by -0.661%

This finding also supports the results of Sulistyowati (2013), demonstrating that the policy of increased education, health and infrastructure expenditure led to an increase in employment in all sectors and reduced poverty.

## CONCLUSION

Capital expenditure variable is an indicator of capital resource strengthening which has a positive and significant impact. This shows the implementation of development policies as outlined in capital expenditure on APBD, empirically considered good for regional macro-economic goals, achieving regional economic growth so it needs to be further improved.

Capital expenditure allocation has a positive but insignificant effect on the Human Development Index. This indicates that the government should allocate capital expenditure funds, especially in the field of higher education, with the expectation for regional progress and educating the local child that is by way of building construction, facilities and infrastructure.

The allocation of capital expenditure has a positive and significant impact on poverty. This should allocate capital expenditures devoted to infrastructure development and local government programs should be more pro-local to impact on poverty reduction. While economic growth has a negative impact on poverty. Furthermore, Human Development Index (HDI) as an indicator of strengthening of human resources has a negative and significant influence on poverty level in 9 regencies of North Maluku Province.

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## **INFLUENCE OF INVESTMENT, LOCAL EXPENDITURE AND FISCAL AUTONOMY TOWARDS ECONOMIC GROWTH IN SOUTHERN SUMATERA OF INDONESIA**

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### **ABSTRACT**

Provinces in Southern Sumatra have different rate of economic growth. In 2016, Southern Sumatra provinces of which economic growth is higher than the national economic growth were Lampung and Bengkulu. Meanwhile the economic growth of South Sumatra, Jambi, and Bangka Belitung in the same year was lower than the national economic growth. The phenomena are the underlying reason for conducting this study in Southern Sumatra. Objective of this study was to analyze influence of investment, local expenditure and Fiscal autonomy towards economic growth in Southern Sumatra. The population was 5 provinces in Southern Sumatra. The data were panel data or time series data observed between 2012 and 2016. The finding showed that Foreign Investment, Staff Expenditure, Capital Expenditure and Local Retribution had positive influence towards economic growth, while Domestic Investment and Local tax had negative influence towards the economic growth in Southern Sumatra.

### **KEY WORDS**

Investment, local expenditure, fiscal autonomy, economic growth, Southern Sumatra.

Economic growth is a process to increase output from time to time and becomes an important indicator to measure how successful development is (Todaro & Smith, 2011; Septiatin, Mawardi & Rizki, 2016; Ma'ruf & Wihastuti 2012). Economic growth is a pivotal phenomenon a country or region has to pay close attention to. In general, local economic growth is an indicator to measure local economic growth. It is related to an increase in public economic activities. It is expected that the increase results in trickle-down effect. Therefore, economic growth should become one of the targets of both local and national development.

Economic growth in Indonesia between 2012 and 2016 was fluctuating. Between 2012 and 2015, the national economy showed negative trend but it was growing in 2016. An area in Indonesia that has various rate of economic growth is Southern Sumatra. Provinces in Southern Sumatra have a unique economic growth. Based on the data from the National Bureau of Statistics, in 2016, the Southern Sumatra provinces of which economic growth is higher than the national economic growth were Lampung and Bengkulu. On the other hand, the economic growth of South Sumatra, Jambi, and Bangka Belitung in the same year was lower than the national economic growth (National Bureau of Statistics, 2017).

Several factors that influence economic growth are investment (Afonso & Fuceri, 2010; Aminah, 2016; Hermes & Lensink, 2003; Suindyah, 2009), local expenditure (Hamsinah, Mursinto, Soekarnoto, 2014; Wu, Tang, Lin, 2010; Zahari, 2017), and Fiscal autonomy (Barimbing & Karmini, 2015; Priambodo, 2014; Tahar & Zakhiya, 2011).

The objective of this study was to analyze influence of investment, local expenditure, and Fiscal autonomy toward economic growth in Southern Sumatra, which consisted of Jambi, South Sumatra, Bangka Belitung, Bengkulu, and Lampung. There is not any study investigating the influence of investment, local expenditure, and Fiscal autonomy toward economic growth in all provinces in Southern Sumatra. It is expected that this study

can fill the gap but it also becomes originality of this study. Both the national and local (Southern Sumatra) government can use finding of this study as recommendation to increase economic growth in the area. In addition, the finding can also be used as reference for future researchers.

## LITERATURE REVIEW

*Economic growth.* Economic growth is process of increasing production capacity of an economic system; economic growth is represented in the form of an increase in national income. A country's economy is growing when its Gross Domestic Product (GDP) is increasing. Economic growth is one indicator of successful economic development (Jhingan, 2000).

According to Kuznets as cited in Dumairy (1997), economic growth is defined as a long-term increase in ability of a country to provide more economic goods to its citizens. This ability grows according to technological advances, and both institutional and ideological adjustments a country needs.

GDP is the most suitable indicator of economic growth (Mankiw, 2010), but Gross Regional Domestic Bruto (GRDB) is an indicator to measure local economic growth. Economic growth in general is closely related to increasing production of goods and service. It is measured using GRDP, an indicator to identify economic growth in an area.

*Investment.* Investment is commitment to certain amount of fund or other resources at the moment and its objective is to obtain benefit in the future (Tandelilin, 2001). According to Jogiyanto (2003), investment can be defined as delay of current consumption for efficient production in particular period of time. Ongoing investment by the community will increase economic activities and number of employment, increase national income and eventually the public welfare.

Investment is investing in one or more than one asset for long period of time in order to generate benefit in the future (Sunariyah, 2003). Samuelson (2004) stated that investment involves increasing capital or goods in a country, such as equipment for production and inventories in one year.

Investment is one of the important components of economic growth. Investment has vital role in aggregate demand. First, expenditure spent for investment is less stable than that for consumption and thus, investment fluctuation may result in recession. Secondly, investment is important for economic growth and improves worker productivity. Economic growth depends heavily upon capital stock (Setyowati and Fatimah, 2007).

Investment fund consists of two sources, domestic and foreign investment. Foreign investment is investment of which capital comes from foreign country while domestic investment is investment of which source of capital is from within the country (Salvatore, 1997).

*Local expenditure.* Local expenditure is a decline in economic benefits during one accounting period in the form of outflow, asset deflation, or debt that results in a decrease in equity; it is not related to distribution to equity participants (Halim, 2002). Based on the 2005 Decree number 58 on Regional Financial Management, local expenditure is a regional government liability recognized as a deduction of net worth. Local expenditure is all local government expenditure in a budget period.

Based on the 2005 Decree number 58 which is then elaborated to 2006 Decree of the Ministry of Domestic Affairs number 13, local expenditure is classified as indirect and direct expenditure. Indirect expenditure does not have any direct relationship to program or activities while direct expenditure is closely related to program and activities. Furthermore, expenditure can be classified into staff expenditure, capital expenditure, interest expenditure, subsidy expenditure, grant expenditure, social assistance expenditure, revenue-sharing and financial assistance and incidental expenditure.

Based on the 2010 Decree number 71, one sort/post in accounting standard is capital expenditure. Capital expenditure is type of expenditure from public sector budget spent to obtain fixed asset or other assets that can provide benefit for government program/activities

more than twelve months. Most local government spends their budget on capital expenditure for things related to public development. Capital expenditure, according to Government Accounting Standard, includes Capital Expenditure for Land, Equipment and Machinery, Building, Road, Irrigation and Network and other physical objects. These are infrastructure local government needs. Capital expenditure is basically spent for building local infrastructure and public facilities, helping local government carrying out their tasks or for development. The higher Capital Expenditure Ratio to total local expenditure, the more impactful it is towards economic growth in an area.

*Fiscal autonomy.* Local financial independence or often referred to as fiscal autonomy shows ability of a region to finance their own government activities, development, and services to people who have paid taxes and levies as sources of income local government needs (Halim and Kusufi, 2014). Independence is ratio of regional finance indicated by comparison between Local Own-Source Revenue (PAD) and total local revenue. This ratio also illustrates local government dependence towards external funding sources. The higher the independence ratio is, the lower the level of regional dependence towards external funding source is lower; this results in local economic growth (Barimbing & Karmini, 2015; Priambodo, 2014; Tahar & Zakhiya, 2011).

Halim and Kusufi (2014) explained that Local Own-source Revenue refers to all local revenue derived from local economic sources. Mardiasmo (2002) stated that Local Own-source Revenue includes local tax, local retribution, revenue from separated local wealth management, profit of local government-owned companies and other legitimate revenue.

Based on the 2009 Decree number 28 on local tax, local tax is compulsory premium derived from an individual or institution without equal direct return that can be enforced out based on applicable regulations for local government programs/activities and local development. Furthermore, local retribution is local levies as payment for particular service/license granted by local government to an individual/institution.

Based on the literature review, the hypotheses are as follows:

- Foreign investment has positive influence towards economic growth of Southern Sumatera;
- Domestic investment has positive influence towards economic growth of Southern Sumatera;
- Staff expenditure has positive influence towards economic growth of Southern Sumatera;
- Capital expenditure has positive influence towards economic growth of Southern Sumatera;
- Local tax has positive influence towards economic growth of Southern Sumatera;
- Retribution has positive influence towards economic growth of Southern Sumatera.

## **METHODS OF RESEARCH**

*Population and Sample.* The population was 5 provinces in Southern Sumatera, namely Jambi, South Sumatera, Bangka Belitung, Bengkulu, and Lampung. The sampling technique was non-probability sampling, in which all members of the population became the sample.

*Measurement.* The data were secondary data in the form of panel data. The data were obtained from the National Bureau of Statistics and Directorate General of Fiscal Balance and Ministry of Finance between 2012 and 2016. The instruments were as follows:

- Economic growth: economic growth (*Pertumbuhan Ekonomi/PE*) is increase of output continuously in a long time. It is an indicator of development in a region. Economic growth is represented in percentage. Economic growth was projected with increasing percentage of GRDP of constant price in an on-going year compared to GRDP in the previous year in Southern Sumatera between 2012 and 2016.
- Investment: investment was measured using domestic investment (*Penanaman Modal Asing/PMA*) and domestic investment (*Penanaman Modal Dalam Negeri/PMDN*) in

Southern Sumatera from 2012 to 2016. PMA and PMDN were some amount of money invested in the region.

- Local expenditure: local expenditure was measured using staff expenditure (*Belanja Pegawai/ BP*) and capital expenditure (*Belanja Modal/BM*) in Southern Sumatera between 2012 and 2016. Staff expenditure referred to local expenditure, of which source was the Local Budgets, for staffs. Capital expenditure was some money spent for assets or infrastructure; it was categorized as local capital in the Local Budgets.
- Fiscal autonomy: fiscal autonomy was measured with local tax (*Pajak Daerah/PD*) and local retribution (*Retribusi Daerah/RB*) in Southern Sumatera between 2012 and 2016. local tax is compulsory premium derived from an individual or institution without equal direct return that can be enforced out based on applicable regulations for local government programs/activities and local development. Local retribution is local levies as payment for particular service/ license granted by local government to an individual/institution.

## RESULTS AND DISCUSSION

The first stage was to conduct classic assumption testing towards the model. Objective of the test was to identify whether or not the research model had met requirements of BLUE (Best Linear Unbiased Estimator). Classic assumption testing consisted of normality testing, multicollinearity testing and heteroscedasticity testing.

Kolmogorov–Smirnov test was the method of analysis used to evaluate normality of the data. Data was normally distributed when Asymp. Sig (2-tailed) score was higher than 0.05. Table 1 showed result of the Kolmogorov-Smirnov test towards the research model.

Table 1 – Result of Kolmogorov-Smirnov Test towards the Model

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		25
Normal Parameters <sup>a,b</sup>	Mean	.0E-7
	Std. Deviation	.81152075
	Absolute	.079
Most Extreme Differences	Positive	.079
	Negative	-.064
Kolmogorov-Smirnov Z		.397
Asymp. Sig. (2-tailed)		.997

a. Test distribution is Normal.

b. Calculated from data.

Source: *Data Analysis, 2018.*

Based on the normality testing towards how much influence the independent variable had towards the dependent variable. The Asymp. Sig (2-tailed) score was higher than 0.05 which indicated that the data were normally distributed.

Table 2 – Collinearity Regression Model

No	Variable	Collinearity Statistics	
		Tolerance	VIF
1	PMA	0.315	3.172
2	PMDN	0.314	3.188
3	BP	0.269	3.722
4	BM	0.238	4.202
5	PD	0.122	3.225
6	RD	0.525	1.905

a. Dependent Variable: PE

Source: *Data Analysis, 2018.*

The following procedure was multicollinearity test. The objective was to identify correlation between the independent variables. Ideally, regression model did not have multicollinearity. Multicollinearity test was conducted by identification of Tolerance and VIF scores. When tolerance score was higher than 0.1 and VIF score was lower than 10, multicollinearity occurred. Table 2 showed result of the multicollinearity test.

Table 2 showed that Tolerance scores of the independent variables were higher than 0.10 and their VIF scores were lower than 10. It meant that the research model did not have multicollinearity issue.

The next procedure was heteroscedasticity testing using Glejser test. Ideally, a regression model did not have heteroscedasticity. When significance of the independent variables towards their residue was higher than 0.05, heteroscedasticity did not occur. Table 3 showed result of the heteroscedasticity testing.

Table 3 – Heteroscedasticity Testing of the Regression Model

No	Variable	Significance
1	PMA	0.198
2	PMDN	0.401
3	BP	0.576
4	BM	0.364
5	PD	0.718
6	RD	0.100

a. Dependent Variable: RES\_2

Source: *Data Analysis, 2018.*

Table 3 showed that the significance of the independent variables towards their residue was higher than 0.05. These are evidence that the research model did not have heteroscedasticity issue.

Having finished the classic assumption testing, the following step was multiple regression testing to identify relationship between the independent variables towards the dependent variable. Table 4 showed result of the regression testing towards the independent variables, namely foreign investment (PMA), domestic investment (PMDN), staff expenditure (BP), capital expenditure (BM), local tax (PD) and local retribution (RD) towards economic growth (PE), the dependent variable.

Table 4 – Result of Multiple Regression Test

Model	B	Sig.
(Constant)	4.592	.000
PMA	0.049	0.254
PMDN	-0.286	0.028
BP	1.653	0.482
BM	1.208	0.012
PD	-0.328	0.671
RD	1.983	0.013

a. Dependent Variable: PE

Source: *Data Analysis, 2018.*

Based on Table 4, structural equation of the research model was as follows:

$$PE = 4.592 + 0.049 PMA - 0.286 PMDN + 1.653 BP + 1.208 BM - 0.328 PD + 1.983 RD + \varepsilon$$

Where:

PE: Economic growth;

PMA: *Penanaman Modal Asing* (Foreign Investment);

PMDN: *Penanaman Modal Dalam Negeri* (Domestic Investment);

BP: *Belanja Pegawai* (Staff Revenue);

BM: *Belanja Modal* (Capital Revenue);

PD: *Pajak Daerah* (Local Tax);

RD: *Retribusi Daerah* (Local Retribution);  
 $\varepsilon$ : *Error term*.

## DISCUSSION OF RESULTS

Hypothesis 1 is partially accepted. Foreign investment (PMA) has positive but non-significant influence towards the economic growth in Southern Sumatera. The beta score is 0.049 (positive) and the significance is 0.254 or higher than 0.05. Fluctuating foreign investment in Southern Sumatera contributes to the non-significant influence because it has not been able to encourage economic growth significantly. This finding is in line to Afonso & Fuceri (2010); Aminah (2016); Hermes & Lensink (2003) and Suindyah (2009). The positive but non-significant influence is an aspect that distinguishes the finding of this study and that of the previous ones;

Hypothesis 2 is rejected. Domestic investment (PMDN) has negative and significant influence towards the economic growth in Southern Sumatera. The beta score is -0.286 (negative) and the significance is 0.028 or lower than 0.05. It happens due to the fluctuating PMA in the region between 2012 and 2016. Inability to meet the targeted PMDN is another reason that resulting in negative influence between PMDN and the economic growth.

Hypothesis 3 is partially accepted. Staff expenditure (BP) has positive but non-significant influence towards the economic growth in Southern Sumatera. The beta score is 1.653 (positive) and the significance is 0.482 or higher than 0.05. Staff expenditure has not been able to encourage the economic growth in Southern Sumatera and that is the reason why the influence of BP is not significant.

Hypothesis 4 is accepted. Capital expenditure (BM) has positive and significant influence towards the economic growth in Southern Sumatera. The beta score is 1.208 (positive) and the significance is 0.012 or lower than 0.05. The significant influence is the result of effective allocation of capital expenditure so that it supports the economic growth in Southern Sumatera. The finding supports previous studies conducted by Hamsinah, Mursinto, Soekarnoto (2014); Wu, Tang, Lin (2010) and Zahari (2017).

Hypothesis 5 is rejected. Local tax (PD) has negative and non-significant influence towards the economic growth in Southern Sumatera. The beta score is -0.328 (negative) and the significance is 0.671 or higher than 0.05. The local government inability to meet the targeted PD is the reason why the influence of PD is not significant.

Hypothesis 6 is accepted. Local retribution (RD) has positive and significant influence towards the economic growth in Southern Sumatera. The beta score is 1.983 (positive) and the significance is 0.013 or lower than 0.05. The significant influence means that the local retribution has met the target and is able to support the economic growth in Southern Sumatera. It is in line with previous studies conducted by Barimbing & Karmini (2015); Priambodo (2014) and Tahar & Zakhiya (2011).

## CONCLUSION

Future researchers interested in investigating factors that influence economic growth can use the finding of this study as reference. Limitation of this study is the number of variables and provinces that become analysis units. It is expected that future researchers involve more independent variables and more regions as the analysis unit.

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**STOCK PRICE ANALYSIS BEFORE AND AFTER THE ISSUANCE  
OF FINANCIAL STATEMENTS: SURVEY ON BASIC AND CHEMICAL INDUSTRIES  
AT INDONESIA STOCK EXCHANGE**

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**ABSTRACT**

This paper presents stock price analysis before and after the issuance of financial statements of basic and chemical industries listed in Indonesia Stock Exchange in 2016. The variables investigated in this research were both average stock prices for five days before and after the issuance of financial statements in 2016. Based on the data processing results using SPSS version 16, there was no difference indicated in the stock prices before and after the issuance of financial statements in 2016. This indicates that the issuance of financial statements has no impact on stock prices of basic and chemical industries listed in Indonesia Stock Exchange. That is, in investing, investors tend not to use financial statements as the basis for investment decision-making. In other words, it is possible that investors are not oriented to make a long-term investment but merely intend to utilize their idle funds. Thus, in this research, conducting technical analysis was considered enough to answer the research question so that there was no need to further carry out fundamental analysis.

**KEY WORDS**

Stock, price, financial statement, industry, funds.

As stipulated in Law Number 8 of 1995 on capital market, it is defined as any activities related to the public offering and trading of securities it produces as well as securities-related institutions and professions. The capital market in general is a meeting place of the sellers in the capital market which is companies which require capital and called the issuer.

The role of the stock exchange for investors includes (a) promoting investment in accordance with economic growth; (b) obtaining dividends for those who own or hold shares, (c) providing an alternative investment in the form of relevant instruments that may reduce the risks.

In addition the role of the stock exchange for the issuers includes (a) obtaining a large enough amount of funding and investment that can be used to increase production capacity, (b) improving the image or value of the companies through the high solvency of the companies that have the ability to meet all their obligations, (c) reducing the dependence of issuers to banks.

The description of an entity is reflected by the issuance of financial statements, namely Balance Sheet and Profit and Loss. The balance sheet describes the condition or position of a company at a given period, while profit and loss shows the performance achieved by the company in a certain period. As related to the two reports, it indicates that the asset as the resource owned by the company and in operation ultimately it results in benefits in the form of profit.

The results achieved by the company will affect the value of the company and will affect the stock price. There are two approaches that are commonly used to analyze stock prices, namely fundamental and technical analyses. Fundamental analysis is basically trying to estimate stock prices in the future by (1) estimating the value of the fundamental factors that influence the future stock price, (2) applying the relationship of macroeconomic variables, industry analysis and company analysis; this model is known as share price forecasting model.

Technical analysis is an attempt to estimate stock prices by observing changes in stock prices of a company. Technical analysis may determine the best moment when to buy or sell shares by utilizing technical indicators or using graphical analysis. Based on the above background, the researcher derived the study with the focus on stock price analysis before and after the issuance of financial statements of basic and chemical industries listed at the Indonesia Stock Exchange (IDX).

Based on the indication of the problems, the formulation of the problem is on how the impact of the issuance of financial statements on stock prices particularly on companies of basic and chemical industry. Thus, the purpose of this study is to determine the impacts of the issuance of financial statements on stock prices on stock prices particularly on companies of basic and chemical industry listed at IDX.

## LITERATURE REVIEW

The financial statements describe the financial condition and performance as well as the cash flows of an entity or a company. The financial statements will become a key concern for investors to assess the entity or company of (Ross, Randolph, & Jeffrey, 2005).

The Indonesian Institute of Accountants (2015) describes the financial statement as a structure that presents the financial position and financial performance of an entity. The general purpose of the financial statements in relation with the public interest is to provide any relevant information on financial position, financial performance, and cash flow of entities, which is very essential for making economic decisions for its users.

Investors are very concerned with the financial statements, particularly to assess the condition and performance of the entity. By looking at the financial statements, the investors are able to assess to what extent the companies' success in their business activities; therefore, they may predict the potential growth of the companies in the future. In addition, the investors may predict the amount they may gain from the investment to the companies. Thus, the investors may take the decision whether to make investments through securities traded at the Indonesia Stock Exchange (IDX).

The analytical approaches employed to assess companies in terms of their financial statements are through fundamental and technical analyses. Fundamental analysis is a method of evaluating a security in attempt to measure its intrinsic value, by examining related economic, financial and other qualitative and quantitative factors. Fundamental analysts study anything that may affect the security's value, including macroeconomic factors such as the overall economy and industry conditions, and microeconomic factors such as financial conditions and management of the company. The main goal of fundamental analysis is to produce the quantitative value of which an investor can compare with the security's current price, thus indicating whether the security is undervalued or overvalued.

The intrinsic value is the actual value of a company or an asset based on an underlying perception of its true value including all aspects of the business, in terms of both tangible and intangible factors. This value may or may not be the same as the current market value. Additionally, the intrinsic value is primarily used in options pricing to indicate the amount an option is in the money.

Wira (2016) mentioned that there are six fundamental elements in conducting fundamental analysis, namely: EPS (Earning per Share); PER (Price Earnings Ratio); PBV (Price to Book Value); ROE (Return on Equity); DER (Debt to Equity Ratio); DY (Dividend Yield).

Technical analysis is a stock price analysis technique which is most widely used by investors as shown in the research by Taylor and Aller (1992) in Fernandez-Rodriguez, et al (1999) asserting that most investors (more than 90%) gave higher weight on the use of technical analysis than with fundamental analysis. However, even though the technical analysis is mostly used by investors, various researches in Indonesia capital market tend to conduct fundamental studies on the capital market.

Wira (2016) defined the technical analysis as an analytical technique usually employed by traders to assist buying and selling decisions in stock trading, forex, gold or commodities. There are two functions in doing this technical analysis are:

*Identifying current trends and pattern.* Technical analysis is used to analyze prices based on price data in the past. Based on these data, analysts try to see particular trend or price patterns that occurred; traders usually follow the existing patterns. For example, when prices tend to rise, traders open a buy position. On the other hand, when prices tend to fall, traders open a sell position. In determining the current trend or pattern, users either use tools or indicators.

*Assisting to determine buying and selling decisions.* Technical analysis may help the traders to determine the sale or buy decision. Usually traders use the following indicators as the considerations: Moving Average, MACD (Moving Average Convergence Divergence); RSI (Relative Strength Index); Stochastic, Parabolic SAR; Bollinger Band.

Various studies have shown different research results on what the best methods can be used on the technical analysis.

## METHODS OF RESEARCH

This is a comparative by nature which is intended to observe the difference of stock prices before and after the issuance of the financial statements of companies on basic and chemical listed at the Indonesia Stock Exchange (IDX) in 2015.

The population in this study was companies running their business on basic and chemical industries amounting to 55 companies were chosen as the samples by considering the following categories: the availability of data related to financial statements in 2015, and the issuers made profit in 2015.

Based on the research framework, the operational variables were the average prices of the stocks within five days before and after the issuance of the financial statements. In order to test the research hypothesis, statistical hypothesis testing was conducted as follows:

*Normality Testing using Lilliefors Test.* Normality testing using Lilliefors test aims to test the normality of data which are not compiled in the frequency distribution list and the least amount of data ( $4 \leq n < 30$ ) with the following rule of decision:

- Ho is accepted if  $L_o \leq L_{critical}$ ;
- Ho is rejected if  $L_o > L_{critical}$ .

*Homogeneity Testing using  $F_{maximum}$ .* Homogeneity Test of variance with  $F_{maximum}$  was intended to observe whether the two variances were homogeneous or not with the following formulation:

- Ho - the two variances are homogenous;
- Ha - the two variances are not homogenous.

$$F = \frac{\text{maximum variance}}{\text{minimum variance}}$$

Rule of decision:

- Ho is accepted if  $F_{statistic} \leq F_{table}$ ;
- Ho is rejected if  $F_{statistic} > F_{table}$ .

*Hypothesis testing using t Test:*

Ho: There is no difference in stock prices before and after the issuance of financial statements of companies on basic and chemical industries listed in IDX;

Ha: There are differences in stock prices before and after the issuance of financial statements of companies on basic and chemical industries listed in IDX.

Statistical hypothesis:

- Ho:  $\mu A = \mu B$ ;
- Ha:  $\mu A \neq \mu B$ .

Calculating the t score with the following formula (Sugiyono, 2013:122):

$$t \text{ statistic} = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r\left(\frac{s_1}{\sqrt{n_1}}\right)\left(\frac{s_2}{\sqrt{n_2}}\right)}}$$

Ho is accepted and Ha is rejected:  $-t_{\frac{1}{2}}\alpha \leq t \text{ statistic} \leq t_{\frac{1}{2}}\alpha$ .

Ho is rejected and Ha is accepted:  $-t \text{ statistic} \leq -t_{\frac{1}{2}}\alpha$  or  $t \text{ statistic} \geq t_{\frac{1}{2}}\alpha$ .

## RESULTS OF STUDY

Based on the results of processing to 28 companies from 55 companies, 22 companies did not meet the requirements determined in this research. The results of its processing can be described in Table 1.

Table 1 – Result of Statistical Analysis

n/n	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 before - after	2.09079	24.30806	4.59379	-7.33490	11.51647	.455	27	.653

Based on Table 1, in relation with the issuance of financial statements issued by issuers, investors were not influenced significantly (with the score of 0.653 higher than 0.05), or  $t_{\text{count}} 0.455$  is smaller than  $t_{\text{table}} 0.684$  meaning that Ho is accepted and Ha is rejected. This indicates that there is no difference in stock prices before and after the issuance of financial statements by the companies listed in IDX. Investors, however, tend not to be influenced by any financial statements issued by the issuers; it might be possible for the investors to use only technical analysis as a basis for decision-making process for their investment.

In line with previous research conducted by Taylor and Aller (1992) in Fernandez-Rodriguez et al. (1999) found that most investors (more than 90%) gave higher weight to the use of technical analysis than fundamental analysis. Even though technical analysis is mostly used by investors, however, various researches in relation with capital market in Indonesia tend to employ fundamental study on capital market.

This is similar to the results of the research carried out by Bouteska and Rega (2017) that accounting information is not reflected in stock prices, meaning that stock prices do not reflect on information received by investors, but stock prices reflect investors' behavior in investment. However, the finding is not similar with the results of the research conducted by Glezakos, Mylonakis, & Kafouros (2012) that the fundamental analysis apparently becomes the basis for investors for their investment.

## CONCLUSION

Based on the results and discussion, the stock prices in the secondary market in basic and chemical industries listed in the Indonesia Stock Exchange is not influenced by the issuance of the financial statements of the companies; it is possible that the investors in investing their capital rely on the technical analysis approach instead, despite the fact the financial statements indirectly may describe the condition of the company (issuers) that actually is imminent.

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**IDENTITY CONGRUENCE AS MEETING-POINT OF BETWEEN EXPECTATION-CONFIRMATION, SOCIAL IDENTITY, SOCIAL EXCHANGE AND PLANNED BEHAVIOR THEORIES TO EXPLAIN ISLAMIC CONTRIBUTION INTENTION: A CASE STUDY AT SHARIA BANKS IN LAHAT, PALEMBANG OF INDONESIA**

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**ABSTRACT**

The study has three purposes. First, it intends to delineate constructs forming satisfaction in Islam perspective with formative approach. Second, it brings up new construct that is intention to give the best contribution. It applies SEM-PLS for data analysis. It provides several insights that enrich management literature. For one, it is among few that explores constructs forming Islamic satisfaction. The other, it is the first study that brings up new construct drawn on Islamic teaching that is intention to give best contribution which in Islam is called Shodaqoh and coined as Islamic contribution. The results are conceived to be that all predicted relationships are accepted. It has several novelties that might enrich management literature. Firstly, it is among the first that sheds light on identity congruence as a meeting point between social identity, social exchange, expectation-confirmation and planned behavior to explain an Islamic contribution intention. Secondly, it is the first research that analyzes relationship between Islamic satisfaction and an Islamic contribution. Thirdly, it is the first research that puts forward the concept of Islamic contribution intention.

**KEY WORDS**

Islamic contribution intention, Islamic satisfaction, Islamic culture, identity congruence.

Definition of work satisfaction within Islamic perspective refers to employees' grateful feeling that engenders blissfulness due to chance to materialize the faith and piety to God in job environment. They are allowed to do so starting from time before, during, and after completing the job (Hayaati, 2010, Saadiah, 2008). It is highly valued as work in Islam is also prayer to the God. Intention of doing job might be directed as a prayer to God, which sets the activity to reflect religious values, its performance to deliver good values or advantages to other, to make good exemplars, to make a living from decent income. Activities during the job are also treated as the way to pray to God in which one can express his/her faith, obedience, praise and contribute something to the life. The outcomes of the work are expected to deliver good results with capacity to make the world a better place to live in. Islamic satisfaction might comprises of four dimensions based on the work of Mohamad et al (2014) following Al-Ghazali's interpretation of Quran. They include spiritual, intellectual, social, and material dimensions.

Spiritual dimension concerns with lively heart that serve as a guidance for any attitude and behavior. It is only possible for those who have faith and base all their activities on it. They see a work as a way to seek closeness to God, get motivated to perform good deeds, and avoid mistakes that might make them away from God. They put heart on their work, thus set asides self-interests, and emphasize the greatest contribution to the greatest stakeholders. Staff or worker will have spiritual-dimension satisfaction in an organization that is perceived as being able to fulfill this end. Organization should be a place from where an individual might increase their faith, make their relationship to God closer, make their life more meaningful, and a place where they can make a valuable change and contribution to

the world. In this study, the closest proxy is Islamic culture, where individual and organization interact to enrich their inside dimension. The individual inside dimension might be religiosity, faith, identity, self-esteem, and self-meaning, while organization's inside meaning may take the forms of brand, identity, strengthened positioned and differentiation.

Intellectual dimension concerns with the room an organization provides for the recognition, the development, the sharing, and the goodness one's knowledge might contribute. According to Al-Ghazali, as the knowledge of a person increases, so does his joy. He also stressed that a spirit with intellect and knowledge can give an implication to the behavior. By means of knowledge, man can develop civilization, progress, and revelations that set man apart from other creatures. By means of knowledge also, man can differentiate between goodness and the bad from which they might orient themselves toward the former and avoid the latter. Knowledge might serve as a guidance to lead to the right path, to resemble the God as Omni Science, and as a light to get to know more as to the God. Knowledge man possessed should be recognized and capitalized for day to day organizational operation as only by this way individual feel their presence in the organization meaningful, not to mention their relationship to organization getting much closer from which loyalty can be ascertained. Mutual and synergic relationship between an individual and organization makes their relationship enrich both individual and organization growth. In this study, the closest proxy is knowledge-sharing, where individual is willingly driven to share their knowledge to the organization and their interests.

Social dimension concerns with developed relationship to co-workers and employers. One of strong human being's needs, according to Al-Ghazali (1976), is social interaction. People converge on the need to interact to other, to group, and to unite and communicate from which social norm has a role. As social creature, human being is drawn to do so especially in order to have self-esteem, social recognition, protection and social meaning. Social interaction among people in Islam also reflects the individual faith to God. The stronger an individual faith is to God, the stronger ties he keep with other human beings. Many studies have confirmed that stronger relations between employees and employers will strengthen the intimate relationship. It would enable for comfortable work surroundings and make employees reluctant to leave the job. When an individual obtain satisfaction in his relationship with people with whom he or she is working with, he will feel comfortable with his working environment. In this study, the closest proxy is social norm that dictates one's attitude and behavior as it makes an individual conforms his attitude and behavior to the norm to ascertain social acceptance, identity, esteem and meaning.

Material dimension concerns with material fulfillment. The material element is related to physical needs that include but not limited to food and water; clothing; place to stay and security (Din *et al.*, 1989). The fulfillment of physical needs might drive people to work hard. In this study, the closest proxy for material dimension is reward. Reward is found to be the major drivers of job satisfaction for most countries (Westover & Taylor 2010). Management literature recognizes external and internal rewards. The scope of reward in this research only allows for external reward as it follows Mohamad et al's study (2014) based on Al-Ghazali's works (1976).

After the delineation of constructs forming satisfaction in Islam perspective, the study intends to explore the effect of satisfaction to Islamic contribution intention. It is important as there is a teaching concerning the significance of giving something beneficial to the interest of others which is in Islam religion is called Shodaqoh. Moslems are taught to live the life meaningfully to others. Moslem should avoid pointless activities as wasting the valuable time is considered as a sin. In this way, Moslems with faith tend to orient their life to the goodness of others as best as they can, which in this case is organization.

*Hypothesis Development.* The study follows the work of Mohamad *et al* (2014), stating that satisfaction in Islamic perspective consists of four dimensions. They are spiritual, knowledge, social, and reward dimensions. The present study attempts to put those dimensions as constructs forming Islamic satisfaction in formative way, and determines their effects on Islamic satisfaction in Sharia banking context especially in Lahat region. It makes proxies for the four constructs; those are Islamic culture for spiritual dimension, knowledge

sharing for knowledge dimension, subjective norms for social dimension, and reward for material dimension.

Spiritual dimension is about certain values adhered by given individuals to give meaning to life, direction to their way of life, and soul enrichment. When it comes to values, culture comes to the surface. According to Soedjono (2005), organizational culture is the values that flourish in an organization, where these values are used to direct the behavior of organization's members. Therefore its research the values used is Islamic values.

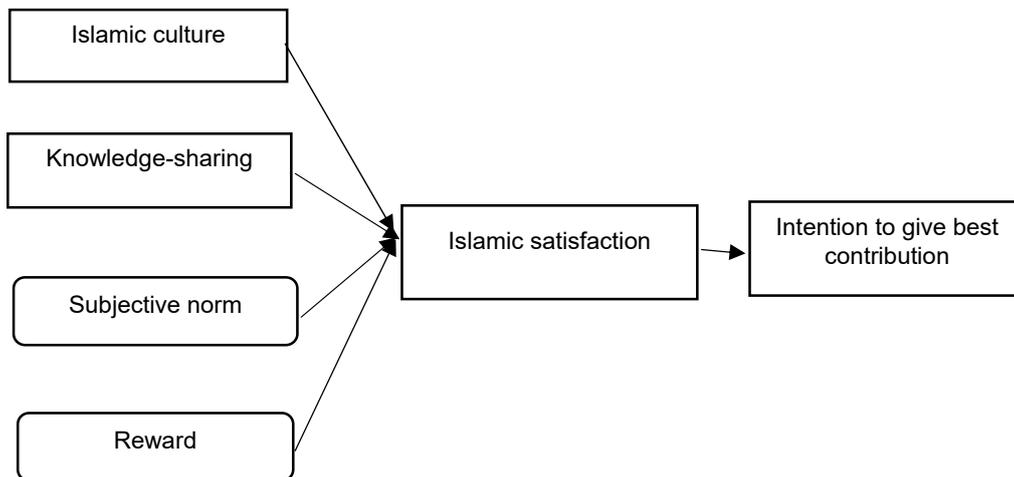


Figure 1 – Research Model

Value itself directs behavior and satisfaction in daily life (Kusaili and Kasyful, 2007). Several works have identified relationship between culture and satisfaction. Those include Purnama (2017), Park and Kim (2009), Yildirim *et al* (2017), Eskildsen *et al* (2010), Kianto *et al* (2016), and Chen *et al* (2013) support the relationship. Accordingly, this study puts forward the following hypothesis:

H1: Islamic culture has a significant effect on Islamic satisfaction.

Employee can be pleasant or in positive state as a result of the fulfillment of the expectations and needs of employees for knowledge through the availability of a learning. Human is the main source of knowledge. Jiang and Hu (2016) cited research confirming that knowledge and information sharing can support competitive advantages at the organizational level (Cabrera and Cabrera 2005). At the individual level, they cite research revealing that knowledge enables for strengthened human resources (van den Hooff and van Weenen 2004; Wang and Noe 2010), meets social needs (Wasko and Faraj 2000, 2005), and sustains interpersonal relationships (Bosson *et al*, 2006).

We argue that knowledge sharing influences life satisfaction because it fosters better relationships with one's colleagues, which in turn affect individuals' life satisfaction. Social exchange theory (Blau 1964) suggests that individuals make comparison between perceived benefits and costs when making action decisions, and expect positive feedback (Wang and Noe 2010). It is based on the norm of reciprocity, that in social exchanges, they follow mutual reciprocity pattern. It fosters social relationships in the workplace (Cropanzano and Mitchell 2005; Schoorman *et al*. 2007). Chiu *et al*. (2006) held that knowledge sharing occurs within social exchange logics. The received knowledge would induce receiving individuals to contribute knowledge. Several works have shown relationship between knowledge-sharing and satisfaction. They include Kianto *et al* (2016), Chen *et al* (2013), and Jiang and Hu (2016). Thus, the study hypothesizes:

H2: Knowledge-sharing has a significant effect on Islamic Satisfaction.

Relationship between subjective norm and Islamic satisfaction has so far not been fully explored. People are generally influenced by their environment. Their work motivation are mostly guided by their world-view, values, principles, and particularly belief and faith. It is

strengthened when institution and people inside it provide the support. When one's belief or faith is in accordance with institution encourages, then it is assumed that it would lead to satisfaction.

Subjective norms refer to people whom an individual considers important and whose ideas, values or perspectives affect his/her attitude and behavior. When their identity-related values are similar to him or her, then emerges what is usually congruence. Byrne (1971) argued that congruence with people considered important (significant others) would make individuals have more positive attitude. The congruence encourages agreement as to the important behaviors in the workplace (Schein, 1985). According to Adkins et al. (1996), this congruence would reduce tension in workplace, thus might increase satisfaction. Vancouver and Scmitt (1991) supported the relationship between congruence and satisfaction. This, this research makes the following hypothesis

H3: Subjective norm has a significant effect on Islamic satisfaction.

Rewards have so far been associated with satisfaction. Rarely researches do find insignificant relationship between rewards and satisfaction. Both extrinsic (pay and bonus) and intrinsic types (recognition and appreciation) of rewards have been considered to have effects on satisfaction. Several works have supported this such as Smith *et al.* (2015), Sarwar and Abugre (2013), and Ozutku (2012).

However, Islamic teachings emphasize several values that are more importantly considered than extrinsic and intrinsic rewards. For one, Islam considers the importance of basic intention or purpose of working not merely as the way of fulfilling worldly needs but also as part of worship practice to God. It means that return from the God is put first before material return from organization. Another, Islam also stresses on characters such as sincerity, patience, and gratefulness. Sincerity refers to motivation of doing something or giving benefits to other with the absence of personal interests. Patience refers to endurance in facing or doing things felt as encumbrance. Thus, it hypothesizes that:

H4: Rewards do not have a significant effect on Islamic satisfaction.

Satisfaction is the way to achieve behavioral intention. Several works have shown the results that support relationship between satisfaction and behavioral intention. Mohamed et al., (2014) showed that satisfaction with online shopping has a significant effect on intention to continue; Rahman *et al.* (2017) proved that Edu-tourist's satisfaction led to intention to purchase, Ryuet *al.* (2010) showed the same thing in hospital context, and Wu *et al.* (2016) in green context.

In Islamic organization context, individuals are conceived to derive their Islamic satisfaction to their organizational indebtedness. By applying Islamic teaching regarding the importance of Shodaqoh, they might express this by attempting to give contribution to organization in order to maintain and drive its development. The contribution can be in the form of knowledge, discipline, ideas, OCB or others. Thus, the research makes a following proposition:

P1: Islamic satisfaction has a significant effect on Islamic contribution intention.

## LITERATURE REVIEW

*Definition of Shodaqoh.* The Prophet of Muhammad has said that people should not be constrained by what they have to make shodaqoh. Life provides unlimited chances for people to make shodaqoh starting from smiling, reassuring talks, removing stones from the street through which many other people would pass by, to helping people, fulfilling family's needs, spreading religion's teachings or preventing others from making sins. By means of *shodaqoh*, Rosulullah call on people to make use of all activities for praying intention. Its role is instrumental, as perception that only wealthy people can make shodaqoh is replaced by the sense of fairness where all people have an equal chance to do the same thing. It is not surprising as many verses in Quran revealing considerable rewards for those who are willing to make material-related shodaqohs. Later, Rosululloh emphasizes immaterial shodaqohs that are equally important.

It was brought up by his followers who were upset of being not able to make shodaqoh as his more fortunate followers were. It was due either to the fact that they left their belongings in Mecca, and or the financial conditions. The Prophet of Muhammad gave them reassuring reply that the chance to make shodaqoh is not limited by the amount of possessed materials. From this, it is inferred that the definition shodaqoh is highly broad, covering all deeds for the goodness of others outside oneself altruistically as part of praying to the God. In institution terms, it might refer to people's way of working that are trying their best to give optimal contributions to the advance of the institution without thinking of feedback rewards as they `perform this altruistically as part of praying to the God. In this study, it is coined as Islamic contribution.

*Meeting point of social identity, social exchange, satisfaction and planned behavior theory.* Grounded on social identity theory, employees tend to internalize organization's value and identity perceived as being attractive into their own self-concept so that there is identity overlap between employees and organization. It relates to individual desire for social category. Individuals seek to define themselves in terms of social categories. Social identity serves as a means for social category that set the group where an individual decides to affiliate with apart from other groups. Organizations offer powerful identities as a source of self-categorization for individuals. The internalization of organization's identity by their employees is made possible by existing similarity between the two. Social identity need (Ashforth and Mael, 1989) makes individual has preferences for similarity in organizations. Thus, it is assured that there is a strong correlation between congruence (self-incongruity theory) and social identity.

Preference for similarity explains any effort every individual made to make adjustment, correspondence, fit, or suitability to his/her environment. If it is already achieved, each individual would seek to maintain and optimize it. The extent of fit would determine work attitudes and behaviors. Individual's decision to make adjustment is affected by perceived attractiveness in organization's value and identity. This perceived attractiveness by process of inclusion is expected to give positive paint to self-concept. The two run in synergic manner, develop and deplete together simultaneously. As Dutton *et al.* (1994) higher identity congruence leads to higher attraction to organizational identity.

Social exchange theory (SET) conceives the willingness of individuals to make relationships with others based on benefits and costs (Thibaut and Kelley 1959). Employees who feel to have shared identity with co-workers and or organization would have a greater chance of entering into exchange relationship. They will receive and provide much more support to each other (Van Dick and Haslam, 2012). The shared identity is the source for solidity. People perceive group boundaries when they share common interests that make them willing to share expertise, knowledge and skill with other members of a social identity (von Krogh, 2002). The existence of a shared sense of identity in a group helps group members hold shared norms, and shared values for collective action (von Krogh, 2002). Holding shared norms and shared values based on shared sense of identity is called identification and is in internalization in social identity theory and is the ground for exchange relationship.

Organization may fulfill employees' needs for belongingness, affiliation, and recognition, which provide the sense of membership. This fulfillment would drive them to develop a stronger commitment the organization for return. Synergic pattern runs in mutual simultaneous way between capability to fulfill affiliation or belongingness needs and strong commitment. The fulfillment should be social identity perceived attractive for having similar attributes to individual' self-concept. Perceived attraction is derived from expectation of its potential for being means of self-extension. From this interaction, it is obvious that there is relationship between congruence in value, identity or goal and exchange.

Deutsch (1973) argued that congruence might lead to cooperation among parties involved. In the context of goal, he thought congruence drives individuals and organization in cooperative mutual relationship. Bell (1978) found that congruence in feelings or emotions might stimulate the development of relationship among different individuals. Locke and Horowitz (1990) emphasized the effect of similarity in emotions on satisfactory interpersonal

relationship. Yu and Chu (2007) highlighted this similarity on increased LMX (leader-member exchange). This kind of relationship falls under cost-benefit type which is the main characteristic of social exchange theory.

Satisfaction is based on expectation-confirmation theory. It was proposed by Oliver (1977) to explain satisfaction as a function of expectations, perceived performance, and confirmation of beliefs. In terms of congruence, individuals might have expectation of social identity with resulting identity or image congruence, compatibility or fit with environment with the same resulting congruence, and increased performance as the result of congruence measures.

Research has shown the positive effects of value congruence on individual attitudes such as satisfaction (Chatman, 1991; O'Reilly *et al.*, 1991; Bretz and Judge, 1994), and satisfaction with leaders (Meglino *et al.*, 1991). Identity and or image congruence will sustain emotional feeling, encourage social relationship, and make easy work team. This congruence makes little or significant any conflict or other differences. It is so important to sacrifice when the conflict or difference ever surfaces. Thus, congruence in workplace enables for satisfaction.

Employees always seek compatibility to their work environment, with the effect of intentions, including intention to leave, stay, commit, and contribute. Compatibility relates to congruence. Higher congruence is more related to work attitude than lower congruence. In terms of goal congruence, several works have shown relationships between congruence and job satisfaction and turnover intention (Lovelace and Rosen, 1996; Sims and Kroeck, 1994).

Behavioral intention is derived from planned behavior theory. It is posited that behavioral intention is determined by three factors. They are attitude toward the behavior, subjective norm and perceived behavioral control (Ajzen, 2006). Attitudes refer to how positive or negative an individual feeling toward the behavior. It is strongly affected by the belief system and perception of how importance the given behavior should be performed. Congruence has been shown as being the main source of forming attitude, either it is viewed as attraction (Marin and Maya, 2013; Lam *et al.*, 2013), organization's ability to fulfill individuals' need for affiliation (Gonzalez and Chackraborty, 2012), or norm of response in mutual relationship that engenders employees' positive attitude (Arnett *et al.*, 2003).

Regarding to subjective norms, congruence in value and thus identity which is organization-widely shared potentially becomes subjective norms. Shared empathy, shared sense of responsibility and shared identification, among others, might turn into subjective norms where it has influential guideline on which everyone should follow or where almost all superordinate persons provide exemplary others to follow. Congruence puts most individuals in convergence and becomes uniting force to the point no individual intends to diverge for the sake of harmony and solidity.

Regarding perceived control, congruence makes possible of mutual support from co-workers and organization. Organization-wide support would enable individuals to have intention to perform a behavior he/she perceives compatible to co-workers' and organization's values. Perceived control is related to perceived support and attempt to make compatibility or fit with environment. Perceived control is supposed to be strengthened as it increases perceived congruence and fit with organization.

## **METHODS OF RESEARCH**

The present study designs two new constructs of perceived value deemed relevant for Islamic bank within the employees' perspectives. They result from previous interviews conducted before the research, and content validity and face validity are carried out subsequently to make sure their validity and reliability. Content validity involves expert judgment in which seven experts give their evaluation on the respective construct. The resulting constructs is further tested by referring the 40 respondents' opinions of their properness. It applies saturating sampling (Sauders *et al.*, 2009) that covers all employees and employers at Islamic banks in Lahat.

## RESULTS AND DISCUSSION

The research conceives that Islamic culture has a significant effect on Islamic satisfaction. Values developing in a wide-organization scale might coincide with employees', and it might serve a sticking attraction that strengthens their commitment and intention to stay. The so-called value congruence between employees' and organization's might be among strongest coefficient values. By this congruence, employees might find comfort with their surroundings, support to what they believe in, certainty to the right behavior, decreased conflict with other, from which personal growth and career paths might be ascertained. Values are the main pillar forming identity (Birgittaet *al.*, 2014). In a identity-based institutions like Islamic banks, culture related to religious identity is strongly upheld.

Knowledge-sharing is also conceived to have a significant effect on Islamic satisfaction. Knowledge is important for employees to familiarize with the Islamic ways in transactions. Innovation is an issue Islamic institutions commonly face. On one hand, they should follow Islamic strict rules in transactions; however on other hand they must make innovation to compete with conventional banks that have already dominated the banking sector. The common result is that, among others, many consumers find difficulties to differentiate between Islamic and conventional practices in Islamic banks, as they are still required to pay administrative fees that can be categorized as interest payment in conventional bank. More than often they also apply conventional banks' innovation with some modification. They generally only some Islamic rules, while leaving others for feasibility reasons. Real Islamic innovations are imperative as they might reflect and foster religion belief and identity.

Subjective norms are seen to have a significant effect on Islamic satisfaction. Not many researches has explored this relation, and this might fill the gap in management literature. Subjective norms might provide pressure to individuals with incompatible values, ideas or perspective to make some adjustments. The pressure would turn into agreement, support, and understanding that allow for increased cohesiveness, esteem, and satisfaction in the workplace. This is in line with the work of Schein (1985) and Vancouver and Smitt (1991). Arguably, Islamic banks have a better leverage than conventional banks in terms of identity-related value congruence. So, it should be no surprise to see that some conventional banks, domestic and international, apply Islamic procedures. Another effect is that not all banks with Islamic procedures (Shariah) offer identity-related value congruence since some conventional banks also offer Syariah services. Somehow, employees develop value perception from organization's common practices or procedures. When the practices or procedures relate to religion teachings, the resulting value perception might lead to identity perception.

Rewards as the old concept do not suffice to warrant Islamic satisfaction. The old concept that sees rewards as being composed of intrinsic and extrinsic would not fully represent Islamic expectation. Though some Islamic individuals still think that these kinds of rewards important for their life, many others have expectations that might overshadow those rewards. Individual Moslems may be driven to make some virtues without expecting rewards. Some studies have argued that similarity induces empathy. Identity congruence and support between organization and consumers or employees tends to make the latter into more feel empathy. As long as organization is able to put forward identity or values suitable to ones' selves, they are agued, emotional feelings can be induced to turn into empathy (Preston and de Waal, 2002; Barnett).

Thus, beside extrinsic and intrinsic types of rewards, there are another ways to attract and maintain employees such as identity attractiveness and self-extension. Both converges on similarity that provides attraction and chance for employee to represent themselves through organization's identity. Bhattacharya and Sen (2003) have made relationship between identity attractiveness and similarity, beside distinctiveness and prestige.

Islamic satisfaction is conceived to be significantly related to Islamic contribution intention. Islamic satisfaction is derived from organization capability to fulfill stakeholders' expectations, while intention to give best intention is directed to the organization. Explaining the significant relationship between the two involves intersection of social exchange, social

identity, and expectation-confirmation theories. Identity might relate to exchange within the framework that as long as individuals' needs of identity are fulfilled they would be likely to do something to foster relation to or do something to show gratitude to organization for doing so. It could be in the form of identification (where individuals consider an organization's identity as theirs), expansion (individuals take in organization's identity into themselves) or support the development of the organization for the purpose of its maintenance as extension of their identity.

Further researches are still important to explore more deeply relationship between rewards and Islamic satisfaction. For example, it might be highly useful to develop new constructs such as Islamic rewards, balanced rewards based on both seniority and merit, or others in the relationship to Islamic satisfaction. Otherwise, insertion of another variable in the relationship between rewards and Islamic satisfaction to make it into positively significant would be instrumental.

If the same model to be maintained, new relationships also worth developing. That is, relationships could be made between Islamic culture and Islamic contribution intention, knowledge-sharing and Islamic contribution intention, subjective norm and Islamic intention contribution intention, and between rewards and Islamic contribution intention that make Islamic satisfaction turn into mediator. It also could be applied to Islamic banks in different contexts for comparison purposes, such as Islamic banks from domestic and foreign countries.

Future research also can include other variable other than knowledge sharing for knowledge dimension of Islamic satisfaction. Other dimension of knowledge might be considered important and have important effects on Islamic satisfaction. Exploration of other dimensions of knowledge might contribute to knowledge of Islamic satisfaction.

Moderating variables worth considering as it might increase chance for a more complete picture of variables operating to lead to Islamic contribution intention. For the same purpose, exploration also could be made between variables that form Islamic satisfaction. As it would provide a deeper knowledge to managers which variables affecting Islamic satisfaction that merit special attention to increase employees' satisfaction.

## **CONCLUSION**

All relationships predicted in this study are conceived to be positively significant, except that between rewards and Islamic satisfaction. It might imply that the concept of rewards is not suitable to the Islamic teachings, and some changes would allow for suitability. It might be due to the fact that in Islamic teaching there is emphasis on giving without asking return (Ikhlas) and purposes intended only to the God that makes material and immaterial rewards lose their attractiveness.

More interesting is a significant and positive relationship between Islamic satisfaction and Islamic contribution intention. Instead of its novelty, it deserves replicating in other contexts such as business firms or conventional banks with the framework of value congruence theories. Islamic notion might hinder generalization, but it can be handled by inserting equally philosophical terms in front of satisfaction and intention variables.

Identity congruence can be applied for planned behavior context. This study proves that identity congruence can clarify the assumed phenomenon in planned behavioral context of Islamic banks, serving as a meeting point between social identity, social exchange and expectation-confirmation theories.

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**THE EFFECT OF PRODUCT INNOVATION AND INNOVATION PROCESS  
ON PERFORMANCE OF MANUFACTURING COMPANIES LISTED IN INDONESIA  
STOCK EXCHANGE DURING 2014-2016**

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**ABSTRACT**

The purpose of this study is to examine the effect of product innovation and process innovation on company performance in manufacturing companies listed on Indonesia Stock Exchange (IDX) period 2014-2016. Research variables: Dependent variable (firm performance) and independent variable (product innovation and process innovation). Measurement: company performance measured by ROA ratio, product innovation measured by PRODUCT ratio, and process innovation measured by PROCESS ratio. Sources of this research data is secondary data, in the form of financial statements of manufacturing companies listed in IDX during the period 2014-2016. Data analysis technique used is regression analysis through SPSS. The results of this study indicate that product innovation has a positive effect on company performance, while process innovation has no positive effect on company performance. The contribution of this research is expected to give contribution to company about policy which can help improve company performance in relation to product innovation and innovation process done by company and expected also can give contribution for investor to consider innovation strategy done by company in effort to increase profit from investment which they invested in a company.

**KEY WORDS**

Product, innovation, process, company, performance.

Indonesia as part of the Southeast Asian region has challenges facing a free market within the Southeast Asian region known as the ASEAN Economic Community (MEA). The implementation of the MEA provides a challenge for companies in Indonesia to seize market opportunities in an increasingly competitive business environment. Companies are required to meet the needs of corporate stakeholders in maintaining a company.

A variety of strategic policies run the company to survive and able to maintain the continuity of its business. Innovation strategy is one of strategy policy that many companies use to face business competition. The innovation strategy further directs the company to prioritize their innovation improvement rather than defeating it by destroying its competitors. The company strives to create product innovation in order to produce *competitive advantage* compared to its competitors' products.

Creativity development of a product can be done based on market demand pressure or the development of production technology. Products that do not develop will have an impact on boredom on consumers, so that consumers can find new product alternatives in accordance with their expectations. It provides an opportunity for consumers to switch to other brands. The innovation strategy is a strategy directed to the process of discovery, development, and implementation of new ideas related to the development of processes, technologies and products (Slater and Olson, 2001). Continuous innovation can provide an alternative for companies in setting priorities for competitive strategy, not only prioritizing *cost leadership*, but also on *quality leads*, *delivery*, and *responsiveness* (Means and Faulkner, 2000).

Research conducted by Atalay *et al.* (2013) provide empirical evidence that product innovation provides a poetic effect for company performance. The development of new products from the use of existing technology provides an opportunity for companies to attract

as many markets at the price level they specify. This gives a positive impact on the increase in profits generated by the company. Atalay *et al.* (2013) conducted at 113 automotive companies in Konya.

Research conducted by Atalay *et al.* (2013) contrary to research conducted by Karlsson and Tavassoli (2015). Karlsson and Tavassoli (2015) provide empirical evidence that companies that innovate processes do not have an impact on company performance. This is because the number of product innovations that occur requires the development of knowledge and technology that require a large *cost* in running it. *Costs* greatly impact on the decline in company performance, due to the large *cost* incurred for new technologies.

Due to inconsistencies in previous research, it is important to reexamine the effect of product innovation and process innovation on company performance. This research is expected to provide information to the company about the policies that can help improve the company's performance in solving it with product innovation and process innovation conducted by the company. This research is also expected to contribute to the investor to consider the innovation strategy undertaken by the company in an effort to increase the profits from the investment that they planted in a company.

## THEORY AND HYPOTHESES DEVELOPMENT

*Stakeholders Theory.* A *stakeholder* approach emerged in the mid-1980s. The background of a *stakeholder* approach is the desire to build a framework that is responsive to the problems facing managers at that time of environmental change (Freeman and McVea 2001). The goal of *stakeholder* management is to devise methods for managing the various groups and relationships generated in a strategic way (Freeman and McVea, 2001). *Stakeholders* are individuals or groups of individuals who can influence or be influenced by the achievement of company goals (Freeman, 2010: 25).

*Company performance.* Performance is an important thing that must be achieved by every company anywhere, because the performance is a reflection of the company's ability to manage and allocate resources. In addition, the ultimate goal of performance appraisal is to motivate employees to achieve organizational goals and in complying with predetermined standards of behavior, in order to produce the expected actions and results. The performance of the company is the achievement of the business as the objective of the company is established that is getting the maximum profit to be able to sustain growth and development. There are several criteria in assessing a company's performance delivered in various literatures. These criteria include operational and financial (Suta, 2007: 12).

*Innovation.* Innovation can occur in companies both from the private sector or the public sector does not even close the possibility that innovation occurs within government companies, non-profit companies, and also government agencies. Law No.18 of 2002 on national systems of research, development, and application of science and technology defines innovation as a research, development and / or engineering activity aimed at developing practical application of new values and scientific contexts, or new ways to apply existing science and technology into products or production processes. Schumpeter (1939) in (Küçükoğlu & Pınar, 2015) argues that innovation is:

*"Innovation is the implementation of technical or organizational novelty, not just its invention or development"*.

*Product Innovation.* In the OECD Oslo Manual (2005), a product innovation is defined as the introduction of new goods or services or significant product improvements. This includes significant improvements in technical specifications, components and materials, software combinations, or other functional characteristics. Product innovation can take advantage of new knowledge or technology, or it can be based on a new usage or combination of existing knowledge or technology.

*Process Innovation.* Innovation process is a new implementation, a significant increase in production produced or an increase in delivery methods. The parts included in process innovation are significant changes in production techniques, equipment and / or software used. Process innovation can be aimed at reducing unit cost of production or delivery, to

improve quality, or to increase production significantly or produce new products (OECD Oslo Manual, 2005).

*Previous Research.* Research conducted by Faria and Lima (2009) on the influence of innovation type on the performance of companies conducted on manufacturing and service companies in Portugal. The research was conducted during 1998 to 2000. The results of Faria and Lima (2009) provide empirical evidence that product, process and organizational innovation has positive and significant impact on company performance.

Research conducted by Atalay *et al.* (2013) on the effect of innovation on company performance conducted on 113 automotive supplier companies operating in Konya. The study was conducted during the period of March to December 2011. The study was conducted by conducting direct interviews with *top managers* of automotive supplier companies. The results of Atalay *et al.* (2013) provide empirical evidence that product innovation and process innovation have a positive and significant impact on company performance. Atalay *et al.* (2013) also gives results that innovation marketing and organizational innovation does not provide a significant effect on the performance of the company.

Research conducted by Karlsson and Tavassoli (2015) on the influence of innovation strategies on corporate performance conducted on the innovation community in Sweden. The study was conducted during 2002 to 2012. The results of Karlsson and Tavassoli (2015) provide empirical evidence that product innovation has a positive and significant effect on company performance. Karlsson and Tavassoli (2015) research also gave results that process innovation and marketing innovation did not have a significant effect on company performance. Innovation should be done by using more than one form of innovation model in order to provide better results for the improvement of company performance in the present and future.

*The Influence of Product Innovation on Financial Performance.* To face competition and to answer market challenges, every company is required to innovate products. Product innovation is introducing new products that are a new combination of characteristics that align with the preferences of potential customers or alter the characteristics of current products in a way that increases the willingness of potential customers to pay for the overall characteristics created. Product innovation is a difficult and demanding process of technological advancement, changing customer needs, shortening product life cycles, and increasing global competition. Fagerberg *et al.* (2004) emphasized that the introduction of new products generally has clarity, and has a positive effect on revenue growth because of the cutting of production costs.

Research conducted by Faria and Lima (2009), Atalay *et al.* (2013), Kalay and Lynn (2014), Karlsson and Tavassoli (2015), Rosli and Sidek (2015), and Bartolini and Baussola (2015) provide empirical evidence that product innovation has a positive and significant impact on company performance. The greater the innovation of products produced by a company, the greater the performance of the company. Based on the description above, the hypothesis built in this study are:

H<sub>1</sub>: Product innovation has a positive effect on company performance.

*Influence of Process Innovation on Financial Performance.* Innovation process is a new implementation, a significant increase in production produced or an increase in delivery methods. The parts included in process innovation are significant changes in production techniques, equipment and / or software used. Process innovation can be aimed at reducing unit cost of production or delivery, to improve quality, or to increase production significantly or produce new products (OECD Oslo Manual, 2005).

Research conducted by Peters (2015) provides empirical evidence that process innovation has a positive and significant impact on company performance. The greater the innovation process produced by a company, the greater the performance of the company. Based on the description above, the hypothesis built in this study are:

H<sub>2</sub>: Process innovation has a positive effect on company performance.

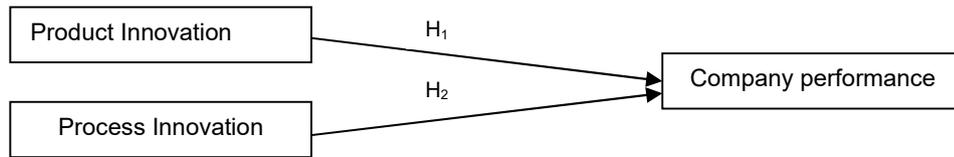


Figure 1 – Conceptual Framework

## METHODS OF RESEARCH

*Types of Research.* This type of research is quantitative with an associative research approach. Associative research aims to determine the correlational relationship and causal relationships between variables (Sulistiyanto et al., 2006: 14).

### *Identify Variables:*

- Dependent variable in this research is company performance;
- Independent variables used in this study are product innovation and process innovation.

### *Operational Definition of Variables:*

*Company Performance.* Company performance is a view of the company's *financial* condition over the period in the future. Company performance measurements are useful to provide information about the appearance of the company's condition for a certain time in the future. In this study, the company's performance is measured by the company's *financial* condition in the future. According to Hongren (2007: 372), the measurement of financial performance has a goal to measure business performance and management compared to company goals. In this research future financial performance is measured by using *return on asset* ratio (ROA) for 2 (two) years ahead. *Return on asset* ratio is one form of profitability ratios that can give a picture of how the company's ability to generate profits from operational activities undertaken. The *return on asset* ratio is calculated using the formula:

$$ROA = \frac{Net\ Profit}{Total\ Assets}$$

*Product Innovation.* Product innovation involves strong interaction within the company and further between the company and its customers and suppliers (Akova et al, 1998). The greater the company's innovation in improving existing products, and the greater the company's ability to produce new products, will have an impact on the company's ability to face competition. Product innovation in this research uses measurement of PRODUCT ratio (Simeth and Cincera, 2013). PRODUCT Ratio is measured using the formula:

$$PRODUCT = \frac{Research\ and\ Development\ Expense}{Total\ Assets}$$

*Process Innovation.* Process innovation is a new implementation or a significant increase in production. Process innovation is made by making significant changes in production techniques, equipment and / or software used. Process innovation is intended to reduce unit cost of production or delivery, to improve quality, or to increase production significantly or produce new products (OECD Oslo Manual, 2005). In this research, process innovation diokurrasio PROCESS calculated by using the formula:

$$PROCESS = \frac{Expense\ (IT + Machinery + Equipment)}{Total\ Assets}$$

## RESULTS AND DISCUSSION

Table 1 – Descriptive Statistics Test Results

	N	Minimum	Maximum	Mean	Std. Deviation
<i>Return on Assets</i> (ROA)	183	0.0011	0.8557	0.137204	0.1207498
PRODUCT	183	0.0000	0.5592	0.144158	0.1143420
PROCESS	183	0.0028	0.8007	0.187162	0.159398
Valid N (listwise)	183				

Source: Data Processed, 2017.

Based on the results of statistical descriptive test can be seen in Table 1, note that the average value of *Return on Assets* (ROA) of 0.137204. The highest value of *Return on Assets* (ROA) of 0.8557 is owned by PT Multi Bintang Indonesia Tbk in 2014. The lowest value of *Return on Assets* (ROA) of 0.0011 is owned by PT Multistrada Arah Sarana Tbk in 2014.

The average product value is 0.144158. The highest product value of 0,5592 is owned by PT Hanjaya Mandala Sampoerna Tbk in 2016. The product's lowest value of 0.0000 is owned by PT Searad Produce Tbk in 2015.

The average value of Process is 0.187162. The highest value of the Process of 0.8007 is owned by PT Kabelindo Murni Tbk in 2014. The Process's lowest value of 0.0028 is owned by PT Asiplast Industries Tbk in 2014.

Table 2 – Normality Test Results

		Unstandardized Residual
N		183
Normal Parameters	Mean	0.00000000
	Std. Deviation	0.11626640
Most Extreme Differences	Absolute	0.153
	Positive	0.153
	Negative	-0.119
Kolmogorov-Smirnov Z		2,068
Asymp. Sig.		0,000

Source: Data Processed, 2017.

Based on the results of normality test can be seen in Table 2, note that the value of Sign. This 0.000 is less than 0.05 ( $0.000 < 0.05$ ). This shows that the data used in this study is not abnormal distribution (homogeny data). The significance value of the normality test based on Ghozali (2013), if the value of Sign  $>> 0,05$  means the data is normally distributed, whereas if Sign value  $< 0,05$  means the data is not normally distributed.

Table 3 – Autocorrelation Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.270	0.073	0.063	0.1169105	1,696

Source: Data Processed, 2017.

Table 4 – Multicollinearity Test Results

Model	Unstandardized Coefficients	Standardized Coefficients		t	Sig.	Collinearity Statistics	
		B	Std. Error			Beta	Tolerance
1 (Constant)	0.098	0.016		6,140	0,000		
PRODUCT	0.289	0.078	0.274	3,715	0,000	0.949	1.054
PROCESS	-0.015	0.056	-0,020	-0,269	0.788	0.949	1.054

Source: Data Processed, 2017

Based on the autocorrelation test results can be seen in Table 3 it is known that the Durbin-Watson value of 1.696, this value is smaller than 2 ( $1.696 < 2$ ). This indicates that the data used in this study is free of autocorrelation symptoms or there is no correlation between

intrusion errors in the period 2016 with intrusion errors in the period 2015 and 2014. The significance value of autocorrelation tests based on Ikhshan *et. al* (2014) , if the Durbin-Watson value between -2 to +2 means there is no autocorrelation.

Based on the results of multicollinearity test can be seen in Table 4 it is known that the product tolerance value of 0.949, this value is greater than 0.1 ( $0.949 > 0.1$ ) and VIF Product value of 1.054, this value is smaller than 10 ( $1.054 < 10$ ). The tolerance value is 0.949, this value is greater than 0.1 ( $0.949 > 0.1$ ) and the VIF Process value is 1.054, this value is less than 10 ( $1.054 < 10$ ). Overall, the tolerance value of Product and Process is greater than 0.1, whereas the VIF Product and Process value is smaller than 10. This indicates that, the data used in this study is free from the symptoms of multicollinearity. The value of significance of multicollinearity test based on Ghozali (2013), if tolerance value  $> 0,1$  and VIF value  $< 10$ , then the data in research is free from multicollinearity symptoms.

Table 5 – Heteroscedasticity Test Results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.049	0.011		4.355	0,000
	PRODUCT	0.214	0.055	0.285	3,879	0,000
	PROCESS	-0.011	0.040	-0,021	-0,290	0.772

Source: Data Processed, 2017.

Based on the results of heteroscedasticity test can be seen in Table 5 note that the value of Sign. Product of 0.000, this value is smaller than 0.05 ( $0.000 < 0.05$ ). Sign Value. Process of 0.772, this value is greater than 0.05 ( $0.772 > 0.05$ ). Overall, the value of Sign. Process is greater than 0.05, while Product value is less than 0.05. This shows that the data used in this study is free from symptoms of heteroscedasticity. The significance value of heteroscedasticity test based on Ghozali (2013), if the value of Sign.  $> 0.05$ , then the data in the study free of symptoms of heteroscedasticity.

Table 6 – Coefficient Determination Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.270	0.073	0.063	0.1169105

Source: Data Processed, 2017.

Based on the test results coefficient of determination ( $R^2$ ) can be seen in Table 6 note that  $R^2$  of 0.073. This shows that 7.3% variation variables of the dependent variable is company performance can be explained by two (2) independent variable that is *innovation product* and *innovation process*. While the remaining 92.7% is explained by other factors outside the model of this study.

Table 7 – Test Result F

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.193	2	0.097	7,075	0.001
	Residual	2,460	180	0.014		
	Total	2,654	182			

Source: Data Processed, 2017.

Table 8 – Test Result t

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.098	0.016		6,140	0,000
	PRODUCT	0.289	0.078	0.274	3,715	0,000
	PROCESS	-0.015	0.056	-0,020	-0,269	0.788

Source: Data Processed, 2017.

Based on F test results can be seen in Table 7 note that the value of F equal to 7.075 with a probability of 0.001. The probability value is less than 0.05 ( $0.001 < 0.05$ ). This suggests that, the regression model can be used to detect the value of firm performance. Thus, other variables such as *innovation product* and *innovation process* together have an influence on company performance.

Based on t test results can be seen in Table 8 note that the value of Sign. Product of 0.000, this value is smaller than 0.05 ( $0.000 < 0.05$ ). This indicates that  $H_1$  is accepted, meaning that product innovation positive f influence on company performance. The development of new products from the use of existing technology provides an opportunity for companies to attract as many markets at the price level they specify. The greater the innovation of products produced by a company, the greater the company's performance. This gives a positive impact on the increase in profits generated by the company. The results of this study are in line with the results of research conducted by Faria and Lima (2009), Atalay *et al.* (2013), Kalay and Lynn (2014), Karlsson and Tavassoli (2015), Rosli and Sidek (2015), and Bartolini and Baussola (2015) provide empirical evidence that product innovation has a positive and significant impact on company performance.

Sign Value. Process of 0.788, this value is greater than 0.05 ( $0.788 > 0.05$ ). This indicates that  $H_2$  is rejected, meaning that *innovation process* has no positive effect on company performance. The results of this study are in line with the results of research conducted by Karlsson and Tavassoli (2015) provide empirical evidence that companies that innovate the process do not have an impact on company performance. This is because the number of product innovations that occur requires the development of knowledge and technology that require a large cost in running it. Costs greatly impact on the decline in company performance, due to the large cost incurred for new technologies.

## CONCLUSION

This research was conducted to test the effect of product innovation and process innovation on company performance on manufacturing companies listed on IDX period 2014-2016. The test results show that product innovation positive f influence on company performance. This suggests that the development of new products from the use of existing technology provides an opportunity for companies to attract as many markets at the price level they specify. The greater the innovation of products produced by a company, the greater the company's performance. This gives a positive impact on the increase in profits generated by the company. Meanwhile, the results of testing on process innovation do not affect positive f on company performance. This is because the number of product innovations that occur requires the development of knowledge and technology that require a large cost in running it. Costs greatly impact on the decline in company performance, due to the large cost incurred for new technologies.

The contribution of this research is expected to be used as input or additional empirical evidence about the effect of product innovation and process innovation on company performance. This research is expected to provide benefits for the contribution of science, especially related to management decisions in conducting innovation policies that affect the performance of the company. For leaders and policy makers within the company, this research is expected to be a reference in determining policies related to innovation to be taken in order to improve company performance. This research is expected to provide useful information for readers, especially investors in making decisions to buy or sell shares in connection with the existence of innovation policies made by the company.

For future research, it is expected to examine each component of product innovation and process innovation more specifically in order to know more about each contribution a to company performance. The population of the research sample should not be limited to manufacturing companies but can be done in other sectors such as construction and mining sectors in order to know which sector of the company has been managing product innovation and process innovation well that can show significant influence to company performance. Future research should always use the closest period of time from the time the research is

conducted in order to find out the latest *trends* in product innovation management and process innovation and its effect on company performance from year to year more accurately.

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## **INTELLECTUAL CAPITAL AND ABNORMAL STOCK RETURN: A CASE STUDY OF LQ-45 INDONESIA**

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### **ABSTRACT**

This study aims to determine the effect of intellectual capital measured using Value Added Intellectual Capital which has three components, namely Value Capital, Human Capital, and Structural Capital to the average abnormal return of shares in the LQ-45 firm. Using multiple linear regression analysis, the results showed that VACA had an effect on average abnormal return of stock and variable of VAHU and STVA had no effect to average abnormal return of stock.

### **KEY WORDS**

Intellectual capital, capital employed, human capital, structural capital, stock return.

In the era of globalization, this era has advanced all the many sectors that have developed. Almost all sectors will be vying for the industry to increase and keep up with developments. The rapidly growing developments are identified by looking at technological advances. The existence of hard competition and according to the rules with the growth of significant innovation occurs in the business sector. Continuous development makes the company strives to continue to evaluate and improve its performance in order to survive in carrying out its business activities. Economic characteristics of knowledge base (knowledge management), asserted that a company can succeed due to the creation of transformation and capitalization of knowledge owned (Sawarjuwono and Kadir, 2003). Basic knowledge will be necessary for companies to strive to create new things and manage knowledge in order to achieve the goals of the company; a company that strives to advance will formulate and create various strategies so that knowledge can be utilized maximally and appropriately. The importance of this makes the company aware to manage the ownership of the company's resources as the most important factor in maintaining the company's advantage over its competitors.

Finally, the company transformed its strategy into knowledge based business as a way of improving the efficiency and effectiveness of other resources. The value of a company can be generated by the existence of intellectual capital that can be obtained by the company with the development of corporate culture or company's ability to motivate its employees. Many opinions that explain if the company's most valuable asset is to have Human Resources (HR) especially intellectual capital resources. All tangible assets owned by the company will be controlled by humans so that human capabilities can affect the company's operations. Current intellectual capital (IC) has been implemented to the stage of the business environment. Opportunities to be a winner in the global market will be achieved by countries that have qualified human resources (HR)

Definition of Intellectual Capital (IC) according to various sources can be interpreted that the addition of each component that can contribute value-added for the company. Intellectual Capital (IC) has three main components: (1). Human Capital (HC) presents the individual knowledge stock of an organization presented by its employees; (2). Structural Capital (SC) encompasses all non-human storehouse of knowledge within an organization as well as companies including databases, organizational charts, process manuals, strategies, routines and everything that makes the company's value greater than its material value; (3). Customer Capital (CC) is a knowledge that cannot be separated in marketing channels and customer relationship where an organization develops it through the process of doing business. These three components each have a role in creating the company's intellectual

capital that will ultimately determine the value of the company. Ulum (2008: 78) argues that market value occurs due to the entry of the concept of intellectual capital, which is a major factor and can increase the value of the company. In line with the increasing value of the company, the company's financial performance may increase, resulting in increased corporate profits. Ramadhani (2013) explains if the profits obtained by the company can be achieved if the company's financial performance is good. Revenue generated by the company will be assessed by investors as a hope in receiving a high profit-sharing rate.

One of the strategies that must be developed when building a business in a company that is maintaining its existence by way of funding searches aimed at the basis for improvement of operational activities of the company. Issuance of shares can be one way that can be done by the company for additional funds for operating activities can be fulfilled. An investor who will invest definitely has a goal to get a return on the investment that investors place on the company. before investing requires accurate information from the company's financial statements. on the other hand, users of financial statements such as these investors need quantitative and qualitative information as an evaluation of company performance as well as information about the company's intellectual capital. Along with the increasing need for intellectual capital disclosure as a driver of corporate value while the value of difficulty in measuring intellectual capital directly arises indirect measurement of intellectual capital by using Value Added Intellectual Capital (VAIC™), a measure to assess the efficiency of value added as a result of the company's intellectual ability. Value Added Intellectual Capital (VAIC™) begins with a company's ability to create value added. Value Added (VA) is defined as the most objective measure indicator for analyzing and assessing business success as well as being able to demonstrate the company's ability to create value creation.

The emergence of the phenomenon of intellectual capital led to increased interest from many circles. They want to get a lot of information related to the management, identification, measurement, and reporting of intellectual capital. They also want more detailed, detailed and detailed information on intellectual capital analysis and its effects. Companies that have good intellectual capital performance standards will publish their own intellectual capital as a corporate advantage because high levels of disclosure can lead to higher intellectual capital performance. Finally, the investor will trust to invest in the company. When investors take investment decisions this will cause a change in stock prices dah finally affect the abnormal return of shares. Sir (2010) conducted research on intellectual capital and stock return abnormal which result showed that intellectual capital significantly influence to abnormal return of stock. Ulum Research (2008); Tan, Plowman, & Hancock (2007); and Firrer, & William (2003) make intellectual capital to see its influence on financial performance. This study looks at the effect of intellectual capital on the abnormal return of shares in companies listed on LQ-45 in Indonesia Stock Exchange (IDX).

## **LITERATURE REVIEW**

Using stakeholder theory that emphasizes the position of a stakeholder who is seen as having an influence for the company. Influence created by stakeholder groups becomes an important consideration for a company in making disclosure decisions or not disclosing an information contained in the financial statements. Stakeholders are not only limited to business actors but also include shareholders of companies, communities, and environment in all aspects of the company's operations (Belkaoui, 2003).

Previous research related to intellectual capital was done by Chen, Cheng, Hwang (2005) using a Pulic model (VAIC™) to test a relationship between IC and market value and company's financial performance. The results show that IC has a positive effect on the market value and financial performance of the company. In line with research conducted by Ulum (2008) related to IC and company performance using VAIC method for research in three aspects of influence, that is intellectual capital influence with company performance, financial performance of company in the future, and influence growth rate of company's

financial performance in period which will come. The result shows that there is a significant positive correlation between intellectual capital and company performance.

This type of research is quantitative research. The sample is determined by using purposive sampling. Criteria used by researchers as follows:

- LQ-45 companies listed on the BEI have published consecutive financial statements from 2013-2015;
- LQ-45 Company is listed on IDX which distributes its shares successively from 2013-2015;
- The LQ-45 Company that lists salary expenses in consecutive financial statements from 2013-2015.

The data collected includes the company's annual financial report LQ-45 which is the research sample. Data collection techniques in this study using documentation techniques derived from the Capital Market Reference Center of Indonesia Stock Exchange ([www.idx.co.id](http://www.idx.co.id)) and yahoo finance. This study uses independent intellectual capital variable that is measured indirectly by assessing the efficiency of value added as a result of the company's intellectual capability (Value Added Intellectual Coefficient VAIC™).

The main components of VAIC™ can be seen from the company's resources, namely physical capital (VACA-value added capital employed), human capital (VAHU-value added human capital), and structural capital (STVA-structural capital value added). The measurement of intellectual capital uses three proxies, namely: (1) VACA is the ratio of value added (VA) to total firm equity (CE) utilized in the fixed and current assets of a company (Pulic, 1998 in Ulum et al., 2008) (3) The STVA measures the amount of structural capital (SC) required to generate 1 rupiah of value added (VA) and is an indication of how the success of structural capital (SC) in value creation. The dependent variable is the average abnormal return of stock measured by calculating abnormal return which is the difference of the actual return with expected return calculated on a daily basis then averaged and divided by the total amount. Furthermore, all variables were analyzed using multiple linear regression analysis.

## RESULTS AND DISCUSSION

Data that has been tabulated in if using SPSS Test Tools 17. SPSS test tool is used to test the influence of each independent variable VACA, VAHU, STVA to the dependent variable average abnormal return of stock. Here is the result of linear regression analysis:

Table 1 – Regression Analysis

Model	Unstandardized Coefficients		t	Sig.	
	B	Std. Error			
1	(Constant)	-2577.581	3262.877	-.790	.434
	VACA	8436.080	2770.769	3.045	.004
	VAHU	-.628	.549	-1.145	.258
	STVA	1541.648	4037.144	.382	.704

*Dependent Variable: Average Abnormal Stock Return.*

Table 1 shows the significance value of VACA variable of 0.004 <0.05 means that VACA affects the average abnormal return of stock. When a Capital Employed unit generates a greater return in a company than any other competitor, the company indicates that it has a better use of its Capital Employed indicator (Daud & Amri, 2008). High VACA values have a positive relationship with return because this indicates that the tangible asset owned by the LQ-45 company is an asset that can improve the company's performance because LQ-45's corporate capital comes in the form of learning, access, and trust. When a company decides to invest from the company, the decision is based on the quality of their relationship, price, and technical specifications. The better the relationship, the greater the probability of an invasion plan occurs, and this is the greater the chance of the company to

increase the return of external disclosure of ICs to external parties because it affects the company's stock return abnormal.

Variables VAHU and STVA have no effect on average abnormal return of stock because significance value  $>$  from 0.05 is VAHU  $0.258 > 0.05$  and STVA  $0.704 > 0.05$ . That is, the company LQ-45 tested in this study lacks Human Capital and structural capital contribution (SC) in the formation of corporate value does not affect the stock return of the company. Variable VAHU based on regression test results can be interpreted that human capital may have been maximized in the company but did not provide significant benefits in the company. this can be expected because the company does not need a new innovation that may actually exist in human capital itself. Since the LQ-45 company has high liquidity, the company's operations will continue to meet consumer demand. With this high liquidity LQ-45 is more inclined to the operational management system. Another case with the STVA variable that has no effect on the abnormal return because structural capital value added is the values of the organizational infrastructure and the type of knowledge stored in the form of manuals, guidelines, concepts, and information systems that exist in the company so as to create an effectiveness and efficiency within the company.

### CONCLUSION

Based on the results of research that has been done on the influence of intellectual capital against average abnormal return of stock, it can be concluded if Value Added Capital Employed (VACA) has positive effect on abnormal return while VAHU and STVA variable have no effect to abnormal return. Generally speaking, the variables VACA  $<$ VAHU, and STVA can together affect the abnormal return. For further researcher who intend to study Intellectual Capital in more depth can add research object and classify IC in High-IC or Low-IC company in one sector of company because this research use LQ-45 company where there are various kind of liquidity sector company in Indonesia.

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## **TURNOVER AND INCOME RATE VARIANCE OF SMALL AND MEDIUM ENTERPRISES AND ITS EFFECTS ON SMALL ENTERPRISES' BRAND IDEOLOGY**

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### **ABSTRACT**

This research was aimed to learn different Small and Medium Enterprises (SMEs) based on the better annual turnover, increased turnover growth, and maximum net income characterized by greater investment in brand ideology (brand orientation, brand identity, and internal brand). The location being studied in this research was Kupang City, the capital city of East Nusa Tenggara. This research used an explanatory design. The population of this research covered 518 SMEs spread across six districts while the number of samples used was 100 SMEs selected using "Proportional Area Sampling" technique. The respondents were also chosen purposively. As the criteria, the SMEs should have a Trade Business License/ Business Place Permit (SIUP/SITU). Data analysis was descriptive statistics and inferential statistics using *Partial Least Square* method. The constructs were then validated and analyzed further using one way ANOVA and then the hypotheses were tested. The results of this research showed that SMEs with higher annual turnover and positive turnover growth were more concerned with brand ideology compared to those with lower annual turnover and negative turnover growth. Most SMEs had different implementations of marketing and brand ideology. SMEs with a low annual turnover paid less attention to their brands while SMEs with a high annual turnover more prioritized their brands.

### **KEY WORDS**

Turnover growth, brand ideology, brand orientation, brand identity, internal brand.

Branding has an important role for companies in recent decades. This is in line with the increased number of research on brand-specific marketing. In general, research on branding goes against the reality. In developed countries, Small and Medium-sized Enterprises is a business that has strong financial management and the socio-economic life of the people in the countries is well established. Regardless of the role of SMEs in developed countries, various works of literature on branding are more focused especially on large companies only (Krake, 2005). A small portion of the research results on branding becomes biased to conduct further research. According to Gabrielli and Balboni (2010), there is a tendency to assume that marketing principles are equally applicable for either small or large enterprise. However, the slow progress of research on SME marketing shows that small enterprises differ from large enterprises, particularly in relation to brands (Berthon *et al.*, 2008; Krake, 2005; Wong dan Merrilees, 2005).

Gilmore *et al.* (2001) and Reijonen and Laukkanen (2010) argue that marketing in SMEs is often haphazard, informal, loose and unstructured while that in large enterprises appears formal, planned and structured. Differences not only emerge between small and large enterprises but also between similar SMEs (Reijonen and Laukkanen, 2010). Therefore, this research more focuses on SMEs operating in Kupang City and examines whether there are differences in turnover and revenue rates of similar SMEs, as well as its effects on the brand ideology of small enterprises.

This research was aimed to determine: (1) the better annual turnover, turnover growth, and net income rates of SMEs characterized by high brand orientation; (2) the variance of better annual turnover rates, turnover growth, and net income of SMEs characterized by greater investment in brand identity; and (3) the variance of better annual turnover, turnover

growth, and net income rates of SMEs characterized by greater investment in internal branding.

## LITERATURE REVIEW

*Brand Orientation.* Brand orientation is a relatively new concept in branding literature. After being introduced by Urde (1994), this concept remains separated from the research spotlight for several years. But lately, academics have directed their interest in the concept of brand orientation (Baumgarth, 2010; Ewing and Napoli, 2005; Laukkanen *et al.*, 2010; Tuominen *et al.*, 2009; Wong and Merrilees, 2008). Along with the increasing number of studies, several definitions have been proposed. In defining brand orientation, Urde (1999) connects it with the development of brand identity. Meanwhile, Bridson and Evans (2004) defined brand orientation to indicate the extent to which brands are valued in organizations and as a result, are practised. In contrast, Wong and Merrilees (2008) defined brand orientation as a mindset supporting brands in marketing strategies. The findings of several recent researches (Baumgarth, 2010; Wong dan Merrilees, 2008) have suggested that brand orientation has a positive effect on brand performance. The concept of brand performance is a prerequisite for financial performance (Keller, 1993; Lassar *et al.*, 1995). Furthermore, their studies suggest that high financial performance indicates a high level of commitment to brand ideology, especially brand orientation.

*Brand Identity.* Most brand-oriented companies must engage in the development of brand identity (Reid *et al.*, 2005; Urde, 1999). However, if there are only attitudes or mindset that is brand-oriented, it will not always bring success, especially if the attitudes and mindset are not applied properly (Wong and Merrilees, 2005). Therefore, Aaker and Joachimsthaler (2002) gave the concept of brand identity consisting of three layers, namely (1) brand essence (*i.e.* what is the brand?); (2) core identity (*i.e.* mission, vision, values); and (3) additional identity (brand personality). Meanwhile, Ghodeswar (2008) adopted the three layer-based approach to brand identity by suggesting the need of establishing a core brand identity (*i.e.* mission, vision, values). The core brand identity must be performed permanently, and then additional identity can be made, including brand personality. Thus, the development of brand identity must begin by determining the brand's vision (de Chernatony, 1999) and thereafter establishing brand values (Keller, 2003).

Brand values can attract and bind customers to a company (Urde, 2003). For the purpose of integrated brand communications, visual symbolization of the brand must be able to promote the intangible brand identity (Kapferer, 1997). This is in line with de Chernatony (1999)'s opinion stating that the component of brand identity is a key to success. Companies are striving for coherence in brand communication that will strengthen their positions on the whole in the eyes of customers (Urde, 1994). As a result, the sales and profit figures of companies must follow it, related to whether the company's sales turnover and profit are increased, fixed, fluctuating, or decreased due to changes.

*Internal Brand.* Internal branding is a coordinated program designed to educate employees on brand messages (Aurand *et al.*, 2005). When product features are easy to duplicate, the service may be the only differentiating factor between competing companies. Companies, especially those operating in the service industry (McDonald *et al.*, 2001), should also ensure that their employees promote coherent brand messages through their behaviours during providing their best service (Henkel *et al.*, 2007; King and Grace, 2006). By communicating the brand messages to employees, they become aware of the brand and support the brand promise (Papasolomou and Vrontis, 2006).

Building a brand identity will be in vain if employees do not support through their behaviours (Aurand *et al.*, 2005). However, internal brands should not limit to educate current employees only, but also should cover recruited or prospective employees (King and Grace, 2006). The success of a brand (service) is based on the employee's service and their behaviours during the service (de Chernatony and Segal-Horn, 2003).

The results of Hirvonen and Laukkanen (2011) showed that in terms of annual turnover, companies with a low turnover are found to lack brand orientation, and pay less

attention to the development of internal brands and brand identities. Meanwhile, regarding the turnover growth, the difference is not too significant. In fact, after analyzing the results of the *F* test to provide *Hoc* testing, significant differences are only identified with regard to brand identity. Therefore, the tendency of companies that have a high turnover growth is more on the brand identity.

## METHODS OF RESEARCH

The location being studied in this research was Kupang City, the capital city of East Nusa Tenggara where many activities of small and medium enterprises take place. This research was initially planned to be conducted in two phases, starting from 2016 to 2017. However, it was finally only done in the first year (2016). This research was an explanatory research, trying to explain the relationship between variables through hypothesis testing. Quantitative research was also used to analyze data and samples with descriptive statistical and inferential statistical analysis methods generalized to population conclusions.

*Population and Sample.* The population of this research was all households of SMEs, not Rural Banks (RBs) or Micro Finance Institutions (MFIs) listed in Kupang City. The total number of the population was 518 households (Cooperative and SME Office of Kupang City, 2013 in *LAKIP* of Kupang City, 2014). The sampling was done proportionally to the sample area (*Proportional Area Sampling*) based on the spread area of SMEs in six districts in Kupang City.

Error tolerance ranging between 5%-10% is aimed at the social science domain. In line with that, the error tolerance of this research was determined 9%, so the sample size or number can be set based on Slovin Formula,  $n = N/Nd^2 + 1$ . Using this formula, the number of samples of this research was obtained 99.69 rounded to 100 households of companies (SMEs). Then, the size or number of sub-samples was determined to be taken from each population area while the samples of SME households taken as respondents were selected purposively according to the criteria for listed companies, one of which is to have Trading Business License (*SIUP*) or Business Place Permit (*SITU*).

*Data Collection and Questionnaire Measurement.* This research used primary and secondary data types. Data collection was conducted using questionnaire, interview, and observation techniques. Primary data were collected through instruments in the form of structured questionnaires. Statements in the questionnaire were presented using five points of the Likert scale, in which the lowest point is 1 (one) indicating 'strongly disagree' and the highest point is 5 (five) indicating 'strongly agree'. The questionnaires were distributed to 100 households of SMEs operating in Kupang City that offered products/services in various industrial business, representing all companies including SMEs of Rural Banks/ Micro Finance Institutions.

The research questionnaire included 21 statement items compiled with reference to some literature, covering: brand orientation variable consisting of 5 statement items adopted from Wong and Merrilees (2008); brand identity variable consisting of 8 statement items which were a combination of existing items and some newly-developed items referring to Ewing and Napoli (2005), Hankinson (2001), Reid *et al.* (2005), Urde (1999), Wong and Merrilees (2008); internal branding variable consisting of 8 statement items which were a combination of items developed by Aurand *et al.* (2005), Hankinson (2001), and Henkel *et al.* (2007). Before used, the instrument was tested first.

*Data Analysis Technique.* The collected data were analyzed with the assistance of Microsoft Excel and Statistics Program for Social Sciences (SPSS) softwares, covering: (a) Descriptive statistical analysis using coding, editing, percentage, average, and cross tabulation procedures, and (b) Inferential statistical analysis using Partial Least Square (PLS) analysis, path diagrams, instrument measurement model evaluation (convergent validity through loading factor and convergent validity through Average Variance Extracted (AVE)), reliability evaluation, Goodness of Fit Model, T-test, Determinant Coefficient Test ( $R^2$ ), conversion of path diagram into Structural Model, dominant effects, Variance Analysis (ANOVA), F-Test, and Least Square Difference.

*Research Conceptual Model and Hypothesis Development.* Based on the research objectives and literature review presented earlier, the conceptual framework of this study was “Is the variance of annual turnover, turnover growth, and net income rates of SMEs have an effect on brand ideology including brand orientation, brand identity, and internal brand of small enterprises?”, presented in Figure 1 as follows:

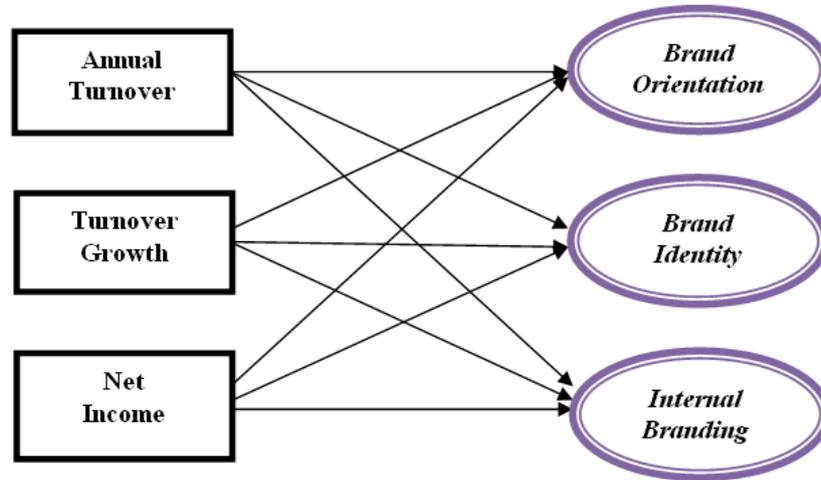


Figure 1 – Research Conceptual Model

*Hypothesis Development.* Based on the research conceptual model, the hypotheses of this research are as follows:

- H1.1: Better annual turnover is characterized by high brand orientation;
- H1.2: Positive turnover growth is characterized by high brand orientation;
- H1.3: Maximum net income is characterized by high brand orientation;
- H2.1: Greater annual turnover is characterized by greater investment in brand identity;
- H2.2: Positive turnover growth is characterized by greater investment in brand identity;
- H2.3: Maximum net income is characterized by greater investment in brand identity;
- H3.1: Greater annual turnover is characterized by greater investment in internal branding;
- H3.2: Positive turnover growth is characterized by greater investment in internal branding;
- H3.3: Maximum net income is characterized by greater investment in internal branding.

## RESULTS AND DISCUSSION

*Overview of SMEs in Kupang City.* Kupang City is located at the west end of Timor Island in the southern part of the Republic of Indonesia. Kupang City serves as the entry-and-exit gate of local, regional and national traffic flows of people, goods and service.

To improve the welfare of the community, the Municipal Government of Kupang City is committed to empower the community and provide the widest opportunity for the citizens to develop their economic potentials. Concrete steps conducted by the government are increasing the role of cooperatives and SMEs. In 2013, the indicator achievement realization of the SME number of non-Rural Banks and Micro Finance Institutions in Kupang City reached 518 SMEs (103.6%) from the targeted number of 500 SMEs, while the number of active cooperatives was 402 units (80.4%) from the targeted number of 500 units.

Law Number 20 of 2008 concerning Micro, Small and Medium Enterprises suggests that SMEs aim to grow and expand their businesses in establishing and developing the economy of the community. SMEs are small-scale economic activities of the people in which the business fields are mostly small business activities. The Municipal Government of Kupang City is continuing to courage efforts to increase the capacity of business capital through the provision of unsecured soft loans, developed through Micro Finance Institutions.

The description of SMEs in Kupang City is presented in Table 1, while that of respondents is shown in Table 2.

Table 1 – Description of SMEs in Kupang City

Characteristic	Item	Percentage (%)	Characteristic	Item	Percentage (%)
SME Category	Small Business	79	License Ownership	SIUP/SITU	99
	Medium Business	21		SITU	1
Year of SME Establishment	2013	30	SME Location (Districts)	Kota Lama	21
	2011	18		Kota Raja	21
	2010	14		Alak	18
	2012	10		Maulafa	15
	2008, 2009	17		Oebobo	15
	2002, 1998, 2005	7		Kelapa Lima	10
	2003, 2004, 2006, 2007	4			

Source: Primary Data.

**Description of Research Variables.** The questionnaire consisted of 21 statement items and 5 respondent answer scales. Description of perception from 100 respondents on the three endogenous variables is as follows:

Brand Orientation (BO) was measured by 5 statement items. The BO-1 item reached an average score of 4.02, indicating that the respondents agreed if a brand is very important for their company strategy. The average score of the BO-2 item was 3.78, meaning that the respondents also agreed if a brand flows through all marketing activities. In similar, the average score of the BO-3 item was 3.94, signifying that the respondents again agreed if a brand is highly important for operating their businesses while the average score of the BO-4 item was 4.16, meaning that the respondents agreed if their long-term brand planning is also greatly essential for the future success of their companies. Meanwhile, the BO-5 item obtained an average score of 4.04, indicating that they also agreed if a brand is a crucial asset for them. If summed up, the average score of the Brand Orientation (BO) variable, on the whole, came out at 3.99, belonging to the "good" category.

Brand Identity (BI) was measured by 8 statement items. The average score of the BI-1 item was 3.33, meaning that the respondents tended to be neutral that their brands were different from their competitors' brands. As for the BI-2 item, the average score reached 3.40, indicating that the respondents also tended to be neutral, creating a personalized and impressive brand. Meanwhile, the average score of the BI-3 item was 4.06, indicating that the respondents agreed, knowing well that their business brands will develop in the future. Almost similarly, the BI-4 item reached an average score of 4.08, meaning that the respondents also agreed, always striving to achieve the future goal of this business. On the other side, the average score of the BI-5 item gained 3.40, signifying that the respondents tended to be neutral that their brands represent their organizational values, while the average score of the BI-6 item was 3.59, meaning that the respondents tended to agree that their business product/service marketing is guided by brand values. Regarding the BI-7 item, the average score reached 3.65, indicating that the respondents agreed, always trying to unify their business marketing activities. On the other side, the average score of the BI-8 item was 3.45, giving a clue that the respondents were neutral that the office layout, logo and clothing/uniform can represent the brand values. Overall, the average score of Brand Identity (BI) variable obtained 3.62, categorized into "good" level.

Internal Brand (IB) was also measured by 8 statement items. The IB-1 got an average score of 3.88, meaning that the respondents agreed to always tell the employees for maintaining the values of the business. Meanwhile, the average IB-2 score was 3.45, suggesting that the respondents were neutral, regularly discussing the business brands. The

average score of the IB-3 item reached 3.86, showing that the respondents agreed, always advising their employees to communicate the brand issues to the head/ manager. As for the IB-4 item, the average score obtained was 4.11, indicating that the respondents also agreed, encouraging employees to promote consistent brand values through their behaviours in serving customers. Meantime, the IB-5 item reached an average score of 3.42, suggesting that the respondents tended to be neutral that brand values can affect their staff development and employee placement decisions. The average score of the IB-6 item was 3.54, meaning that the respondents agreed that through education and training, employees can become aware and support the brand promise. Next, the IB-7 item got an average score of 3.97, indicating that the respondents again agreed, always reviewing employee behaviours as part of the brand process and strengthening. Lastly, the average score of the IB-8 item was 4.09, signifying that the respondents tended to agree that employees should always deliver positive brand messages to customers. If summed up, the average score of Internal Brand (IB) variable was 3.79, belonging to “good” category.

*Instrument Validity and Reliability.* In the convergent validity testing, it was obtained a loading factor value of  $> 0.6$ , an Average Variance Extracted (AVE) and Communality of  $> 0.5$ . Based on the calculation, all items and indicators measuring Brand Orientation, Brand Identity, Internal Brand, Annual Turnover, Turnover Growth, and Net Income variables were declared valid. As for the instrument reliability testing, it was known a value of composite reliability (CR)  $> 0.7$  and Cronbach’s Alpha value  $> 0.6$ . Based on the calculation, all indicators measuring Brand Orientation, Brand Identity, Internal Brand, Annual Turnover, Turnover Growth, and Net Income variables were considered reliable.

The goodness of Fit Model aims: to know the ability of endogenous variables to explain the variance of exogenous variables, in PLS analysis using a determination coefficient ( $R$  square). The  $R$ -square value of each brand orientation and internal brand variables was similarly 0.895 while that of the brand identity was 0.895. It was shown that the variances of brand orientation, internal brand, and brand identity variables explained by annual turnover, turnover growth, and net income variables were 89.5% and 89.6% while the remaining 10.5% and 10.4% were the contributions of other variables outside of this research model.

*Hypothesis Testing.* The hypothesis testing result of  $H1.1$  suggested that there was a positive and significant relationship between annual turnover and brand orientation. The testing result showed a path coefficient of 0.172 (positive value) and  $T$ -statistics value of (1.995)  $> 1.64$ . As for the hypothesis testing result of  $H2.1$ , it was indicated that there was a positive and significant relationship between annual turnover and brand identity. The testing result showed a path coefficient of 0.252 (positive value) and  $T$ -statistics value of (2.770)  $> 1.64$ . Furthermore, the hypothesis testing result of  $H3.1$  also indicated that there was a positive and significant relationship between annual turnover and internal brand. The testing result showed a path coefficient of 0.185 (positive value) and  $T$ -statistics value of (1.938)  $> 1.64$ .

Moreover, based on the hypothesis testing result of  $H1.2$ , there was a positive and significant relationship between turnover growth and brand orientation. It was indicated by the path coefficient of 0.843 (positive value) and  $T$ -statistics value of (74.292)  $> 1.64$ . The hypothesis testing result of  $H2.2$  also indicated a positive and significant relationship between turnover growth and brand identity, in which the result showed a path coefficient of 0.793 (positive value) and  $T$ -statistics value of (64.613)  $> 1.64$ . Similarly, the testing of hypothesis  $H3.2$  also resulted in a positive and significant relationship between turnover growth and internal brand. This was indicated by the achievement of the path coefficient of 0.850 (positive value) and  $T$ -statistics value of (69.972)  $> 1.64$ .

On another side, the hypothesis testing result of  $H1.3$  found that there was a positive yet insignificant relationship between net income and brand orientation. The testing result showed a path coefficient of 0.056 (positive value) and  $T$ -statistics value of (0.634)  $< 1.64$ . As for the testing of hypothesis  $H2.3$ , there was also a positive yet insignificant relationship between net income and brand identity. It was indicated by the path coefficient of 0.060 (positive value) and  $T$ -statistics value of (0.634)  $< 1.64$ . The last, the hypothesis testing result of  $H3.3$  similarly suggested that there was a positive yet insignificant relationship between

net income and internal brand, in which the path coefficient reached 0.029 (positive value) and *T*-statistics value was  $(0.300) < 1.64$ .

Table 2 – Description of SME Respondents

Characteristic	Item	Percentage (%)	Characteristic	Item	Percentage (%)	
Gender	Male	59	11. Partnership Form between SMEs and the Government	Linkage program/	2	
	Female	41		Product development	3	
Age	20 – 40 y.o	55		Product/ IT development	1	
	> 40 - 60 y.o	45		Product development and human resource training	8	
The duration of serving as Head/ Manager of SME	> 2 – 5 years	60		Product/ IT/ revolving fund Development	2	
	> 5 years	40		Others	8	
The SME operating duration	> 2 – 5 years	58		No cooperation	76	
	> 5 years	42		12. Partnership Form between SMEs and Bankings	Product development	4
Education	SD/ equivalent graduate	1			Human resource training	1
	SMP/ equivalent graduate	10			Revolving fund	2
	SMA/equivalent graduate	65	Mismatch Fund		1	
	D3	2	Product/ revolving fund development		2	
	S1	22	Others	7		
Total of Employses in Each SME Household N = 100 SME Households (427 people)	1 – 3 people	68	13. Preference of SMEs on Brand ideology	No cooperation	83	
	4 – 6 people	15		Not preferred	6	
	7 – 9 people	13		Quite preferred	26	
Average SME Annual Turnover Average Net Income	10 – 12 people	4	Preferred	Very Preferred	45	
	IDR 158, 951, 900/year				23	
Classification of SME Annual Turnover (IDR)	IDR 106, 595, 000/year		14. Preparation of SME Financial Statement	Not preparing	7	
	5 M - 1, 14 B	98 (L)		Sometimes preparing	31	
Classification of SME Net Income (IDR)	1, 15B - 2, 27B	1 (M)	15. Submission of SME Financial Statement	Always preparing	62	
	2, 28B - 3, 40B	1 (H)		Internal SME	99	
Turnover Growth during the last 5 years	1, 5 M – 77 M	98 (L)	16. SME Annual Tax Statement	External SME	0	
	78 M - 1, 53B	0 (M)		Others	1	
during the last 5 years	1, 54B - 2, 30B	2 (H)	Yes	No	64	
	Decreasing	17		No		36
	Fluctuating	25				
Fixed	18					
	Increasing	40				

Source: Primary Data.

**Conversion of Path Diagram into Structural Model.** Conversion of path diagrams in a measurement model aims to determine the effect of exogenous variables on endogenous variables as follows:

$$\text{Equation 1: } BO = 0.172 AT + 0.843 TG + 0.056 NI$$

Where: BO: Brand Orientation; AT: Annual Turnover; TG: Turnover Growth; NI: Net Income.

In Equation 1, it was informed that: (1) *the direct coefficient of AT on BO* was 0.172, stating that AT positively and significantly affected BO. That was, the higher AT would tend to improve BO; (2) *the direct coefficient of annual TG on BO* was 0.843, indicating that TG positively and significantly affected BO. In other words, the higher TG would tend to improve BO; (3) *the direct coefficient of annual NI on BO* was 0.056, suggesting that NI positively yet

insignificantly affected BO. That was, the higher NI would also tend to improve BO although the improvement was not significant.

$$\text{Equation 2: } BI = 0.252 AT + 0.793 TG + 0.060 NI$$

Where: BI: Brand Identity; AT: Annual Turnover; TG: Turnover Growth; NI: Net Income

In Equation 2, it was informed that: (1) *the direct coefficient of AT on BI was 0.252*, suggesting that AT positively and significantly affected BI. It meant that the higher AT would tend to improve BI; (2) *the direct coefficient of annual TG on BI was 0.793*, indicating that TG positively and significantly affected BI. In other words, the higher the TG was, the more improved the BI would be; (3) *the direct coefficient of annual NI on BI was 0.060*, signifying that NI positively yet insignificantly affected BI. This indicated that the higher NI would tend to improve BI although the improvement was not significant.

$$\text{Equation 3: } IB = 0.185 AT + 0.850 TG + 0.029 NI$$

Where: IB: Internal Brand; AT: Annual Turnover; TG: Turnover Growth; NI: Net Income.

In Equation 3, it was informed that: (1) *the direct coefficient of AT on IB was 0.185*, stating that AT positively and significantly affected IB. That was, the higher AT would tend to improve IB; (2) *the direct coefficient of annual TG on IB was 0.850*, indicating that TG positively and significantly affected IB. In other words, the higher the TG was, the more improved the IB would be; (3) *the direct coefficient of annual NI on IB was 0.029*, suggesting that NI positively yet insignificantly affected IB. It meant that the higher NI would tend to improve IB although the improvement was not significant.

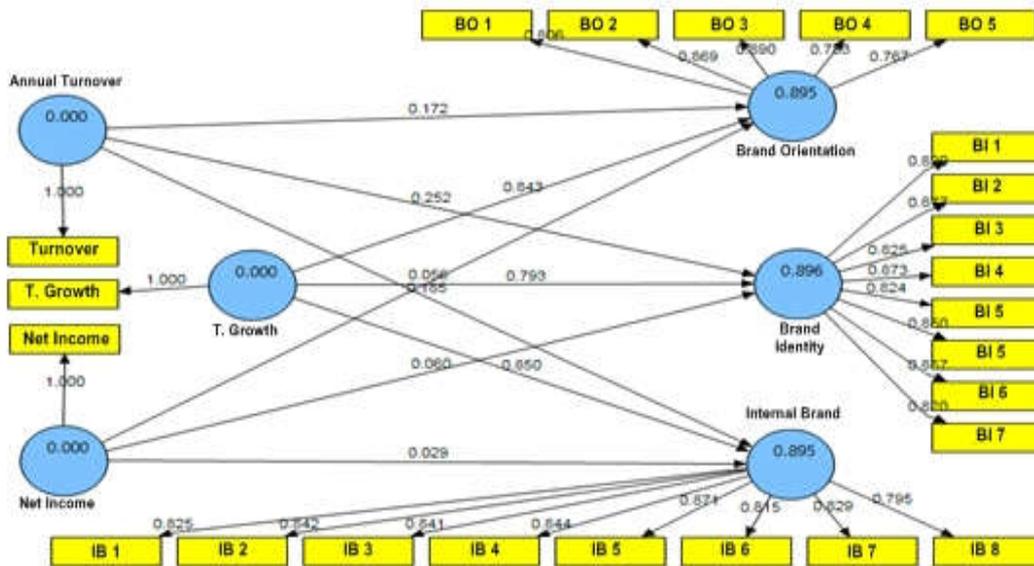


Figure 2 – Measurement Model Path Diagram

**Dominant Effect.** Exogenous variables that have a dominant effect on endogenous variables can be known through largest path coefficients. The analysis results showed that the turnover growth variable had the greatest path coefficient to the internal brand with a total effect of 0.850, followed by the brand orientation’s path coefficient of 0.843 and brand identity’s path coefficient of 0.793.

**Effect Difference Testing of Annual Turnover Categories on Brand Orientation, Brand Identity, and Internal Brand.** The effect difference testing of annual turnover categories on BO, BI and IB were done using One Way ANOVA with the following hypotheses:

- $H_0$ : There is no significant effect difference between annual turnover categories on BO, BI and IB;
- $H_1$ : There is at least a pair of annual turnover categories significantly different on BO, BI, and IB.

The testing criterion states that if the probability is  $\leq$  *level of significance* (alpha = 5%),  $H_0$  will be rejected. Therefore, this research stated that there was at least one pair of annual turnover categories resulting in significantly different BO, BI, and IB. The effect difference testing of annual turnover categories on BO, BI, and IB informed that the statistical value of *F*-test for BO was 16.715 (prob. 0.000); that for BI was 5.795 (prob. 0.004), and that for IB was 5.037 (prob. 0.008) < alpha (5%), causing  $H_0$  rejected. It can be stated that at least one pair of annual turnover categories on BO, BI and IB was significantly different.

The significant effect difference in the annual turnover categories of BO, BI and IB was found through LSD Test with the criterion if one pair of annual turnover categories obtains a probability of  $\leq$  alpha = 5%, it can be said that there is effect difference in the annual turnover categories of BO, BI and IB. The analysis results of the category effect difference informed that the high annual turnover resulted in the highest BO, BI and IB, which were significantly different from the low and moderate annual turnovers. Meanwhile, the low annual turnover resulted in the lowest BO, BI and IB, which were not significantly different from the moderate annual turnover, but significantly differed with the high annual turnover.

*Effect Difference Testing of Turnover Growth Categories on Brand Orientation, Brand Identity, and Internal Brand.* The effect difference testing of turnover growth categories on BO, BI and IB were done using One Way ANOVA with the following hypotheses:

- $H_0$ : There is no significant effect difference of turnover growth categories on BO, BI and IB;
- $H_1$ : There is at least a pair of turnover growth categories significantly different on BO, BI, and IB.

The testing criterion states that if the probability is  $\leq$  *level of significance* (alpha = 5%),  $H_0$  will be rejected. Therefore, in this research, it was said that there was at least one pair of turnover growth categories resulting in significantly different BO, BI, and IB. The results of the effect difference testing of turnover growth categories on BO, BI, and IB informed that the statistical value of *F*-test for BO was 6.667 (prob. 0.000); that for BI was 3.425 (prob. 0.020), and that for IB was 3.637 (prob. 0.016) < alpha (5%), so  $H_0$  was rejected. In other words, it can be said that at least one pair of turnover growth categories on BO, BI and IB was significantly different.

The significant effect difference in the turnover growth categories of BO, BI and IB was found through LSD Test with the criterion if one pair of turnover growth categories obtains a probability of  $\leq$  alpha = 5%, it can be said that there is effect difference in the turnover growth categories of BO, BI and IB. The analysis results of the category effect difference informed that the increased turnover growth resulted in the highest BO, BI and IB, and it was not significantly different from the fixed turnover growth (BO), fluctuating and fixed turnover growth (BI), and fixed turnover growth (IB). However, it significantly differed with the decreasing and fluctuating turnover growth (BO), decreasing turnover growth (BI), and decreasing and fluctuating turnover growth (IB). Meanwhile, the decreasing turnover growth resulted in the lowest BO, BI and IB, which was not significantly different from the moderate annual turnover, but significantly differed with the increasing turnover growth.

*Effect Difference Testing of Net Income Categories on Brand Orientation, Brand Identity, and Internal Brand.* The effect difference testing of net income categories on BO, BI and IB were carried out using One Way ANOVA with the following hypotheses:

- $H_0$ : There is no significant effect difference between net income categories on BO, BI and IB;
- $H_1$ : There is at least a pair of net income categories significantly different on BO, BI, and IB.

The testing criterion mentions that if the probability is  $\leq$  *level of significance* ( $\alpha = 5\%$ ),  $H_0$  will be rejected. Therefore, this research stated that there was at least one pair of net income categories resulting in significantly different BO, BI, and IB.

The results of the effect difference testing of net income categories on BO, BI, and IB informed that the statistical value of *F-test* for BO was 10.607 (prob. 0.000); that for BI was 5.214 (prob. 0.007), and that for IB was 3.235 (prob. 0.044)  $<$   $\alpha$  (5%), so  $H_0$  was rejected. That was, at least one pair of turnover growth categories on BO, BI and IB were significantly different.

The significant effect difference in the net growth categories of BO, BI and IB was determined through LSD Test with the criterion if one pair of net income categories obtains a probability of  $\leq$   $\alpha = 5\%$ , it can be said that there is effect difference in the net income categories of BO, BI and IB. The analysis results of the category effect difference informed that the high net income resulted in the highest BO, BI and IB, which was significantly different from the low and moderate net incomes. Meanwhile, the low net income resulted in the lowest BO, BI and IB, which was not significantly different from the moderate net income but significantly differed with the high net income.

## DISCUSSION OF RESULTS

*Annual Turnover and Average Annual Turnover Difference of SMEs.* In the ANOVA of this research, there were three composite steps used as dependent variables, namely BO, BI and IB. SMEs were classified into three separate groups based on the annual turnover. The results of this research showed that, of 100 SME households in Kupang City, 98% of the SMEs had an annual turnover value of  $<$  IDR 1, 136, 666, 666, belonging to 'Low' category. The other 1% of the SMEs had an annual turnover value between IDR 1, 136, 666, 667 – IDR 2, 268, 333, 332, belonging to 'Moderate' category. Meanwhile the rest 1% had an annual turnover value of  $>$  IDR 2, 268, 333, 333, belonging to 'High' category. From the results of the analysis, it can be concluded that SMEs have varying sizes and annual turnovers in the term of brands. SMEs with a higher annual turnover have a more positive attitude toward their brands and are more likely to develop BI and IB.

The LSD test showed more detailed information about the difference or variance in the average annual turnover of SMEs. The analysis results suggested that BO and IB had statistically significant differences in which the lowest annual turnover of the SMEs was  $<$  IDR 1, 136, 666, 666 and the highest annual turnover of the SMEs was  $>$  IDR 2, 268, 333, 333. Meanwhile, in the BI, there was one pair that was statistically found to be significant, that was SMEs with the annual turnover  $<$  IDR 1, 136, 666, 666 and those with the annual turnover ranging between IDR 1, 136, 666, 667 – IDR 2, 268, 333, 332.

Based on the overall results, it can be concluded that all the hypotheses of *H1.1* (Better annual turnover is characterized by high brand orientation), *H2.1* (Greater annual turnover is characterized by greater investment in brand identity), and *H3.1* (Greater annual turnover is characterized by greater investment in internal branding) are supported and accepted. It turns out that SMEs with a low annual turnover pay less attention to brands, while those with a higher annual turnover tend to give more priority to brands. The fact that 1% of SMEs had a high annual turnover value (more prioritizing brand ideology) is in line with the recognition of 45% respondents stating that they gave more priority to their brand ideology.

*Turnover Growth and Average Turnover Growth Difference of SMEs.* The turnover growth of SMEs during the last five years can be seen from the annual turnover experiencing a decrease, consistency (fixed), fluctuation and increase. The research results showed that, of 100 SME households operating in Kupang City, 40% of them experienced an increased annual turnover, 25% experienced a fluctuation, 18% had no changes in the annual turnover (fixed), while the rest 17% experienced a decrease in the annual turnover. SMEs reporting a declining, fixed or increasing annual turnovers were then compared one another using ANOVA. In this category, SMEs differed from one another in relation to BO and BI. Meanwhile, in IB, there was no statistically significant difference or variance between the three groups.

The average turnover growth difference of SMEs in Kupang City was measured using Least Square Difference test. The results of LSD test regarding brand ideology (BO, BI and IB) informed that the increased turnover growth resulted in the highest BO, BI and IB, and there was no statistically significant difference from the fixed turnover growth (BO), fluctuating and fixed turnover growth (BI), and fixed turnover growth (IB). However, it was significantly different from the decreasing and fluctuating turnover growth (BO), decreasing turnover growth (BI) and decreasing and fluctuating turnover growth (IB). Meantime, the decreasing turnover growth resulted in the lowest BO, BI and IB, not significantly different from the fluctuating and fixed turnover growth but significantly different from the increasing turnover growth. Thus, It can be indicated that there is a difference between SME groups whose turnover growth decreases and increases (\*\* $p < 0, 01$ ), and between the SME groups whose turnover growth is fixed and increases (\* $p < 0, 05$ ).

Based on the overall results, it can be concluded that all the hypotheses of H1.2 (Positive turnover growth is characterized by high brand orientation), H2.2 (Positive turnover growth is characterized by greater investment in brand identity), H3.2 (Positive turnover growth is characterized by greater investment in internal branding) are supported and accepted. It turns out those SMEs with a declining, fixed or fluctuating turnover growth less pay attention to the brands, while those with a high turnover growth more prioritize the brands.

*Net Income and Average Net Income Difference of SMEs.* The research results suggested that 100 SME households operating in Kupang City were classified into three separate groups based on the net income. Of the 100 SMEs, 98% had a net income of < IDR 767, 666, 665.7 (Low), the other 2% had a net income of > IDR 1, 533, 833, 333 (High), and 0% had an annual turnover between IDR 1, 136, 666, 667 – IDR 2, 268, 333, 332 (Moderate).

The average net income difference of SMEs was measured using LSD test. The LSD test results on brand ideology (BO, BI, and IB) suggested that the high net income resulted in the highest BO, BI and IB, which was significantly different from the low net income. Meanwhile, the low net income resulted in the lowest BO, BI and IB, which was significantly different from the high net income. Thus, it can be indicated that there is a difference between SME groups whose net income increases and decreases (\*\* $p < 0, 01$ ).

Based on the overall results, it can be concluded that all the hypotheses of H1.3 (Maximum net income is characterized by high brand orientation), H2.3 (Maximum net income is characterized by greater investment in brand identity), and H3.3 (Maximum net income is characterized by greater investment in internal branding) are not supported and rejected.

The rejection of the three hypotheses above was based on the results of hypothesis testing. The hypothesis testing result of H1.3 showed that the effect of net income to brand orientation resulted in a path coefficient of 0.056 with the *T*-statistics value of 0.634, indicating that the path coefficient was positive and the *T*-statistics value was < 1.64. It means that there is a positive yet insignificant relationship between net income and brand orientation. Meanwhile, the hypothesis testing result of H2.3 suggested that the effect of net income on brand identity resulted in a path coefficient of 0.060 with the *T*-statistics value of 0.634, also indicating that the path coefficient was positive and the *T*-statistics value was < 1.64. That is, there is a positive yet insignificant relationship between net income and brand identity. Similarly, the hypothesis testing result of H3.3 showed that the effect of net income on internal brand yielded a path coefficient of 0.029 with the *T*-statistics value of 0.300, indicating that the path coefficient was positive and the *T*-statistics value was < 1.64. This means that there is a positive yet insignificant relationship between net income and internal brand.

*Theoretical Implications.* With regard to theoretical implications, it is assumed that in various situations, small companies generally always get benefits from brand guidelines developed by (in this context) large companies (Gabriellu and Balboni, 2010). This assumption needs to be questioned concerning whether small companies should or not forever take the chance of gaining benefits from the brand guidelines developed by large

companies. However, there is a reason to assume that there are several differences identified in this study, which may derive from the fact that companies with a low annual turnover or a decreasing turnover growth are hesitant and reluctant to adopt a brand ideology. This is because they (small companies) consider that finding brands is only suitable to be applied to large companies with a greater financial and human resources.

## CONCLUSION

This research was aimed to examine and analyze the higher financial performance of Small and Medium Enterprises characterized by a greater adaptation to brand ideology (brand orientation, brand identity, and internal brand).

Descriptive analysis of this research showed that of 100 SME households in Kupang City during the last five years, the average annual turnover reached IDR 158, 951, 900, - and the average net income was IDR 106, 595, 000, -. Furthermore, 98% of the SME households had a low-categorized annual turnover and net income.

In average, the brand orientation (BO), brand identity (BI), and internal brand (IB) variables of SMEs in Kupang City are in "good" criteria.

SME annual turnover and turnover growth have a positive and significant effect on brand ideology (brand orientation, brand identity, and internal brand), but SME net income has a positive yet insignificant effect on brand ideology.

The contribution of annual turnover, turnover growth, and net income variables on brand orientation, brand identity, and internal brand variables was 89.5% in average, while the remaining 10.5% was the contribution of other variables that were not discussed in this study.

The research results in relation to the annual turnover suggested that companies (SMEs) with a low annual turnover tended to have less brand orientation and pay less attention to the brand identity and internal brand development. This supports the theory stating that a successful company is a company that has an obvious brand orientation (Wong and Merrilees, 2005).

Turnover growth effect on BO, BI and IB are not significantly different. The differences can be determined by analyzing the results of *F*-Test and Least Square Difference testing. Statistically, significant differences are identified in relation to brand orientation, brand identity, and internal brand. Based on the testing results, it can be concluded that SMEs with a higher turnover growth pay more attention to their brand ideology:

- Overall, the results of this research supports and are in line with several recent studies stating that there is a difference between SMEs in terms of adaptation and implementation of marketing and brand ideology (Reijonen and Laukkanen, 2010).
- This research also examined the theory of Wong and Merrilees (2005) stating that the smallest SMEs experience brand barriers, such as lack of human resource, finance and time. This condition hampers SMEs in Kupang City to engage in paying attention to their brands.

## SUGGESTIONS

For Small and Medium Enterprises (SMEs), the results of this study are expected to be a reference to increase or improve better annual turnover, positive turnover growth and maximum net income.

Small companies should better understand the importance of brand ideology including brand orientation, brand identity, and internal brand so that the effective SME management can be easier.

Small companies should be able to eliminate the reluctance and hesitation in adopting a brand ideology. Furthermore, to make SMEs more beneficial, they need to be equipped with branding tools.

For local governments, in this case, referring to the Office of Industry and Trade as well as the Office of Cooperatives and SMEs, this research is expected to be an input in conducting a training and coaching for SMEs about the importance of brand ideology.

The last, it is recommended that future research develop the guidance model of branding tools according to the characteristics of SMEs with business variation, annual turnover and turnover growth rates that are different from each other, and include other variables that are not discussed in this research model.

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## ANALYSIS OF E-TAX IMPLEMENTATION IN MALANG CITY OF INDONESIA: A REVIEW BASED ON THE TEN GUIDING PRINCIPLES OF GOOD TAX POLICY

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### ABSTRACT

Self assessment system demands the active role of the taxpayer in fulfilling his tax obligations. One of the means is through the implementation of e-tax in Malang City, Indonesia. E-tax is an online tax system that aims to reduce potential tax leak by connecting all transactions from customers with servers. The purpose of this study is to analyze the implementation of e-tax in Malang city based on ten guiding principles of good tax policy. This study uses a qualitative approach. Data collection uses literature study (secondary data). The results of this study explain that in general, e-tax implementation in Malang City has fulfilled the principle of a good tax policy that prioritizes the principle of acceptance and provide simplicity and convenience for the taxpayer in the fulfillment of tax obligations. However in terms of the principle of fairness, it has not fulfilled the principle yet because there is still no optimal data collection of taxpayers in some tax sectors.

### KEY WORDS

Self assessment system, tax policy principle, e-tax.

Local taxes have function as a source of revenue to meet the financing of regional development that are useful for the benefit of the community. Local taxes also function as one of the areas that have the biggest contribution in regional revenue (figure 1). Based on data from the Regional Tax Service Agency (*BP2D*) of Malang City, Locally-Generated Revenue from local tax sector has increased in each year, as shown in the following table:

Table 1 – Percentage of Locally-Generated Revenue to Total Revenue of Malang City, 2012-2016

Year	Locally-Generated Revenue (LGR) in Billion			
	Local Tax	Local Retribution	Management of Regional Asset Results	Other legitimate LGR
2012	125	33	20	20
2013	210	38	21	28
2014	260	40	11	35
2015	272	40	15	36
2016	301	48	15	22

Source: *BP2D, 2017*.

The growth of local tax revenues from 2012 to 2016 continued to increase. It was not separated from active role of the community in assisting regional financing by making tax payments. Regional government of Malang City continues to increase local tax revenue by utilizing the development and application of information technology. Utilization of information technology provides ease of administration. One of the strategies undertaken by Government of Malang City, specifically, Regional Tax Service Agency of Malang or *BP2D* is the application of online tax or electronic tax (e-tax).

Implementation of e-tax in Malang city has existed since 2013. Malang became the second city in Indonesia after DKI Jakarta which has applied e-tax in the fulfillment of tax obligation. Implementation of e-tax is an effort from the tax authorities to provide convenience to taxpayers by utilizing technological progress so as to encourage the creation of voluntary compliance and can increase tax revenue of Malang City.

Implementation of e-tax in Malang is still limited to 3 tax sectors, namely: hotel tax, restaurant tax, and parking tax. Implementation of e-tax is a strategy of *BP2D* to reduce the

level of revenue leak for the three types of taxes and facilitate the implementation of the self assessment system.

Based on the above description, it is interesting to see the implementation of e-tax from a different perspective rather than only focusing on revenue. The formulation of the problem in this research is How is the Analysis of E-Tax implementation in Malang City based on 10 Guiding Principles of Good Tax Policy according to AICPA?

## LITERATURE REVIEW

*Local Tax.* Davey (1988) argued that local taxes can be interpreted as:

- Taxes levied by Regional Government with the regulation of the region itself;
- Taxes levied under national regulations but the determination of tariffs is done by Regional Government;
- Taxes determined and/or levied by Regional Government;
- Taxes levied and administered by the Central Government but the proceeds of collection shall be granted to, be distributed with, or incurred additional levies by Regional Government.

*Tax Collection Principles.* The implementation of positive taxation policy is a process of selecting tax treatments from various alternatives available, in order to achieve the intended target from the tax system to be prepared. These alternatives are selected while taking into consideration the specified taxation principles.

There are basically three tax collection principles which are applied in every tax system, namely (Mansyuri, 1996):

- Revenue productivity. This principle uses taxes as a community fundraiser;
- Equity. This principle makes the basis of fairness in tax collection;
- Ease of administration. This principle states that taxation is done based on legal certainty, taxpayer convenience, and is efficient. It should also be supported by easy-to-understand regulation and without causing distortion.

In the concept of ease of administration, wherever it is done, tax collection should consider the principles underlying a tax collection system. The concept of ease of administration has elements such as (Haula and Irianto, 2012):

- The principle of certainty. The certainty principle states that there must be certainty, both for tax officials and all taxpayers and the whole society. The principle of certainty includes, among other things, the certainty of who should be taxed, what is used as tax object, and the amount of tax to be paid and how the amount of indebted tax should be paid.
- The principle of convenience. This principle states that the time of tax payment should be possible at a pleasant time/facilitate the taxpayer, for example, when receiving a salary or other income such as receiving a gift or deposit interest
- The principle of efficiency. This principle states that from the taxpayer side, the tax collection system is said to be efficient if the cost that must be issued by the taxpayer to meet the tax obligations can be as minimum as possible. In other words, tax collection is said to be efficient if its cost of compliance is low.
- The principle of simplicity. Tax regulations should be simple to be more certain, clear and easy to understand by the taxpayer.

Meanwhile, the American Institute of Certified Public Accountants (AICPA) states there are Ten Guiding Principles of Good Tax Policy. The sequence number of principles in these ten statements is only as a reference and should not be taken as an indication of the order of importance of these principles (AICPA, 2001):

- Equity and Fairness. This principle states that the same situation of the taxpayer should be subject to the same tax. This same tax principle is often explained in terms of fairness.
- Certainty. The tax regulation should determine when taxes are to be paid, how taxes should be paid, and how much to pay will be determined. A person's tax obligations

must be certain and not ambiguous. This certainty is important for the tax system as it helps to improve tax compliance and to improve compliance with the system. Certainty generally comes from clear laws and proper and understandable administrative guidelines for taxpayers.

- Convenience of Payment. This principle states that taxes are levied at the right time and in the most probable way to be collected for the convenience of the taxpayer. Payment convenience is important in helping to ensure taxpayer compliance with the tax system. Sommerfeld links the convenience principle with administration simplicity.
- Economy in Collection. The cost of collecting taxes should be as minimal as possible for the government and taxpayers. These costs include administrative costs to governments that are affected by the number of tax officials (fiscal authorities) required to manage taxes. Compliance costs that are also incurred by taxpayers need to be considered. This principle is also closely related to the principle of simplicity. The more complex the tax, the greater the cost for the government to manage and the greater the compliance cost for the taxpayer to determine his tax liability and report it. From the fiscal authorities' side, the more appropriate term used to measure efficiency is administrative cost (Cedric, 1989). *"The term 'administrative cost' can be used for the public sector costs of running the tax system – principally the costs incurred by the revenue department, whilst 'operating costs' is a convenient term to embrace the total costs of running a tax or the tax system, i.e. administrative and compliance costs combined."* As Cedric puts it, Administrative costs are the costs the government must spend to run the tax administration system. For example not only the cost of the salaries of tax officials, but also other operational costs, the costs of extension/socialization of taxes and costs for law and justice enforcement (billing, checking, objections, appeals, etc.). Compliance costs incurred by taxpayers need to be considered. Costs of Collection is an administrative burden that must be borne by the taxpayer to carry out his tax obligations. According to Cedric Sanford in Rosdiana, the costs or expenses can not only be measured by tangible value, but also costs that can not be measured by the value of money (intangible) to be incurred/borne by the taxpayer in connection with the implementation process of taxation obligations and rights. Such as Fiscal cost (honorarium, salary, consultant services, transportation), Time cost and Psychological costs. (Rosdiana and Irianto, 2012)
- Simplicity. The tax law should be simple so that taxpayers understand the rules and can comply with them properly and in a cost-effective manner. Simplicity in the tax system is important both to the taxpayer and to the people who manage the various types of taxes. Taxes should be simple enough so that the affected can understand the tax easily. A complicated rule causes errors and does not respect systems that can reduce compliance. Simplicity is important both to improve compliance processes and to enable taxpayers to better understand the tax consequences of each transaction.
- Neutrality. Taxes should be free of distortions, either distortions to consumption or distortions to production and other economic factors. This means that taxes should not affect the choice of people to consume and also do not affect the choice of producers to produce goods and services, and do not reduce the enthusiasm of people to work. Therefore, in determining the tariff, the authorities should not select tariffs included in the "prohibited area". Raising tax rates is not necessarily going to increase tax revenues, otherwise it might lead to lower the revenues. It's similar in providing tax incentives. The policy of providing tax incentives should ensure a level playing field that is "fair" so as not to cause entry barriers (Haula and Irianto, 2012).
- Economic Growth and Efficiency. The tax system should not hinder or reduce the productive capacity of the economy. The tax system should not prevent or impede national economic goals, such as economic growth, capital formation, and international competitiveness. The principle of economic growth and efficiency related to the principle of neutrality in the tax regulation can distort the behavior of the taxpayer which may impede economic efficiency.

- Transparency and Visibility. The taxpayer must know about the existence of tax and how and when it is levied on the taxpayer. Visibility or clarity allows individuals and businesses to know the true cost of each transaction made. It also allows taxpayers to see their total tax liabilities. When the tax is not visible, taxpayers can easily evade or avoid the obligations of taxation. There will be a little awareness of taxpayers about how taxes affect themselves.
- Minimum Tax Gap. Taxes must be structured to minimize violations. A tax gap is the difference between indebted tax and tax paid voluntarily. The existence of a tax gap is due to various reasons, such as a deliberate error (non-filing, unreported earnings, exaggeration of deductions, deferral of transactions) and unintentional mistakes (mathematical errors and lack of understanding of rules).
- Appropriate Government Revenues. The tax system should allow the government to determine how much tax revenue might be collected and when the tax revenue is received by the government. The tax system must have some degree of predictability and reliability to allow the government to determine how much income taxes are likely to be collected and when the tax revenue is received by the government.

*E-tax.* E-tax is an online tax system that aims to reduce potential tax leaks. This system will connect all transactions from the customer with the server so that the taxpayer can not manipulate the indebted tax. (BP2D, 2017). Currently, there are 3 types of taxes that use e-tax system in Malang City, namely, hotel taxes, restaurant taxes, and parking taxes.

## METHODS OF RESEARCH

This study uses a qualitative approach which is a process of understanding of a social problem proposed to analyze the implementation of e-tax in Malang based on 10 Guiding Principles of Good Tax Policy according to AICPA. Data collection is done by using secondary data sourced from books, research reports, and other references such as data from websites/internet that can be accounted for.

## RESULTS OF STUDY

Implementation of online tax is applied for 3 types of local taxes in Malang City, namely, hotel taxes, restaurant taxes, and parking taxes. E-tax is an online tax system that aims to reduce potential tax leaks. this system will connect all transactions from the customer with the server so that the taxpayer can not manipulate indebted tax.

Implementation of e-tax in Malang City can provide *certainty* to the taxpayer about the tax object of the restaurant tax and non taxable objects. Objects of restaurant tax include restaurants, cafeterias, canteen, stalls, depots, bars, pujasera, bakeries, catering services or other similar business activities, while those excluding restaurant tax objects are services provided by restaurants with the highest sale value of Rp. 5,000,000.00 per month. In addition, the amount of tax that must be paid by the taxpayer also provides certainty with the existence of a case management system (CMS). The tax calculation contained in the CMS system has been adjusted to the regional regulation, namely Regulation No. 2 of 2015 on amendments to regional regulation No. 16 of 2010 on local taxes. Examples of restaurant tax that will be calculated is that the tax to be paid is 10% of turnover. The entertainment tax rate is based on the object. The parking tax rate is 20%. On this basis, the implementation of e-tax by using CMS can provide clarity of regulations so that there is no double interpretation and has fulfilled the principle of *certainty*.

Based on the principle of *economy in collection*, the implementation of e-tax in Malang City facilitates taxpayer in payments and also facilitates tax officers in tax collection because the CMS system can calculate their own tax amount to be paid. This can reduce administrative costs in tax management by taxpayers. On this basis, the implementation of e-tax can be said to have fulfilled this principle.

Based on the principle of *simplicity*, the implementation of e-tax meets the principle of simplicity because of the facilities that have been provided such as case management

system. The program will self-assess the tax amount to be paid by the taxpayer. The implementation of e-tax also facilitates taxpayers in payment because Malang City has cooperated with BRI Malang City, so that at the end of month, tax payments will automatically transferred into BP2D's bank account. In addition, the taxpayer does not need to attach the bill again in tax reporting. Ease of payment and reporting is essential to improve taxpayer compliance.

Based on the principle of *transparency*, with the implementation of e-tax system in Malang City, all transactions will be recorded properly and detected directly into the server and can be monitored in real time. Transparency will cover or at least reduce the potential for tax leakage. In addition, transparency can increase public trust that paid taxes are automatically monitored by the tax authority.

Under the *minimum tax GAP*, the tax should be structured to minimize violations. A tax gap is the difference between the indebted tax and the tax paid voluntarily. With the e-tax, the amount of indebted tax already can be known by a system called CMS. With this system, taxpayers will be easier in determining how much tax to be paid so as to avoid the difference between taxpayers and fiscal authorities. On this basis, the implementation of e-tax meets the principle of *minimum tax GAP*.

Under the principle of *Convenience of Payment*, payment convenience is important in helping to ensure taxpayer compliance. Malang City has cooperated with Bank Rakyat Indonesia so that tax payment can be done through e-banking or transfer that will automatically be transferred into BP2D's bank account. This provides convenience to the taxpayer without the need to come directly to the bank to make payments.

The principle of *neutrality* mentions that the effect of the tax law on the taxpayer's decision to execute a particular transaction or to engage in a transaction should be minimized. That is, taxpayers should not be overly encouraged or restricted from engaging in certain activities or certain transactions because the main purpose of taxes is to increase revenue, for governmental activities, not to influence business and personal decisions. Implementation of e-tax has fulfilled the principle of neutrality because it does not interfere with business decisions of a person.

The principle of *Economic Growth and Efficiency* states that the tax system should not inhibit or reduce the productive capacity of the economy. So far, the implementation of e-tax does not disrupt the economy. Chairman of Indonesian Association of Coffee and Restaurant Entrepreneurs (Apkrindo) of Malang Branch explained that the implementation of e-tax is very helpful, especially in terms of ease and transparency (BP2D, 2017).

Tax collection is said to be efficient if the cost of tax collection, in this case, the cost of taxpayer supervision is less than the amount of tax collected. The implementation of e-tax can increase efficiency because the cost of collection can be reduced to a minimum. The collection costs, also includes the cost of supervision, become low because the tax officer will be able to easily view the records of each taxpayer from this online system. In addition, the implementation of e-tax can reduce the interaction between fiscal authorities and taxpayers so as to reduce the burden of time and the number of field officers to conduct supervision. Supervision before the existence of e-tax was done through the calculation of taxpayer bill and inputted the data into the computer of tax service agency. Supervision was also done by cash opname that took a long time, supervision by way of *silent operation* that was performed by acting as the customer to ensure the condition of the taxpayer. The implementation of e-tax can improve efficiency in terms of time and cost. While from the taxpayer side, the implementation of e-tax also facilitates the taxpayer because they no longer need to pay taxes to the bank because it uses autodebet system. Based on this basis, the implementation of e-tax of Malang City can be said to fulfill the principle of economic growth and efficiency.

*Appropriate Government Revenues*, the tax system should allow the government to determine how much tax revenue might be collected and when the tax revenue is received by the government. The tax system should have some degree of predictability and reliability to allow the government to determine how much income of taxes are likely to be collected and when the tax revenue is received by the government. This is particularly important for

regional government, most of whom can operate due to a balanced budget. With the e-tax, tax revenues in 3 sectors, namely, restaurant taxes, hotel taxes and parking taxes will be more secure because the transactions between taxpayers and customers are detected properly and it is directly connected to the server. Taxpayers can not manipulate the taxes to be paid so that taxes can be collected more optimally. Based on this, the implementation of e-tax has supported the government in terms of securing revenue in the three tax sectors.

Based on *equity and fairness*, the same situation of the taxpayer shall be subject to the same tax. This same tax principle is often explained in terms of fairness. In the case of applying e-tax, it can be said to fulfill the principle of fairness if all objects are subject to the same tax and there must be e-tax equalization for all three types of taxes. Constraints that occur at this time is: there is no optimal data collection of taxpayers, such as the object of restaurant tax in the form of catering business and bakery business, and there is no optimal data collection of hotel taxes in the form of boarding house taxes (BP2D, 2017). Business networking must be continuously carried out to meet the principles of fairness. On this basis, the principle of fairness in terms of even distribution of tax objects by using e-tax is still not fulfilled.

### **CONCLUSION**

Based on the discussion on the implementation of e-tax in Malang city, it can be concluded that the application of e-tax can be analyzed based on ten guiding principles of good tax policy. The first analysis is in the principle of certainty. It can be concluded that the existence of e-tax for the three types of taxes can provide certainty and clarity for the taxpayer in the fulfillment of tax obligations. The second analysis is in the principle of economy in collection. It can be concluded that the ease provided by e-tax has fulfilled this principle. The third analysis is in the principle of simplicity. It can be concluded that the implementation of e-tax has fulfilled the principle of simplicity both for ease of payment and reporting. The fourth analysis is in the principle of transparency. It can be concluded that the implementation of e-tax has met the principle of transparency. The fifth analysis is in the principle of minimum tax gap, the implementation of e-tax has reduced the difference in turnover calculations between taxpayers and fiscal authorities. The sixth analysis is in the principle of Convenience of Payment. E-tax implementation can provide convenience in terms of payment and reporting. The seventh analysis is in the principle of neutrality. The application of e-tax has fulfilled this principle. The eighth analysis is in the principle of Economic Growth and Efficiency. E-Tax implementation can improve the efficiency of time, effort and cost. The ninth analysis is in the principle of Appropriate Government Revenues. E-tax implementation can reduce the potential of tax leakage so that the tax revenue of Malang city can increase in every year. The tenth analysis is in the principle of equity and fairness. The application of e-tax can not be said to fulfill this principle due to the uneven spread of business networking for these three tax objects.

### **SUGGESTIONS**

There is a need for intensive taxpayer registration (extensification) on tax objects that have not been optimal, among others, the object of hotel taxes including boarding houses, data collection of restaurant tax objects such as catering and bakery.

There is a need for additional payment points in the public sphere so as to facilitate taxpayers in the fulfillment of tax obligations.

There is a need for expansion of cooperation with other banks for the tax banking program so as to facilitate the taxpayer in fulfilling his tax obligations.

### **IMPLICATION AND LIMITATION**

This research attempts to analyze the implementation of e-tax in Malang City based on ten guiding principles of good tax policy. The results of this study are expected to provide

evaluation of the implementation of e-tax in Malang. As an implication for the results of this study, the Government should seek equity of business networking with taxpayer data optimization or so-called extensification so that more and more taxpayers apply e-tax. Extensification is mainly done in boarding house business and catering & bakery business. This can reduce the potential lost and ultimately can improve fairness and local tax revenues in Malang. Limitations in this study are analytical techniques used in this study only used secondary data so that the results of the study is in the form of general overview. Further research is expected to deepen the analysis by in-depth interviews by using the validity of data in the form of source triangulation.

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## **THE ABILITY OF DAYAK CULTURE TO MODERATING THE EFFECT OF BUDGET PARTICIPATION IN BUDGETARY SLACK**

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### **ABSTRACT**

Public sector budget is created to plan action that would be taken by government, how much cost that needed, and how much the outcome can be obtained from the government spending. By establishing a budgetary system which can combine performance plan with yearly budget, it will be seen the presence of relationship between available fund and the outcome expected. As main policy instrument for local government, Local Revenue and Expenditure Budget (APBD) has taken central position in an effort to develop capability and effectiveness of local government. The development of APBD of Palangka Raya city in fiscal year of 2008-2016 indicates the presence of budgetary slack. It is allegedly occurred due to several contingency factors which can affect the relationship of budget participation and budgetary slack. This research used organization culture based on local culture as moderating variable toward budget participation on budgetary slack. Respondent in this study was selected by way of proportionate random sampling. Data was collected by survey method with questionnaire and analyzed with analysis of absolute differential moderation regression test. The result of research showed that budget participation had an effect toward budgetary slack. The ability of variable of organization culture also was able to moderate the effect of budget participation on budgetary slack.

### **KEY WORDS**

Budget, participation, Dayak culture, slack.

Public sector budgets are designed to plan what actions the government will take, in the form of the required costs, and how much the proceeds derive from that government expenditure. By building a budgeting system that can integrate performance planning with an annual budget, there will be a link between available funds and the expected results. As the main policy instrument for local government, the Regional Budget or Regional Budget (APBD) occupies a central position in the effort to develop the capability and effectiveness of regional government.

Research on the factors affecting slack also developed with the inclusion of other variables that are considered influential one of them is the organizational culture that is influenced by local local culture, one of which is the Dayak culture which is a culture on the island of Borneo. Dayak culture is used as a moderating variable because dayk culture is the basic assumptions and beliefs that any organization can influence the way humans act and strengthen an organization. Because this research is done in Palangka Raya city then one of the cultures that need to be considered is Dayak culture in Palangka Raya city that is Isen Mulang culture, Mamut Menteng, and Huma Betang philosophy.

Development of APBD Kota Palangka Raya budget year 2008-2016 indicates a budgetary slack. This is thought to be due to several contingency factors that can affect the relationship of budget participation with budgetary slack. This study uses organizational culture based on local culture as a moderating variable to budgetary participation in budgetary slack.

The purpose of this study is to obtain empirical evidence of the effect of budgetary participation on budgetary slack, as well as to prove empirically the role of Dayak culture in moderating the influence of budgetary participation on budgetary slack at the Municipal Government of Palangka Raya, Central Kalimantan Province.

## THEORETICAL REVIEW

*Agency Theory.* Agency theory is a concept that explains the contractual relationship between principal and agent, ie between two or more individuals, groups or organizations (Jensen and Meckling, 1976). Agency theory also explains the phenomenon that occurs when the boss delegates his authority to subordinates to perform a task or authority to make a decision (Anthony and Govindarajan, 1998). According to Eisenhard (1989), agency theory has three assumptions, namely: (1) assumptions about human nature; (2) assumptions about organization; (3) assumptions about information.

*Goal Setting Theory.* The goal-setting theory is a theory of cognitive motivation based on the premise that a person has needs that can be thought of as specific outcomes or as a target (Locke et al., 1968). The goal setting theory describes the relationship between a defined goal and work performance. The goal-setting theory dictates that goals are specific (specific) and difficult, with feedback will lead to higher performance (Robbins and Judge, 2008).

*Public Sector Budget Concept.* A budget is a written plan for the activities of an organization which is stated quantitatively for a specified period and is generally expressed in units of money. Public sector budgets state that public sector budgets are activity plans that are represented in the form of revenue and expenditure plans in monetary units.

Public sector budget has several main functions (Haruman, 2013), as follows: (1) budget is the end result of work plan process; (2) The budget shall be a blueprint for activities to be carried out in the future; (3) budget as an internal communication tool connecting various work units and work mechanism between superior and subordinate; (4) budget as a control tool of work unit; (5) budget is a tool of motivation and persuasion of effective and efficient action in achieving the vision of the organization; (6) budget is a political instrument; (7) budget is an instrument of fiscal policy.

The Regional Income and Expenditure Budget (APBD) based on Permendagri No. 37 of 2012 is an annual financial plan of local government discussed and mutually agreed upon by the local government and DPRD, and stipulated by regional regulations. The regional budget year covers a period of one year commencing from 1 January to 31 December. The structure of APBD is a unity consisting of: regional income, regional expenditure, and regional financing.

*Budgetary Slack Concept.* The budgetary slack is the difference between the number of submissions submitted by subordinates to the best estimate of the organization (Anthony and Govindarajan, 2007). Budgetary slack arises because the desires of superiors and subordinates are not the same, especially if the performance of subordinates assessed based on budget achievement. Merchant (1985) Lukka (1988), and Young (1985) share the same understanding of budget slack, that is, as a disclosure included in a budget that makes it easy to achieve. Budgetary slack is defined as a resource and a pursuit of activities that can not be easily justified in the form of its contribution to organizational goals (Stede, 2001).

*Budget Participation.* According to Hansen and Mowen (2013) budgetary participation is a budgeting approach that allows managers who will be responsible for budget performance to participate in budget development, budget participation communicates a sense of responsibility to lower level managers and encourages creativity.

Brownell (1982) says budgetary participation is a process whereby individuals are directly involved in it and have an effect on the formulation of budget targets whose performance will be evaluated and likely to be rewarded on the basis of achieving their budget targets. According to Anthony and Govindarajan (2007) which distinguish the budgeting process as follows: (1) top-down approach; (2) bottom-up approach; (3) top-down and bottom-up approach.

*Contingency Theory.* The contingency theory approach is used as a supporting theory in this study, because it assumes the various behavioral patterns leaders (or characteristics) are needed in various situations for leadership effectiveness. The contingency theory approach allows for other variables that can act as moderating variables that influence the participation relationships in budgeting.

*Organizational Culture (Dayak Culture)*. Organizational culture can be analyzed in 3 (three) different levels, namely: artifacts, espoused values, and basic underlying assumptions (Schein, 1997). Schein adds that the value (espoused values) embraced by each organization, will be a common basic assumption in addressing the problem of external adaptation and internal integration.

Every public organization has an organizational culture value feature that is used to distinguish it from other public organizations. Organizational culture is the value (value) owned by an organization that is perceived and understood by all members of the organization (Hutapea and Thoha 2008).

With the existence of one of Central Kalimantan Dayak culture of "Isen Mulang, Mamut Menteng, and Huma Betang philosophy" is expected to be included in the category of organizational culture into local culture within the organization which is expected to bring bureaucratic organization in the era of regional autonomy demanded for how spend the limited budget as efficiently as possible and make the most of the well-earned results. Thus, the organization is able to anticipate the environmental changes that will occur and is expected to be a benchmark for growth and development of the economy and culture of Dayak itself in accordance with the spirit of Dayak Isen Mulang (abstinence surrender), "Mamut Menteng" (Grave brave), and Philosophy Huma Betang (togetherness in the difference) which later with one of the Dayak culture can lift the Dayak tribe is economically better.

### FRAMEWORK AND HYPOTHESES

The concept of this study is the logical relationship of the foundations and empirical studies that have been described in the literature review. Figure 3.2 describes the effect of independent variables: budgetary participation on budgetary slack as dependent variable and organizational culture as moderation variable.

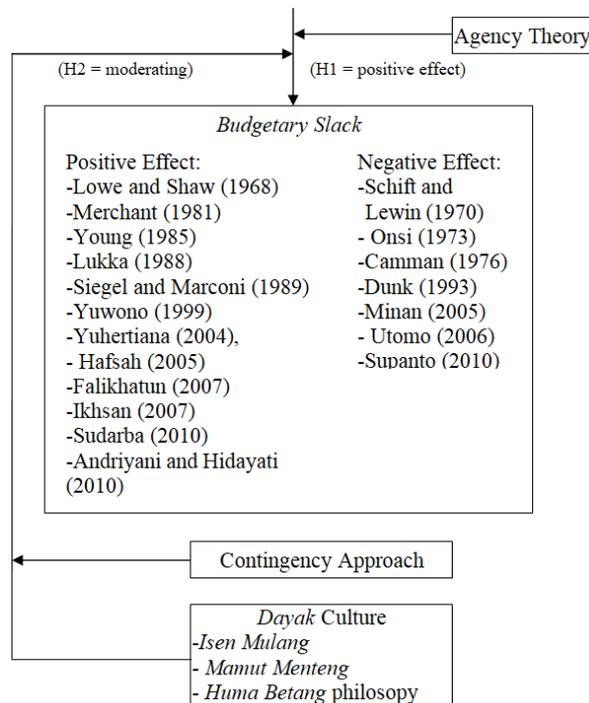


Figure 1 – Conceptual Framework

Based on the conceptual framework, two research hypotheses can be prepared:

- Budget participation has a positive effect on budgetary slack.
- Organizational culture moderates the participative budgetary relationship to budgetary slack.

## METHODS OF RESEARCH

The population in this research is structural officer as Regional Finance Manager (PPKD) and Activity Technical Activity Officer (PPTK) at SKPD of Local Government of Palangka Raya City amounting to 792 people, with Slovin formula obtained 265 samples. Technique of sampling using technique of proportionate stratified random sampling.

The data analysis technique used in this research is interaction moderation regression analysis to test all hypothesis, with the help of computer program SPSS 24.0. The use of the regression must meet the requirements of passing the classical assumption test and the feasibility test of the model (goodness of fit).

Data analysis model and hypothesis test in this research is simple linear regression analysis model and regression analysis model of absolute difference test. Systematically obtained regression equation:

$$Y = a + b_1X_1 + e \quad (1)$$

$$Y = a + b_2ZX_1 + b_3ZX_2 + b_4\text{Abs}(ZX_1 - ZX_2) + e \quad (2)$$

Where: Y: Budgetary slack; X<sub>1</sub>: Budget Participation; X<sub>2</sub>: Dayak Culture; ZX<sub>1</sub>, ZX<sub>2</sub>: standardized value of X<sub>1</sub> and X<sub>2</sub>; Abs(ZX<sub>1</sub> – ZX<sub>2</sub>): absolute difference of ZX<sub>1</sub> – ZX<sub>2</sub>; a: Constanta; b<sub>1</sub>- b<sub>4</sub>: Regression Coefficient; e: error.

## RESULTS AND DISCUSSION

*Characteristics of Respondent.* Respondents' data show that most respondents (55%) are between 46-55 years old. Meanwhile, when viewed from the gender, as many as 62% of respondents are men. The education of respondents is also dominated by undergraduate educated respondents (S1) as much as 55%. Related work experience, as many as 62% of respondents have work experience in the field of budget for 4 (four) years.

*Descriptive Analysis.* Descriptive analysis of the research variables, as Table 1 follows:

Table 1 – Output Descriptive Analysis

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Y	100	12,99	28,43	18,6404	2,90595
X1	100	7,79	29,70	20,5725	3,42589
X2	100	20,43	36,57	27,2307	4,02058

Based on Table 1, it can be explained that: (1) the average of respondents' assessment on budget participation is 18.64% is good; (2) The average respondent's assessment on Dayak culture is 20.57% is good; (3) The average rating of respondents in the budgetary slack is 27.23% is good.

*Regression Analysis and Hypotheses Testing.* The result of the regression analysis according to the framework and the research hypothesis presented in Table 2.

Table 2 – Output of Regression Analysis

Model	Variable	Unstandardized Coefficients	Standardized Coefficients	t-value	Significant Value
Regression Model 1	Constanta	1,858		9,590	0,000
	X <sub>1</sub>	0,378	0,658	8,507	0,000
Regression Model 2	Constanta	3,399		75,738	0,000
	ZX1	0,266	0,653	9,065	0,000
	ZX2	0,156	0,383	5,447	0,000
	Abs(ZX1 – ZX2)	0,088	0,179	2,431	0,017
Regression Model 1, Value of R <sup>2</sup> = 0,432 ; F-test = 72,376 (Sig. 0,000)					
Regression Model 2, Value of R <sup>2</sup> = 0,575 ; F-test = 41,956 (Sig. 0,000)					

Based on Table 2, the regression equation is as follows:

$$Y = 1,858 + 0,378 X_1 + e \quad (4)$$

$$Y = 3,399 + 0,266 ZX_1 + 0,156 ZX_2 + 0,088 \text{ Abs}(ZX_1 - ZX_2) + e \quad (5)$$

Where: Y: Budgetary slack;  $X_1$ : Budget Participation;  $X_2$ : Dayak Culture;  $ZX_1$ ,  $ZX_2$ : standardized value of  $X_1$  and  $X_2$ ;  $\text{Abs}(ZX_1 - ZX_2)$ : absolute difference  $ZX_1 - ZX_2$ ; e: error.

Regression model 1 has R<sup>2</sup> value of 0.432 means that 43.2% of budgetary slack variation can be explained by the variation of budget participation, while the remaining 56.8% is influenced by other variables outside the model. The value of F arithmetic of 72.376 with the value of F (sig) of  $0.000 \leq 0.05$  means that the regression model formed eligible model feasibility.

Regression model 2 has a value of R<sup>2</sup> of 0.575, meaning that 57.5% of budgetary slack variation can be explained by the variation of budget participation, Dayak culture and the interaction between budget participation and Dayak culture, while the remaining 42.5% is influenced by other variables outside the model. The value of F arithmetic of 41.956 with the value of F (sig) of  $0.000 \leq 0.05$  means that the regression model formed eligible model feasibility.

Formulation of hypothesis 1 in this research is budget participation ( $X_1$ ) have positive effect on budgetary slack (Y). From the regression analysis results in Table 2 shows that the value of beta coefficient for budget participation in regression model 1 of 0.378 with p-value of  $0.000 / 2 \leq 0.05$  indicates that budget participation has a positive effect on budgetary slack so that the first hypothesis is accepted.

The hypothesis 2 formula in this research is Dayak culture to moderate the influence of budget participation on budgetary slack. Hypothesis 2 test result presented in Table 2 shows that beta coefficient value for the interaction between budget participation and Dayak culture in regression model 2 is 0,088 with p-value equal to  $0,017 \leq 0,05$ , indicating interaction of budget participation and culture of dayak influence on budgetary slack . The value of standardized coefficients of regression model 1 for budget participation of 0.658 decreased in regression model 2 to 0.653. The results of this study indicate that the Dayak cultural variables are able to weaken the positive influence of budgetary participation on budgetary slack, so that the second hypothesis is accepted.

*Regression Analysis and Hypotheses Testing.* The results of this study show empirical evidence that budget participation has a positive effect on budgetary slack. Employee participation in budgeting will increase the gap, so increasing employee participation in budgeting can increase the lagging. Employee participation in the budget will make the employees freely in determining what will be achieved for their own interests, not the interests of the organization or institution. It can be concluded that the higher the participation given to subordinates, there will be a tendency that the budget they arrange can be achieved by loosening the budget which means it can create a slack. On the other hand it can create the impression that agency performance will look good if the budget has been met.

*Dayak Culture that Moderate the Effect of Budgetary Participation to Budgetary Slack.* The results of this study show empirical evidence that Dayak culture has a positive effect on budgetary budget slack. The existence of Dayak culture will affect the relationship of budget participation to budgetary slack. Where the main points of Dayak culture are Isen Mulang (abstinence surrender), Mamut Menteng (brave), and Huma Betang philosophy (togetherness in difference), these points are increasingly increasing participation in the preparation of the budget. In addition, the values of harmony and kinship contained in Dayak culture also strengthen the attendance of participants in budgeting, in which a budget is proposed that avoids the existence of slack. Because the existence of Mamut Menteng philosophy in Dayak culture which means is valiantly brave in attitude and in deed (always fair) will minimize the occurrence of slack in the process of making the budget.

## CONCLUSION

Based on the results of research on the ability of the Dayak culture to moderate the influence of budgetary participation on budgetary slack, it can be concluded that budgetary participation proved to have a positive effect on budgetary slack. Middle and lower level

managers (heads of sub-offices and staff employees) are budgetary slack to avoid the risk of environmental uncertainty and improve the performance appraisal of their agencies.

In addition, Dayak culture has weakened the positive influence of budgetary participation on budgetary slack. Dayak culture, especially local culture that is Isen Mulang culture, Mamut Menteng, and philosophy of Huma Betang increasingly participate in budget preparation. The value of harmony and kinship embodied in Dayak culture also strengthens the attendance of participants in budgeting and with the Mamut Menteng philosophy which means to be courageous and courageous in attitude and in action (always fair) will minimize the occurrence of slack in the process of making the budget.

There are several things that are recommended as follow-up to the results of the research, namely: (1) involving participants directly related to the use of the budget and the independent party or budget supervisor in budget discussions, so as to create real participation instead of false participation; (2) further research is expected to separate budget participation into pseudo participation and active participation so that further analyzed Dayak cultural moderation on the relationship between budgetary participation with budgetary slack.

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## **IMPACT OF ENTERPRISE RESOURCE PLANNING SYSTEMS ON THE ACCOUNTING INFORMATION RELEVANCE AND FIRM PERFORMANCE**

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### **ABSTRACT**

ERP (Enterprise Resource Planning) system is considered to provide benefits for the company. ERP systems provide useful accounting information for decision making. This study aims to determine the impact of ERP systems on the relevance of accounting information and firm performance on companies that adopt ERP and companies that do not adopt ERP. In this study the relevance of accounting information is tested with three variables of predictive value, timeliness and feedback value. The results of this analysis are obtained from questionnaires that have been distributed to 75 companies, consisting of 40 companies that adopt ERP system and 35 companies that do not adoption of ERP system, the samples obtained by each of only 30 companies so that there are 60 companies studied. The hypothesis in this study will be tested using Mann Whitney nonparametric analysis with SPSS to look for differences in the impact of the two types of firms. This analysis proves that the ERP system affects the relevance of accounting information consisting of three variables and firm performance on companies that adopt ERP systems.

### **KEY WORDS**

Enterprise resource planning, value relevance, firm, performance.

Technology has experienced a very fast development, everything will be easier with the help of technology. ERP system is one of the many technologies that facilitate decision-making and help the company's performance. This system helps companies in managing internal and external information into quality accounting information for decision making. Implementation of ERP within a company requires considerable configuration, but without reprogramming and the technology used should be in accordance with the requirements (Locke and Lowe, 2007).

The quality of information is a very important part for companies that are useful for decision making. The development of technology has created a competitive market competition so that companies compete to find ways to be able to process information quickly and effectively. HassabElnaby et al. in Attayah and Ibrahim (2014) state that competitive global business seeks to survive in competition by using information systems. The use of ERP systems is very useful for improving decision-making and companies keeps important information. Quality accounting information is influenced by strategies in obtaining information and information processing, this can improve the performance of the company (Ferdows and Meyer, 1990).

ERP system is not perfect, this system also fails but many companies do not care about that, they keep investing in ERP system (Ehie and Madsen, 2005). Companies adopt ERP systems hoping to get financial and non-financial benefits.

Galy and Mary (2014) argue that the ERP system requires the coordination of technology within the company, so that the implementation of the ERP system in the company will be successful and the company gets great benefits. Implementation of the ERP system in the company is quite helpful, so the financial statements are well controlled and will attract investors to invest in the company.

Implementation of ERP will initially require considerable cost, this is what makes some companies will think repeatedly in the implementation of ERP. But in the long run has a big enough profit than the cost incurred during implementation. Company spending will be trimmed with the implementation of the ERP system.

Implementation of ERP is a broad process and costly enough, because ERP systems manage complex tasks. This system involves stakeholders such as managers, operational staff and knowledge that is widespread throughout implementation (Sevenpri, 2012).

Research conducted Behesthti and Behesthti (2010) ERP expenditures include the purchase of hardware and software, networking and consulting fees. The bigger the company, the cost needed for the implementation of ERP will be more and more. Implementation of ERP systems takes a long time, cost and trained resources so that ERP implementation poses a risk to the company (Hitt and Brynjolfsson, 1996).

This study examines the differences between companies that have adopted ERP and companies that do not adopt ERP in terms of value relevance include predictive value, timelines, feedback values and firm performance.

## LITERATURE REVIEW

ERP is a software technology that helps organizations manage their business effectively and efficiently (Nah and Lau in Attayah and Ibrahim, 2014). This system helps the company's performance time and cost less. Implementation of early ERP requires training and long time, but the company will benefit so much.

Innovative technologies according to Drucker and Huber in Hunton, et al (2003) are technologies that can help organizational business processes, such as:

- Information that is more accurate, effective, efficient and provides complete external and internal information;
- Identify problems and opportunities accurately and effectively;
- The human resources needed are less to manage information;
- Organizations involved in decision-making are fewer;
- Decision making quickly, so the problem more quickly overcome.

ERP is a technological innovation to facilitate organizations in overcoming problems, because ERP is faster in decision making and has low cost because employees and organizations a bit. Research by Gatticker and Goodhue (2005) suggests that ERP systems have a significant impact if products used for production and distribution are optimized.

ERP is a useful system for integrating information systems that are useful for business infrastructure. Most systems can not measure company performance but ERP can provide performance measurement, this is very influential on decision making (Shen, et al., 2015).

Lorca and Andrés in Kocaoglu and Zafer (2015) stated that the ERP system is a standard system can overcome all the parameters needed in a structured manner. ERP is also a very innovative system and can complement other enterprise systems, ERP also has the ability to provide information on management. Dechow and Mouritsen (2005) identified in his research that the output of the ERP will vary according to the purpose of the user.

The relevance value is related to decision making in the opinion of Kieso (2011) that accounting information will be more useful for decision making, but they also have to consider the time and cost. Good decision-making must consider the past and be able to predict the future. In research conducted Attayah and Ibrahim (2014) argue that relevant accounting information is useful information for decision making.

The financial performance of firms adopting ERP according to Eliashberg and Chatterjee in Hunton, et al (2003) did not increase but differed from those that did not adopt ERP. The goal of ERP is to integrate technology, useful resources to meet customer demand and improve operational performance of the company. The benefits of ERP system adoption according to Chand et al. (2005) reduces operational costs and can increase corporate profits.

Wheatly in Alcivar (2016) describes problems that may affect the failure of ERP implementation, namely:

- Training employees about failed systems;
- Impact training for the company especially the cost issue;
- Hard negotiations between companies and ERP training vendors;

- Implementation is done quickly so that the training takes place briefly;
- Employees have no knowledge of ERP system concept.

The success of the ERP system is influenced by the knowledge of the user through the process of understanding the system and the application of enterprise systems, so this will lead to system integration with management strategies so that system usage will be more optimal (Albers and Trinidad, 2006).

Research May et al. (2013) ERP systems have a significant impact on improving the products of manufacturing companies because ERP systems see how products are manufactured and optimized resources. Product improvement is influenced by three factors:

- The manager must ensure that the system used supports the development of the product;
- The manager must also ensure that the adopted system supports the growth of the product;
- The manager should ensure an opportunity to identify the product.

Environmental uncertainty makes managers difficulty making decisions, because the uncertain environment of information needed will tend to decrease. Reduced information due to coordination of activities (Madapusi and D'Souza, 2012).

Implementation of an optimal ERP system when its use is maximized, according to Scott and Vessey (2000) maximal system influenced by several factors as follows:

- Users should make sure that the ERP system is easy to use;
- Managers need to promote ERP system in the work environment;
- Users should also ensure that the ERP system is a flexible system;
- User ensures information can be used on time;
- Managers should ensure continuous use of ERP systems.

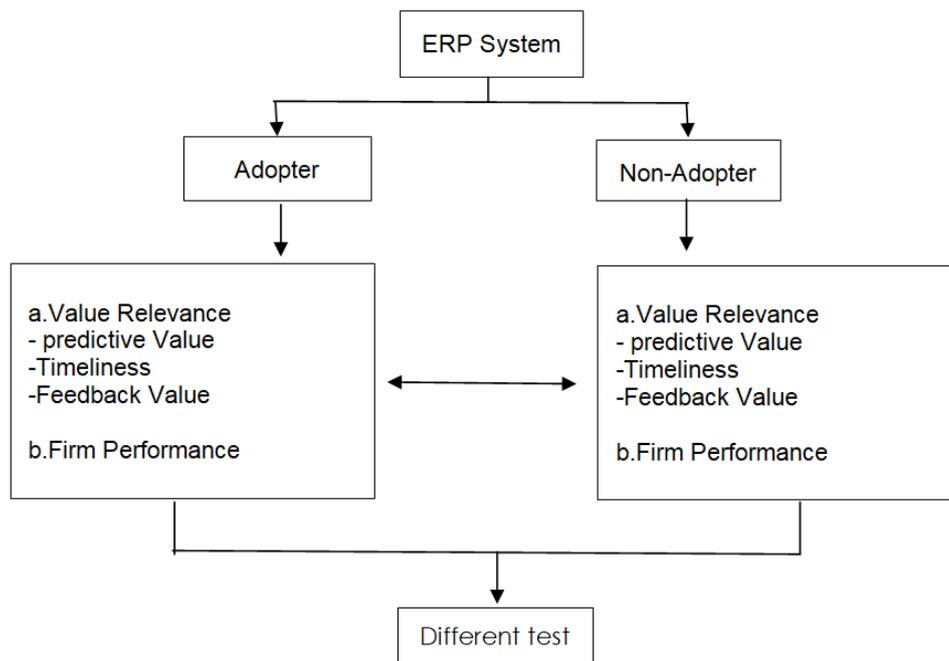


Figure 1 – Conceptual Framework

Hypothesis used in this research are:

H1: There is a significant impact difference between adoption companies and non-adoption ERP companies in the relevance of accounting information due to the use of ERP systems.

*The effect of ERP on the relevance of accounting information.* The relevance of a company's accounting information is one of the benchmarks considered by potential investors and used for decision making, so the implementation of the ERP system impacts

for the company. Attayah and Ibrahim's research (2014) states that the ERP system has a great influence on the relevance of corporate accounting information. The ERP system allows the company to have a better future because it can provide predictive value forecasting so managers can make rational decisions. Short processing of information so that data processing more and affect the relevance of accounting information.

H2: There are significant differences in impact between adoption firms and non-adopted ERP companies in company performance due to the use of ERP systems.

*Influence of ERP on company performance.* Implementation of ERP system impact on company performance in accordance with research conducted by Hunton, et al. (2003), the company adopted an increase in company performance and this affects the profits derived by the company. This system helps the processing of information briefly so that employees will get plenty of time to improve creativity.

## METHODS OF RESEARCH

This study uses a sample of 30 companies in each criteria of companies that adopt ERP and companies that do not adopt ERP. Data collection by sending questionnaires by e-mail to each company. This study gives samples to companies with ERP adoption of 40 questionnaires and the questionnaire was answered as many as 30 companies. Distribution of questionnaires to companies that did not adopt ERP as many as 35 companies and answered as many as 30 questionnaires.

Hypotheses tested by questionnaire consisting of questions related to each variable that is predictive value variables as many as four questions, timeliness as many as six questions, feedback value as many as five questions and the last variable is the firm performance as many as 10 questions.

To test the hypothesis of this study divide the two samples of companies adopting ERP and companies that do not adopt ERP. Furthermore this study will examine the differences of ERP adoption firms and companies that did not adopt ERP by performing a nonparametric test of Mann Whitney on SPSS.

## RESULTS AND DISCUSSION

The effect of the use of ERP systems on the relevance of accounting information and company performance, descriptive statistics consist of mean and standard deviation for adopting firms and non-adopting firms.

Table 1 – Descriptive Statistics

Descriptive statistics for all item					
No.	Item	Adopter		Non Adopter	
		Mean	SD	Mean	SD
1.	Predictive Item Average	18.56	1.07	11.70	2.21
2.	Timeliness Item Average	25.56	2.37	18.53	4.26
3.	Feedback Item Average	19.70	2.23	16.07	1.89
4.	Firm Performance Item Average	40.36	0.71	31.67	5.25
	Total of all item	26.04	1.60	19.50	3.40

Source : Data processed, 2017.

The table above shows the mean mean resulting from the company adoption of ERP is 26.04 while companies that do not adopt ERP is 19.50. From these results indicate that the mean mean of firms that adopt ERP is greater than the mean mean of firms that do not adopt ERP. This proves that with the implementation of ERP system improves the ability to predict the past, predict the future, financial reporting can be done with a short time and improve company performance.

Implementation of ERP system influence to improvement of company performance supported by research conducted by Chou et al. (2017) using the ERP system, employees

can shorten the time in work so as to share knowledge with other employees so that the knowledge of employees will increase and increase motivation to work.

Influence of ERP system to value of relevance of accounting information and company performance according to research conducted by Matende and Patrick (2013) that is ERP system is designed to be able to perform information process in determining strategy, management analysis and function in decision making.

Table 2 – t-test

t-test table					
No.	Description		Mean	S.D	P-value
1.	Predictive Value	Adopter	18.56	1.07	0.00
		Non-Adopter	11.70	2.21	
2.	Timeliness	Adopter	25.56	2.37	0.00
		Non-Adopter	18.53	4.26	
3.	Feedback Value	Adopter	19.70	2.23	0.00
		Non-Adopter	16.07	1.89	
4.	Firm Performance	Adopter	40.36	3.90	0.00
		Non-Adopter	31.67	5.25	

Source : Data processed, 2017.

The mean of predictive value indicates that firm adoption is bigger compared to firms that do not adopt ERP and p-value 0,00 this shows that p-value is smaller than probability level 0.05 so in other words H1 accepted that there is difference between adopted company and companies that are not adopted are associated with predictive value. In this study shows the ERP system capable of presenting past information and presenting future information.

Kanellou and Charalambos (2013) research states that the ERP system affects users of financial statements one of them investors, investors prefer financial statements that can predict future information and can present the information of the past. Galbraith (2002) the use of ERP will effectively have benefits associated with the uncertainty of activity costs, this will affect the quality of information for managers.

In Table II the mean of timeliness indicates greater value than the adoption company that is 25.56 than the non adoption ERP company of 18.53 p-value of timeliness also shows the value below the probability level that is 0.00 so that the result of H2 is accepted. This shows that the implementation of ERP system has significant effect on the timeliness in financial reporting so that the information generated does not expire.

This is in accordance with the research of Trigo et al. (2014) that with the implementation of ERP system able to answer the company's concern in presenting the financial statements on time, so that financial statements can provide fast information, users of financial statements can also access the financial statements udah so easy in making decisions and decisions taken can reflect the circumstances indeed.

The processing of financial statements briefly can reduce the cost as said in the study Elragal and Moutaz (2012) without using ERP system financial report processing will be done repeatedly so it requires a considerable cost while with the ERP system financial statements can be processed with a short time so that the cost issued can be reduced. Stefanou (2002) states that the ERP system is a combination of business applications and procedures into a single database, the system also provides real-time information to the company.

The results shown in table II rmean from the feedback value of companies that adopted the larger ERP system 3.63 ie 19.70 compared with companies that did not adopt the ERP and the table shows the value of p-value 0.00 <0.05 so that H3 accepted ie there is a significant difference between adopted companies and companies that do not adopt ERP. Companies that adopt ERP have the ability to fix errors that occurred in the past.

O'Brien (2015) states that ERP systems can improve the quality of information and can correct errors that occur but this does not happen if the human resources or employees are less reliable in operating or have less knowledge of the ERP system.

The result of the firm performance receiving H4 indicates that there is a significant difference between companies adopting ERP systems and companies that do not adopt this

system because the mean of the companies adopted by ERP is much larger than those that do not adopt that is 40.36 and p-value shows the result 0.00 in other words smaller than the probability of 0.05.

Research conducted in Malaysia and Indonesia by Fernandez, et al. (2017) shows that by applying ERP system then the performance of the company will improve the effectiveness and efficiency of company performance. So this research encourages public sector to apply ERP system to get better result. Research conducted by Cotteleer and Bendoly (2006) states that the ERP system has a significant effect on company performance which includes the availability of information, quality information, inventory management and on time delivery.

## CONCLUSION

This study concludes that there are significant differences between companies that adopt ERP systems and do not adopt ERP systems associated with relevant values consisting of predictive value, timeliness, and feedback value as well as company performance. ERP systems can present the information of the past as well as the future so that the company will have better information from other companies and can make better and more rational company decisions.

ERP system can process financial statements with a short so that companies can take decisions quickly this can minimize costs and can provide the right information, ERP system also affects the value of corporate feedback so that companies can correct mistakes of the past and can make better decisions so it will improve company performance as well. Further research is expected to obtain more data and add some variables that affect the implementation of ERP.

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## **EFFECT OF PROFITABILITY, LEVERAGE TOWARD DIVIDEND POLICY AND FIRM VALUE**

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### **ABSTRACT**

This study was aimed to describe the relationship between profitability and leverage toward dividend policy and firm value. This study was conducted toward 15 banking firms registered in Indonesia Stock Exchange with data analysis using Partial Least Square. Result of this study showed that profitability has significant effect toward dividend policy; however, on the other hand, profitability has insignificant and negative effect toward firm value. Concerning leverage, this study showed that leverage in banking firms has significant effect toward dividend policy but it shows insignificant and negative effect toward firm value.

### **KEY WORDS**

Profitability, leverage, dividend policy, firm value.

Rapid change in global economy condition has affects the economy of most countries, particularly Indonesia. Global event experienced by United States of America in 2008 has influence the capital market in Indonesia. During global crises in 2008 has shown lower performance of Indonesia Composite Index (IHSG) since August 2008 ([www.kompasiana.com](http://www.kompasiana.com)). Lower performance of Indonesia Composite Index occurs because several foreign investors has withdrawn their investment in Indonesian firms. These capital withdrawals creates capital change within the firm and would affect firm's performance. Strict business competition in Indonesia was also triggered by the large number of firms operated in Indonesia. It can be seen by 532 registered *go public* firms in Indonesia Stock Exchange (BEI/IDX) in 2016. These firms were listed in 9 sectors, such as sector (1) agriculture, (2) mining, (3) basis industry and chemical, (4) various industry, (5) household industry (manufacture), (6) *real estate* properties and building construction, (7) utility infrastructure and transportation, (8) finance and (9) trade, service and investment. This condition demand clever business actors to develop their business strategy and policies. Precise and suitable business strategy and policies was aimed to improve firms' performance so that it can survive and compete in domestic and international market.

Good firm's performance would identical with stable and improved finance performance, according to Margaretha (2014) finance performance is one way to evaluate firm's efficiency and effectiveness in producing profit and certain cash position. Firms with higher profit were assumed by investors as in a good condition (Winarto, 2015). Improved finance performance was also seen as the sign about firm's profitability. Profitability is the ability of firms in producing profit through all of its activities and its resources management within certain period of time. Firm's activities and management can take forms in sales, asset utilization, and capital utilization (Hery, 2016).

Higher profitability would affect higher firm's return and thus higher dividend payment (Abreu and Gulamhussen, 2013). This statement support the Signalling theory by Bhattacharya (1979), when profit obtained by firm was on target or even above the target, it means that those revenues would facilitate the firm in paying its dividend toward its shareholders. Firm that paid higher dividend would attract other investors to invest in the

firm. Studies concerning Profitability and Dividend Policies were studies conducted by Abreu and Gulamhussen (2013), Lestari (2012), Javed (2012), Ameer (2008) and Hamid et al., (2016) which suggest that firm's profitability has positive and significant effect toward dividend policies.

Other than investment from investors, other firm's resources is *leverage*, according to Brigham and Houston (2010) firms would focus more on financing by using debt. *Go public* firms would already use debt as its capital supplement to expand their business for their future survival. Every year, firm's shareholder (investors) expects profit sharing given toward shareholder. *Go public* firm's profit sharing would be related to a policy known as dividend policy. This dividend policy (Horne and Wachowicz, 2007) was an accurate profit allocation arrangement for the profit obtained by the firm, whether it would be divided in the form of dividend or would it be retained for firm's survival in the future. In this study, author would focus on the profitability and *leverage* variables in influencing dividend policy, because both variables has direct relationship with firm's finance condition. Good firm value was also another objective in establishing a firm.

Firm value was also assumed as the measure in assessing performance success of a firm. Firm value according to Gitman (2006) was *the actual amount per share of common stock that would be received if all the firm's assets were sold for their market value*. According to Miller Modigliani in Margaretha (2014), he suggest that dividend policy was not relevant with firm value, this was because firm value was not determined by high or low dividend payment. Several previous paper from Siboni and Pourali (2015), Winarto (2015), and Kim et al. (2016) suggest that suitable and appropriate dividend policies would show positive effect toward firm value, and thus author was attracted to study about research gap concerning effect of dividend policy toward firm value. Study by Winarto (2015) suggests that profitability has positive and significant effect toward firm value. Study by Gupta et al. (2016) suggest that finance *leverage* did not related with firm value while study by Gill and Obradovich (2012) suggest that *leverage* has positive effect toward firm value. Based on the differences in previous study's results, author would like to study the effect of profitability and *leverage* toward dividend policies and firm value.

The existence of firms operated in Indonesia was highly various and they lies in different sectors, such as firms in banking sector. Banking sector in Indonesia was assumed to be the most important element in the economy. Bank was highly related with the life of the people because banking sector was involved in financing commercial firms and provide finance services. Banking sector is the service institution which collect funds from the people in the form of deposits and than redistribute it to the people in the form of credit/loan. Therefore, banking sector was seriously in need of lots of funds. Funds from the third party such as those in the form of deposits would be recorded as *liability*, and higher liability in banking firms would enable business fluency and improved profit growth because credit distribution was liable to interest rate by the bank which then received and recorded as bank's income (profit). This describe that banking firms, different than other type of firms, has high *leverage* level and enable higher profit in the future. However, according to Hery (2016) which suggest that high *leverage* level would disrupt growth and profit obtained because it use more debt with higher risk. This difference in opinion has become another attraction for further study in banking sectors firms.

## LITERATURE REVIEW

Firm's profitability is the important factor within the firm because it shows profit obtained by firm's management (Hery, 2016). Generally speaking, a firm can be said success if it was able to create profit from higher revenue than the cost for its business activities, Abreu and Gulamhussen (2013), Lestari (2012) and Asad and Yousaf (2014). Higher profitability showed future firm's prospect was very good and thus investors would assumed this as a positive sign to invest in it, Javed (2012). Investors expect that with higher profitability, it has higher dividend. This showed that,

H<sub>1</sub>: Profitability has significant effect toward dividend policy.

Future prospect of firm value would also increase along with higher profitability level, Winarto (2015). This condition showed that higher profitability firms has good firm performance and creating positive perception for investors and thus increasing their firm's stock value in the capital market. Increasing stock market price would increase firm value. This showed that,

H<sub>2</sub>: Profitability has significant effect toward firm value.

*Leverage* is the firm's ability to pay debt in which this debt would be use by firm as capital supplement, Asad and Yousaf (2014). This debt would cause fix load in the form of interest rate that should be paid by the firm. Debt received by the firm was the obligation that should be paid by the firm, Asif et al., (2011). Debt proportion in the firm was related and influence dividend policies, whereas firm with higher debt would help and support the firm in running its business activities but also has higher risk, Ameer (2008). Higher debt would decrease firm's profit because firm was force to used its profit in paying its debt than paying dividend, Hamid et al. (2016). This condition has become firm's consideration to determine the appropriate proportion related to debt and dividend policy, because debt has negative relationship toward dividend policy.

H<sub>3</sub>: *Leverage* has significant effect toward dividend policy.

*Leverage* or the ability of the firm to pay its debt would not only affect the dividend policy, but also affect firm value, Winarto (2015). If the proportion of firm's debt was high then the risk bear by the firm (related with firm's ability) would also high and it would affect public perception regarding firm value, Gupta et al., (2016) and Gill and Obradovich (2012). This showed that,

H<sub>4</sub>: *Leverage* has significant effect toward firm value.

Subsequent focus in this study was to test the effect of dividend policy toward firm value. Dividend policy is the decision concerning whether profit obtained by the firm would be divided toward shareholders or it would be used as retained profit to finance future survival of the firm, Siboni and Pourali (2015). Dividend payment is the allocation of firm's profit toward shareholders, Kim et al. (2016). Decision to pay dividend toward investors with higher proportion means that firm retain lower profit and vice versa, if it give lower proportion of dividend then it means the firm retain higher profit, Winarto (2015). This condition would lower people's perception and thus lowering the assessment for the firm.

H<sub>5</sub>: Dividend policy has significant effect toward firm value.

## METHODS OF RESEARCH

This study was an *explanatory research*. Explanatory research is research or study aimed to describe the stands of the studied variables and also the correlation of one variable toward another (Sugiyono, 2007). This study would give causal explanation or causal relationship between profitability, *leverage*, dividend policy and firm value variables through hypotheses testing. Author conduct study in registered banking sector in Indonesia Stock Exchange (BEI/IDX) 2013-2016 period, with data taken from the Corner of Indonesia Stock Exchange (PojoK Bursa Efek Indonesia) or through Indonesia Stock Exchange (IDX). The reason behind site selection was because the necessary data was already available in the Corner of Indonesia Stock Exchange and can be accessed through [www.idx.co.id](http://www.idx.co.id). This study used sampling determination technique with *purposive sampling* or *judgment sampling*. *Purposive sampling* describe the selected samples based on its assessment toward several characteristics of sample's members adjusted with author's intention (Kuncoro, 2013) to obtain representative sample in accordance with predetermined criteria. In *purposive sampling* technique, author used considerations by creating boundaries or certain criteria based on the subject's features. Several criteria used to select study sample were:

- Banking firms was registered continuously in Indonesia Stock Exchange during study period of 2013-2016. Selecting 2013-2016 periods with 4 years worth of data was considered to be sufficient by the author. Selecting longer term data would lessen the number of firm because several firms cannot continuously registered in IDX for long period of time.

- Banking firms that always publish their full *annual report* and that has been audited during study period of 2013-2016.
- Banking firms stated “healthy” in 2016, in which this decision was based on the letter of Bank Indonesia (BI) No 6/23/DNNP of 2004.
- Banking firms that has paid dividend at least once during the study period of 2013-2016.

Based on the population of 44 banking firms listed in Indonesia Stock Exchange for four years, we obtain 15 firms that meet the requirement to be used as samples in this study. Thus, number of sample based on the predetermined criteria consists of 60 observation data (15 firms x 4 year). And then, to measure profitability in this study we use 3 profitability ratios such as:

*Return on Assets (ROA):*

$$ROA = \frac{\text{earning after interest and taxes}}{\text{total assets}} \times 100\%$$

*Return on Equity (ROE):*

$$ROE = \frac{\text{Earning after Interest and Tax}}{\text{Total Equity}} \times 100\%$$

*Earnings per Share (EPS):*

$$EPS = \frac{\text{Common stock profit}}{\text{circulated common stock}}$$

*Leverage* variable showed the ability of firm in paying the debt of a firm. This variable was measured with two indicators consist of:

*Debt to Asset Ratio:*

$$\text{Debt to asset ratio (DAR)} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

*Debt to Equity Ratio:*

$$DER = \frac{\text{Total Liabilities}}{\text{Total Equity}}$$

Dividend policy was related with how much cash that should be paid toward shareholders. Optimum firm’s dividend policy was the policy that creates balance between dividend with retained profit for the future growth and development of the firm. Dividend policy variable can be measured with 2 observed ratio:

*Dividend Payout Ratio (DPR):*

$$DPR = \frac{\text{DividendPerShare (DPS)}}{\text{Earning perShare (EPS)}} \times 100\%$$

*Dividend per Share (DPS):*

$$DPS = \frac{\text{Total dividends paid}}{\text{Number of circulated shares}}$$

Firm value is the measurement of management success in managing firm's operational activities so that it can be better and attract new shareholders or new investors. Below presented 2 indicators selected to measure firm value in this study:

*Price Earnings Ratio (PER):*

$$PER = \frac{\text{Price per share}}{\text{Earning per share}}$$

*Price to Book Value (PBV):*

$$PBV = \frac{\text{Share price}}{\text{Book Value of Share}}$$

Data analysis technique in this study was using *Partial Least Square (PLS)* method with *smart PLS software*. Data analysis technique with PLS was considered to be suitable because variables relationship model was highly complex with small number of data sample. Based on the relationship developed in this study, concept model can be described in Figure 1 below:

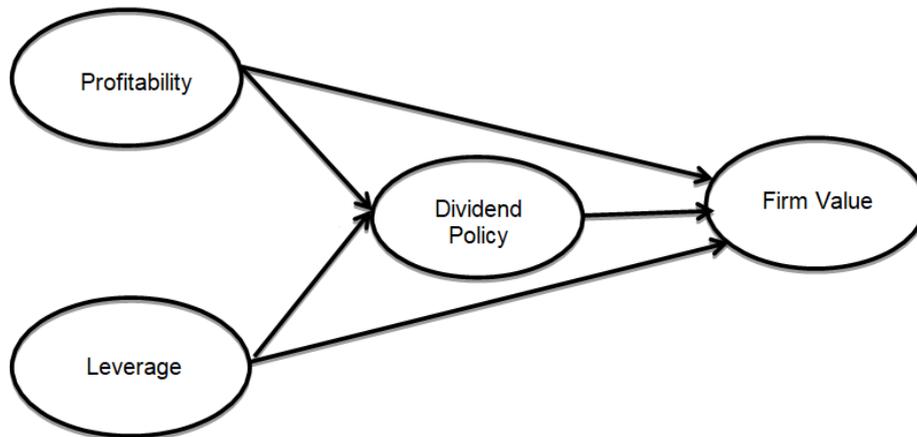


Figure 1 – Conceptual Model

### RESULTS AND DISCUSSION

Below presented results summary of *Partial Least Square (PLS)* technique initiated with outer model analysis:

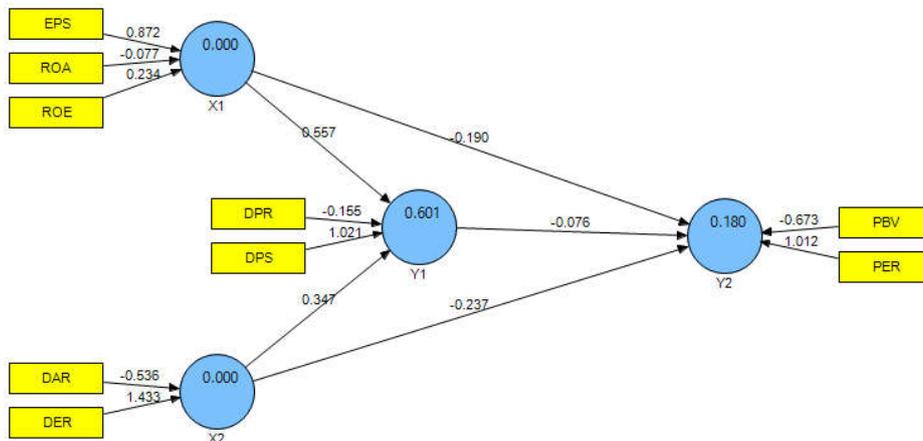


Figure 2 – PLS Outer Model

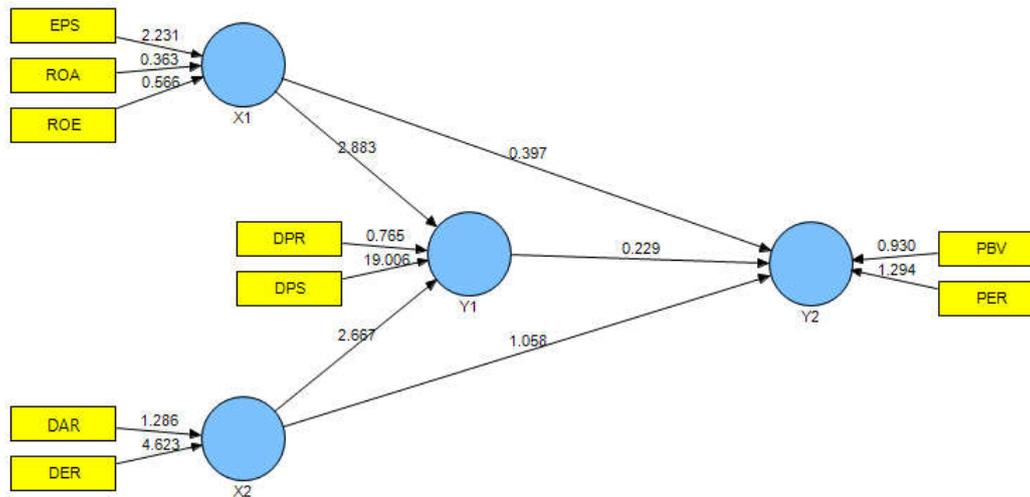


Figure 3 – PLS Inner Model

In PLS, statistical testing over each hypothesized relationship was done through simulation. In this matter, *bootstrap* method was done toward samples. *Bootstrap* testing was also meant to minimize abnormality problem for the data. Study results by *bootstrapping* from PLS analysis were given below:

Table 1 – Path Coefficient (Mean, STDEV, T-Values)

Variables Relationship	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STERR)
Profitability -> Dividend Policy	0.5566	0.1930	2.8833
Profitability -> Firm Value	-0.1896	0.4775	0.3971
Leverage ->Dividend Policy	0.3468	0.1301	2.6666
Leverage -> Firm Value	-0.2373	0.2243	1.0582
Dividend Policy -> Firm Value	-0.0764	0.3330	0.2293

Source: PLS data processing, 2018.

Based on Table 1, we obtained results as follows:

$$Y_1 = 0,5566X_1 + 0,3468X_2$$

$$Y_2 = -0,1896 X_1 - 0,2373X_2 - 0,0764Y_1$$

**Hypothesis Testing:**

The first result of hypothesis testing showed that relationship between Profitability (X1) and Dividend Policy (Y1) shows path coefficient value of 0,5566 with t value of 2,8833. This value was higher than t table (1,960). This means that Profitability has positive and significant effect toward Dividend Policy and thus in accordance with the first hypothesis which suggest that Profitability has significant effect toward Dividend Policy. This means Hypothesis 1 is accepted.

Second result of hypothesis testing showed that relationship between Profitability (X1) and Firm Value (Y2) shows path coefficient value of -0,1896 with t value of 0,3971. This value was smaller than t table (1,960). It means that Profitability has negative and insignificant effect toward Firm Value. This is inappropriate with the second hypothesis which suggests that Profitability has significant effect toward Firm Value. This means Hypothesis 2 is rejected.

Third result of hypothesis testing showed that relationship between *Leverage* (X2) and Dividend Policy (Y1) shows path coefficient value of 0,3468 with t value of 2,6666. This value was higher than t table (1,960). It means that *Leverage* has positive and significant effect toward Dividend Policy, in accordance with the hypothesis which suggests that *Leverage* has significant effect toward Dividend Policy. This means Hypothesis 3 is accepted.

Fourth result of hypothesis testing showed that relationship between *Leverage* (X2) and Firm Value (Y2) shows path coefficient value of -0,2373 with t value of 1,0582. This value was smaller than t table (1,960). It means that *Leverage* has negative and insignificant effect toward Firm Value. This is inappropriate with the fourth hypothesis which suggests that *Leverage* has significant effect toward Firm Value. This means Hypothesis 4 is rejected.

Fifth result of hypothesis testing showed that relationship between Dividend Policy (Y1) and Firm Value (Y2) shows path coefficient value of -0,0764 with t value of 0,2293. This value was smaller than t table (1,960). It means that Dividend Policy has negative and insignificant effect toward Firm Value. This is inappropriate with the fifth hypothesis which suggests that Dividend Policy has significant effect toward Firm Value. It means Hypothesis 5 is rejected.

Table 2 – Indirect Effect

Variables	Direct Coefficient		Error standard		Indirect Coeff.	se Gab	t calculated
X1, Y1, Y2	0.5566	-0.0764	0.1930	0.3330	-0.043	0.197	-0.216
X2, Y1, Y2	0.3468	-0.0764	0.1301	0.3330	-0.026	0.124	-0.214

Source: Processed data, 2018.

Based on Table 2 above, we can see the indirect effect were as follows: Results showed that relationship between Profitability (X1) and Firm Value (Y2) through Dividend Policy (Y1) shows indirect path coefficient value of 0,043 with t value of 0,216. This value was smaller than t table (1,960). This result shows that Dividend Policy has insignificant effect in mediating Profitability toward Firm Value.

Result also showed that relationship between *Leverage* (X2) and Firm Value (Y2) through Dividend Policy (Y1) shows indirect path coefficient value of -0,026 with t value of 0,214. This value was smaller than t table (1,960). It means Dividend Policy has insignificant effect in mediating *Leverage* toward Firm Value.

## CONCLUSION

Several things can be concluded in this study. These results were in accordance with suggestion of Tampubolon (2013) that Profitability is one of the factors that affects Dividend Policy. Results in this study also in accordance with previous study of Abreu and Gulamhussen (2013), Lestari (2012), Asad and Yousaf (2014), Javed (2012), Ameer (2008) and Hamid et al. (2016) which suggest that Profitability has positive and significant effect toward Dividend Policy.

Results from other studies also suggest that Profitability has negative and insignificant direct effect toward Firm Value. Results in here did not support previous study of Winarto (2015) which suggest that Profitability has positive and significant effect toward Firm Value. This study also showed that *Leverage* variable has significant effect toward Dividend Policy variable. Positive path coefficient value means that every increase of *Leverage* reflected in *Debt to Asset Ratio* (DAR) and *Debt to Equity Ratio* (DER) would increase Dividend Policy reflected in *Dividend per Share* (DPS) and *Dividend Payout Ratio* (DPR).

Results of this study also showed that *Leverage* did not have significant effect toward Firm Value and has a negative path coefficient value. This means that *Leverage* ratio in the firm did not influence firm value and shown with negative path coefficient value. This might occurs because in banking firms, high *Leverage* was necessary and it did not change public view of firm value and therefore high *Leverage* wouldn't affect firm value.

This study also showed that Dividend Policy in the firm did not have significant effect toward firm value and was shown in negative path coefficient value. This means that Dividend Policy ratio in the firm did not affect investor's view about the firm, and reflected in negative path coefficient value. Therefore, even if there was low Dividend Policy in the firm, Firm Value would still adequate. This might be because among banking firms there were several firms that did not pay dividend for several years during our study period and they tend to retain their profit for business development and to strengthening capital structure

within the firm, although these would not affect public perception concerning this. Thus, dividend policy did not affect firm value and it has negative path coefficient value.

*Limitation of research:*

- Study period in this research was limited in 4 years worth of data, started with 2013 to 2016;
- This study was only use samples and did not use different firms in comparison. It only use banking sector firms listed in IDX during the period of 2013-2016.

## SUGGESTIONS

For future work, it was suggested to conduct similar study in different sector with various samples and longer period of study (minimum of 5 years) to support results obtained in previous papers. Further study was also expected to add other variables which affect Dividend Policy and Firm Value in order to found more various result. For sampling selection, it was expected to pay more focus on firm sample that conduct successive dividend payout during the study period.

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## **FIRM VALUE CREATION THROUGH INTELLECTUAL CAPITAL AND CORPORATE SOCIAL PERFORMANCE WITH MEDIATED OF FINANCIAL PERFORMANCE USING ISLAMIC MANUFACTURING SECTOR AS SUPPLEMENTARY ANALYSIS**

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### **ABSTRACT**

This study aims to investigate the influence of intellectual capital and corporate social performance on firm value. Furthermore, this research also examines the influence of mediated role of financial performance to intellectual capital and corporate social performance influence over firm value. The results of this study indicate that the investor or stakeholders are concerned with the intellectual capital and disclosure of corporate social performance of companies in which they invest.

### **KEY WORDS**

Intellectual capital, corporate social performance, financial performance, firm value.

The main task of the company is the company's ability to create value. Value for a company is a key key that reflects the growth of good company performance. The phenomenon that occurred in June 2017 is a decline in the Manufacturing Index in Indonesia. "The Manufacturing Index in June 2017 was 49.5 from 50.6 in May 2017" (<https://industri.bisnis.com>). A reading below 50 indicates that manufacturing companies in Indonesia are contracting. The decline reflects that most of the performance of manufacturing companies in Indonesia is decreasing. Such a decrease in performance will provide a negative signal for external parties. The negative signal will affect the decline in the value of the company that is reflected by the stock price in the capital market. "The declining corporate value will result in an increased risk of corporate bankruptcy" (Aspirandi et al., 2016).

Resource Based Theory explains that the strength that exists in a company depends on the company's ability to manage resources owned and controlled by the company. "Companies capable of managing resources well will create competitive advantage so as to generate value for the company" (Nuhayanan, 2015). Intellectual capital of the company is believed to increase the value of the company. Dashti et al. (2016) managed to find that intellectual capital has a positive effect on corporate value. Nuhayanan (2015) found that intellectual capital negatively affects the value of the company. Iranmahd et al. (2014) actually found that intellectual capital does not affect the value of the company. Hadiwijaya and Rohman (2013) suggest that financial performance mediates the influence of intellectual capital on corporate value. The inconsistency of previous research results proves that there is still a need for further study on the effect of intellectual capital on firm value to confirm the results of previous research.

Stakeholder Theory says that the company is required to maintain good relations with all stakeholders of the company. "Shareholders are not the sole guarantor of the company in achieving the success of the objectives, but the employees, customers, governments, suppliers, creditors and the community are a unified stakeholder group that needs to be noticed by the company" (Nuhayanan, 2015). Boaventura et al. (2012) draws the conclusion that Corporate Social Performance (CSP) has a positive effect on the company's financial performance. Gregory et al. (2016) found that Corporate Social Performance (CSP) had a positive effect on Corporate Value.

The main strength of this study compared to previous studies, firstly that this study will use a sample of manufacturing sector companies listed on the Indonesia Stock Exchange 2012-2016. Secondly, this study also uses financial performance as a mediator of intellectual

capital influence on firm value. Third, this study combines Intellectual Capital (IC) with Corporate Social Performance (CSP) in boosting the value of the company. Fourth, this research uses additional analysis (supplementary analysis) in the comparison of the direct and indirect influence of Intellectual Capital and Corporate Social Performance on the value of perusahaan through financial performance between sharia-based and non-syariah based manufacturing companies which also contain Islamic and non-islamic.

## METHODS OF RESEARCH

This type of research is an explanatory research, which tries to explain the existing phenomenon. Explanatory research is a research activity that tries to find and understand the relationship between research variables, such as dependent variable, independent, moderation, and mediation (Srivastava and Rego, 2011: 43).

The population to be used is all manufacturing sector companies listed in Indonesia Stock Exchange (BEI) from 2012-2016. Manufacturing sector companies are used because it is in accordance with the research phenomenon that there is a problem that is urgently to the decline of manufacturing sector index in Indonesia. Nonprobability sampling method (nonrandom selection) by purposive sampling. Some of the criteria for sampling are as follows:

- The Company is listed in the Indonesia Stock Exchange (IDX) and publishes its audited financial statements from 2012-2016;
- The company's net profit should have a positive value from 2012-2016. For the calculation of negative net income in a row will affect the calculation of ROE ratios (Return On Equity). A negative ROE ratio during the year of observation will show that there is no progress of the firm's performance;
- The Company must have a positive equity value during 2012-2016;
- The required data is available in the financial statements of each period for the calculation of Intellectual Capital, Corporate Social Performance, financial performance, and corporate value.

Four variables will be used, namely: Intellectual Capital variable as exogenous variable 1 (independent variable 1), Corporate Social Performance variable as exogenous variable 2 (independent variable 2), variable of firm value as endogen variable (dependent variable), and performance variable finance as an intervening variable. The intellectualcapital and Corporate Social Performance variables are in the form of latent formative variables. Variable financial performance and firm value in the form of reflective latent variables.

Company value as endogenous variable (dependent variable). The endogenous variable of firm value is in the form of a reflective latent construct measured by 4 indicators. Indicators for measuring company value are Market to Book Value (Nuhayanan, 2015), Price Book Value (Sudibya and Restuti, 2014), Price Earning Ratio (Tui et al., 2017) and Market Capitalization (Dashti et al., 2016).

Financial performance in the form of latent variable that can be represented by 4 indicator, that is: Return On Equity (Tui et al., 2017), Return on Assets (Nuhayanan, 2015), Earning Per Share (Suhendra, 2015), and Sales Growth (Boaventura et al., 2012).

Independent Variables in this research there are 2, namely: Intellectual Capital and Corporate Social Performance. Intellectual Capital will be based on research conducted by Sudibya and Restuti (2014) and Corporate Social Performance will be based on research conducted by Widigdo (2013).

To measure Intellectual Capital use the "Pulic (VAIC™) model with its Value Added Capital Employed (VACA), Value Added Human Capital (VAHU), and Structural Capital Value Added (STVA) components" (Sudibya and Restuti, 2014).

*Corporate Social Performance is measured using dummy variables. Any disclosed Corporate Social Performance indicator will be rated 1, and if not disclosed it is assigned a value of 0.*

The PLS (Partial Least Square) model will be used with the help of WarpPLS 4.0 software to analyze the data. PLS is known as a good approach for studying relationship models involving multiple constructs with many measurements (Hartono, 2008: 249).

In the reflective construct, the measurement model test is used to test the validity of the construct and the reliability test. In the formative construct cannot be tested reliability because the indicators in a latent variable are assumed not correlated (independent) so that the reliability value cannot be measured. In testing the mediation effect Baron and Kenny (2008) argue that the requirement of mediation is a significant direct effect (direct effect) when the mediation variable has not been included in the model. When the mediation variable is included in the model the requirements must be met as follows.

- The effect of exogenous variables on the mediation variables is significant;
- The effect of mediation variable on endogenous variable must also be significant;
- When the path coefficient on the effect of exogenous variables on the endogen is decreased (lower than the path coefficient on direct effect before entering the mediation variable) and remains significant, the type of influence is partial mediation;
- When the path coefficient on the effect of exogenous variables on the endogen down (lower than the path coefficient on the direct effect before entering the mediation variable) and become insignificant means the type of influence is full mediation.

## RESULTS AND DISCUSSION

Purposive sampling using criteria in the form of certain considerations is judgment sampling. The results of judgment sampling get 71 sample companies. So in the period of 5 years, the number of research samples as many as 355 companies sampled.

Based on outer weight results on the Outer Formative Conformation Model Evaluation that VIF values ES and SS indicators do not meet criteria with VIF limits  $<10$ . In addition, the p-value of the VACA indicator does not meet the criteria with p-value limit  $<0.05$ . Therefore, the model must be re-estimated by transforming the research data.

Data transformation is performed on GS (Governance Score) and SS (Social Score) indicators to Natural Logarithmic form, because to overcome the symptoms of multicollinearity shown by VIF value  $> 10$  is by transforming data in Natural Logarithm (Ghozali, 2013: 110). However, for ES (Environmental Score) indicators remain. The transformation is performed on the VACA indicator to the LOG10 form, because after the histogram analysis through the SPSS program the most suitable transformation model is LOG10.

Based on the outer loading results of the Outer Reflective Construct Model Evaluation that the value of the SG (Sales Growth) indicator loading in the KK construct is less than 0.50 and the p-value value greater than 0.05 must be excluded from the model because it does not meet the convergence validity requirements. The value of the PER indicator loading in the NP construct is less than 0.50 and the p-value value greater than 0.05 must be removed from the model because it does not meet the convergence validity requirements. Therefore, the model must be re-estimated by transforming the research data. So the indicators that can be used in KK construct are ROE, ROA and EPS. Indicators that can be used in NP constructs are MBV, PBV and MC.

The discriminant validity test result is a larger loading value than the cross-loading value of all constructs and the AVE root value is greater than the correlation between the constructs. Thus, all constructs in the estimated model meet the criteria of discriminant validity.

Reliability test results are Cronbach's alpha value and Composite reliability greater than 0.70, and Full collinearity VIF value below 3.3. Thus, all constructs in the estimated model meet the criteria of discriminant validity.

Inner Model Evaluation test results are the value of APC, ARS and AVIF have met the criteria of goodness of fit model. The value of determination coefficient ( $R^2$ ) of 0.734 and the value of Stoner-Geisser Coefficient ( $Q^2$ ) of 0.493 and 0.736.

Hypothesis test results obtained that the hypothesis received is Intellectual capital has a positive effect on corporate value, Corporate social performance has a positive effect on the value of the company and Intellectual capital indirectly affect the value of the company through financial performance. However, the hypothesis of Corporate social performance has an indirect effect on firm value through financial performance is not accepted.

The results of this study support research conducted by Shakina and Barajas (2013), Sudibya and Restuti (2014), Dashti et al, (2016), and Tui et al. (2017) who found empirical evidence that Intellectual Capital has a positive effect on Corporate Value. The purpose of the company to report intellectual capital is to show that the company has more value to the external parties in managing the activities of the company. So that people and investors believe that the company has been well managed by the management company by appreciating through stock prices in the capital market. This statement is also supported by Dashti et al, (2016) which states that the formation of intellectual capital is very important for a company, because intellectual capital will show the advantages of the company than its competitors in conducting corporate governance towards transparency of corporate management. Transparency by the management of the company will be appreciated by investors and the public through the stock market price.

When linked with Resources Based Theory, the results of this study support the theoretical foundation proposed by Resources Based Theory. The result of research indicate that intellectual capital able to increase company value indicate that company is able to manage its resources to produce unique product innovation according to market requirement.

The results of this study support the research that has been done by Boaventura et al. (2012), Elliott et al. (2014), Zygadlo et al. (2016), Gregory et al. (2016), and Gutzche et al. (2017) who found empirical evidence that Corporate Social Performance has a positive effect on Corporate Value. Implementation of social activities is very important for a company. The main purpose of the implementation of Corporate Social Performance is to show to the public and investors that the company is not only aimed at seeking profits as much as possible, but the company also care about the environment. Implementation of social activities will produce a good image to the company, so that people and investors tend to support to companies that do social activities. In addition, all publicly listed companies in Indonesia have started to be required to conduct Corporate Social Performance activities. Therefore, each company is competing to conduct Corporate Social Performance activities as well as possible. Elliott et al. (2014) also stated that the social activities of the company can support a positive image to the external parties of the company, be it investors, creditors, and the general public. This positive image will support the stock price through the appreciation made by the investor.

When associated with Stakeholder Theory, the results of this study support the theoretical foundation put forward by Stakeholder Theory. Based on the findings, it is evident that manufacturing companies listed in the Indonesia Stock Exchange (IDX) are able to balance the needs of shareholders and stakeholders through corporate social performance activities.

The results of this study support research conducted by Hadiwijaya and Rohman (2013), Sudibya and Restuti (2014), Nuhayanan (2015), Suhendra (2015), and Nuryaman (2015) who found empirical evidence that financial performance plays an important role in creating value company when the company focuses on the formation of intellectual capital. The determination of intellectual capital, especially manufacturing companies listed in the Indonesia Stock Exchange (IDX) has proved successful in creating unique products and has an impact on the improvement of the company's financial performance which is further appreciated by the shareholders of the company. Brigham and Houston (2006: 94) explain that the point of view of an investor, predicting the future of the company is the essence of financial statement analysis, while from the standpoint of management, financial statement analysis will be useful both to help anticipate future conditions and as a point beginning to do the planning steps that will improve the company's performance in the future. The results showed that the shareholders of the company always evaluate the impact of intellectual

capital formation on financial performance is the essence of financial statement analysis. When the formation of intellectual capital has a good impact on financial performance, then the shareholder of the company appreciates the company's stock price, namely the value of the company.

When linked with Resources Based Theory, the results of this study support the theoretical foundation proposed by Resources Based Theory. The company has been able to utilize the resources of various companies so that it can improve financial performance which further impact on the increase of company value. The establishment of a successful intellectual capital will be reflected in improved financial performance.

The results of this study do not support the research that has been done Haryono and Iskandar (2015), Gregory et al. (2016), and Zygadlo et al. (2016) who found empirical evidence that financial performance plays a role in mediating the influence of Corporate Social Performance on Corporate Values. Corporate social activity mostly leads to increased corporate load. Increased corporate expenses due to additional costs used to carry out corporate social activities. Therefore, corporate social performance does not affect the financial performance of the company.

When associated with Stakeholder Theory, the results of this study still support the theoretical foundation proposed by Stakeholder Theory. As long as the company still cares about the surrounding environment by conducting social activities, stakeholder support for corporate value is positive.

The results showed that there is a significant difference in the influence of Corporate Social Performance on Corporate Value through Financial Performance between non-sharia group of companies with sharia.

The results indicate that stakeholders are currently paying more attention to issues addressing corporate social activities. The phenomenon shows that today's society has more critical thinking about all activities conducted by the company. The large number of illegal logging cases, the opening of new lands, and the destructive waste of nature makes people more demanding that all companies implement environmental care activities. Companies that enter the group of sharia-based companies should duly pay more attention to the activities of companies that do a positive impact on mankind on earth. In fact, sharia companies should have a better foundation than non-sharia companies by conducting business activities with activities of corporate social performance (Dusuki, 2008).

## **CONCLUSION AND SUGGESTIONS**

This study aims to examine and analyze the influence of intellectual capital and corporate social performance on company value. In addition, this study also examines and analyzes the indirect effect of intellectual capital and corporate social performance on corporate value through financial performance with additional analysis in the form of comparisons between non-syariah and sharia enterprise groups. Samples were taken by purposive sampling method using judgment sampling technique. To overcome the existence of data outlier, this research uses resampling jackknifing technique. The analytical method used is PLS (Partial Least Square) with the help of WarpPLS software. The results of this study provide empirical evidence that the growth of corporate value is determined by the growth of intellectual capital and corporate social performance. Intellectual capital and corporate social performance will also increase the value of the company. Financial performance acts as a full mediation on the influence of intellectual capital on corporate value.

A study will not be separated from the existence of a limitation. Limitations of this study, as follows:

- Research data is still an outlier although researchers have overcome it with resampling jackknifing technique. Subsequent studies may consider clamping out the outlier data to produce a more maximal analysis;
- In this study only succeeded in analyzing companies that enter the manufacturing sector as much as 71 companies from the total manufacturing companies of 149

companies in 2016. Further research can maximize the number of samples of manufacturing companies that can be analyzed;

- In this research use checklist item level of Corporate Social Performance based on GRI G4. GRI G4 released in 2013 ([www.globalreporting.org](http://www.globalreporting.org)) makes it possible that not all companies in Indonesia have implemented GRI G4 directly in 2012-2016. Future research may consider using Corporate Social Performance measurement that is more appropriate to the state of the company in Indonesia.

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## **THE EFFECT OF EMOTION ON ENTERPRISE RESOURCE PLANNING SYSTEM QUALITY WITH USER EXPERTISE AS MODERATION VARIABLE**

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### **ABSTRACT**

The purpose of this research is to find out how the quality of Enterprise Resource Planning (ERP) system data is affected by the user's emotional response and to find out whether the user's expertise is able to reduce the emotional influence on the data quality of the ERP system. Data from this study were obtained through 40 questionnaires distributed to employees of ERP system users working at PT Pembangunan Pemerintah Tbk which is one of the ERP user companies in Indonesia. The results of this study found that the user's emotional variables do not affect the quality of system data. It can be seen based on p-values of 0.191 where the value is greater than 0.05. Whereas for the user expertise variable has a significant positive effect on the quality of the system data. It can be seen from the p-values of  $< 0.001$ .

### **KEY WORDS**

Emotion, user expertise, data, quality systems.

Enterprise Resource Planning (ERP) is a system used to integrate business processes in manufacturing and production, finance and accounting, sales and marketing, and human resources into one software system. The results of the information are stored in a comprehensive data warehouse that can be used by different parts of the business (Laudon et al., 2012). The importance of this system is explained by O'Brien (2015) that ERP is a backbone across corporate functions that integrates and automates many internal processes and information systems in terms of production, logistics, distribution, accounting, financial and human resources functions in the company. A good system must also be supported by good user skills, so that the information system applied can create good ERP system data quality (Compeau and Higgins, 1995); (Nelson and Cheney, 1987).

The ERP system is currently a system that is relied on by many companies to facilitate company activities and to present relevant data. Data quality problems become a major reason for companies to implement ERP systems. The system can function optimally if the data produced is of high quality. The better the quality of the data, the more relevant information will be produced so that the information is more useful for information users to become a tool in decision making.

Many companies are starting to switch to ERP systems from the previous system, this will certainly force employees to learn and understand the new system. In the process of understanding this system sometimes problems or conflicts arise that are impossible to avoid by ERP system users, which can cause emotion from system users. Emotions can affect the performance of system users, which of course will also affect the quality of system data generated. Venkatesh (2000); Beaudry and Pinsonneault (2010) argue that emotion becomes a major role in the interaction between a person and the information system, the emotions felt by the users of the system can negatively affect the use of the system. This influence can result in reduced data quality of the ERP system, so that the system built cannot provide optimal benefits.

User emotions can be minimized with the expertise of ERP users. This is supported by Leger et al. (2014) stating that users with expertise in system usage will change their outlook and reactions to emotions when they interact with the system. Therefore, companies began to implement specialized training in using the system, to minimize any errors in system input.

The more expert users of the system, it is expected error in the system data is also getting smaller, so the company can obtain quality system data.

Research on the use of ERP systems has been done, especially regarding the quality of data resulting from the use of ERP systems and data processing systems. However, research on the role of user emotion in the use of ERP systems is still very rare, whereas user emotion is an important component of the use of the system so that the expected results can be achieved well. This is revealed by several studies that the emotions felt by users of ERP systems arising from high workloads and excessive anxiety can be detrimental to the use of information systems, especially at the time of system implementation (Venkatesh, 2000); (Beaudry and Pinsonneault, 2010). This is supported by Riedl et al. (2012) which suggests that an interruption in tasks when a person performs a system implementation can cause significant negative emotions.

Research on emotional influences on system data quality was carried out previously by several researchers. Ifinedo (2011) and Igbaria et al. (1995). Conceptually, these two studies support the view that the skills of the users of the system are related to the quality of ERP data generated in a company. Emotionally, according to Leger et al. (2014), expert users tend to use the data available to cope with stressful situations, so they can help them perform tasks well and can make optimal decisions. Conversely, the emotional response of novice users tends to avoid interaction with the system

With such a scope, the purpose of this study is to find out how the quality of ERP system data is influenced by the user's emotional response and to know whether the user's expertise is able to reduce the emotional impact on the quality of the ERP system data. Furthermore, the focus of this research is on the moderate role of user expertise on the relationship between user emotion and the quality of ERP system data. Emotional responses are known to affect the concentration of ERP system users, especially if someone has a workload that is too large. Decreasing concentration can cause errors in system data input which will affect the decline of ERP system data quality. However, these emotions can be minimized by the expertise of users in using an ERP system.

The first part of this study describes the literature and findings on emotions, user expertise, and their relation to the quality of ERP system data. The next section arranges relationships and hypotheses to test the relationship between emotions, user expertise, and ERP system data quality. The second part of this study examines the hypothesis proposed with data from 40 research respondents.

## LITERATURE REVIEW

This study uses two main streams of literature to build models and hypotheses. The first flow is related to emotions and systems, the second flow is related to the expertise of the system users. We also examine the latest literature on user emotions and expertise on data quality of ERP systems.

*Technology Acceptance Model (TAM)*. Technology Acceptance Model (TAM) is one of the models built to understand and analyze what factors affect the acceptability of the use of a computer technology (Davis, 1989); (Davis et al., 1989). TAM is adopted from the Theory of Reasoned Action (TRA) model on the basis of the theory of the reasonable action of a person in reaction, and the perception of something can determine the attitudes and behavior of the person.

Such reactions and perceptions of users of Information Technology (IT), can affect a person's attitude related to the acceptance of the information system. One of the influencing factors is the user's perception of ease of use and the benefits that can be obtained from the IT. This can affect the actions or reactions of IT users as a benchmark for the acceptance of the technology applied.

The TAM model developed from psychological theory that explains the behavior of computer users is basically influenced by belief, intention, attitude, and user behavior relationship. The TAM model has a purpose to explain what factors of user behavior can

influence technology acceptance. Two variables that describe user attitudes toward technology acceptance are: ease of use, and usefulness.

Ease of use and usefulness can be attributed to how users respond in using IT as well as in using the system. This model illustrates that user acceptance of a system is affected by ease of use and usefulness.

*The role of User Emotions in Information Systems.* Damasio (1994) in Leger et al. (2014) defines emotion as a change of state of the body and brain triggered by a specific content response to perception, actuality, or memory related to a particular object or event of a person's brain system. Emotions will focus on the important events that occur.

Bechara and Damasio (2005) suggest that emotions provide implicit and explicit knowledge is a major factor in decision making as well as interaction between a person and his or her environmental condition. Emotion also plays a central role in one's work experience, especially when organizational transformation occurs such as the development of an ERP system.

A person who has emotional stability will have objectivity based on logic for problem solving. Emotional actions can degrade a person's performance, including decreased arousal, frequent truancy or not working, high blood pressure, gastrointestinal disturbances, and so on. This shows that a negative emotional state is a situation where a person experiences tension due to conditions that affect him. Furthermore, in the context of the work field, this can interfere with a person's performance in the company, so that it can affect the quality of the person's performance.

*User Expertise Concepts.* Whether the information system user is at the expert level or the beginner level becomes urgency in behaving on the information systems (Yang, 1997). As revealed by Tabatabai and Shore (2005), the difference between expert users and novice users of information systems is their strategy in finding information. In essence, expert users tend to use clear criteria to evaluate a site without over-navigating. Expert users also use monitoring progress and background knowledge about information retrieval. This positive attitude is also called one of the expert criteria. By having a positive attitude, ERP quality can be maintained with good quality without being affected by emotions.

In the context of emotional stability, it has been found that users with higher levels of computer self-efficacy spend less time making decisions, and they also use less information; In addition, their perception of the utility of the system and their satisfaction is greater (Hung, 2003). By having this type of attitude, expert employees will use the process of thinking analogically rather than beginners, who tend to use a trial and error approach that can cause negative emotions. Thus, the reason to train novice users of information systems is necessary to create good data quality ERP systems (Compeau and Higgins, 1995); (Nelson and Cheney, 1987).

Given these differences about how expert users and beginners behave towards new systems, good ERP quality can be generated by expert users. In addition to their knowledge and good skills on system usage, they also have a more stable emotional state that can lead them to faster and better work. In this case, the user's expertise can reduce the negative effects of emotions in using ERP systems properly.

## **HYPOTHESIS DEVELOPMENT**

The main premise of this research is that an organization that has a culture that promotes innovation tends to be innovative, which, in turn, is likely to result in superior company performance achievement. The model is illustrated in Figure 1.

Emotions felt by users of ERP systems arising from high workloads and excessive anxiety can be detrimental to the use of information systems, especially at the time of system implementation (Venkatesh, 2000); (Beaudry and Pinsonneault, 2010). This is supported by Riedl et al. (2012) which suggests that an interruption in tasks when a person performs a system implementation can cause significant negative emotions.

Research on the effect of emotion on the quality of data system has been done before by some researchers (Ifinedo, 2011); (Igbaia et al., 1995). Conceptually, these two studies



No studies or literature that examines the emotions and relationships with the ERP system in Indonesia, especially at PT. Pembangunan Pemerintah, Tbk. And there are only a few studies that examine the relationship between the variables that exist in this study with information systems. Therefore, the results of this study can be new findings in academics.

*Operational Definition and Variable Measurement:*

*Independent Variables.* The questionnaire used contains questions to measure variables in this study. In the questionnaire, the question about this independent variable is in the third section. User emotion was measured by a questionnaire developed by Igbaria and Chakrabarti (1990). The instrument asks individuals to show their agreement or disagreement with 5 questions that reflect the participation and conflict that may have been experienced by respondents during the ERP system. Response options range from (1) strongly disagree to (5) strongly agree.

*Moderate Variables.* The moderating variable in this study was measured using a questionnaire. Questions about this moderating variable are in the first and second parts of the questionnaire. User expertise was measured by a questionnaire developed by Igbaria and Chakrabarti (1990). Through 6 questions in sections one and 4 of the question there is part two of the questionnaire asking individuals to show their agreement or disagreement regarding the experience and training of information systems related to accounting that may have been followed by respondents. Response options range from (1) strongly disagree to (5) strongly agree.

*Dependent Variables.* The quality of ERP system data is measured by a questionnaire developed by (Igbaria and Chakrabarti, 1990). Questions in the questionnaire asked individuals to show their agreement or disagreement with 5 questions that reflect the quality of the system information. Response options range from (1) strongly disagree to (5) strongly agree.

## RESULTS AND DISCUSSION

*Profile of respondent.* Information on job title, length of work, last education of respondents are presented in Table 1. Job positions of respondents in the study are not dominated by specific positions. Most respondents have varied work experience, ranging from 1 to 34 years. Table 2 presents the demographic characteristics of respondents that show the dominance of male respondents to women. Most respondents have a bachelor's degree.

*Reliability, factor analysis, and average value.* Table 3 shows the ways and standard deviations of responses to items that measure emotion, system expertise and system data quality.

According to the results of the reliability analysis, items that have a total item correlation value lower than 0.40 must be eliminated. In this study for items from the user's expertise scale namely EXP2 - EXP5 must be eliminated. Nunnally (1978) states that the loading cut-off used are 0.40 assuming that all loading factors that have values above 0.54 are significant. Therefore, the results of composite reliability measurements in this study indicate that all variables have a composite reliability value greater than 0.70. It can be concluded that all variables in this study are reliable and reliable for use in further analysis.

*Hypothesis testing.* The hypothesis that has been proposed will be tested using the Structural Equation Model (SEM) model with the Partial Least Square (PLS) analysis model. PLS analysis was tested using the help of WarpPLS 5.0 software for windows to examine the influence between emotions which is moderated by the user's expertise on the quality of the system data.

Table 5 shows that all proxies have an outer loading factor value greater than 0.5. It can be concluded that all indicators are eligible to be an indicator that can reflect each of the corresponding variables.

The measurement of discriminant validity is to compare the Average Variance Extracted (AVE) square value of each construct with the correlation between the other constructs in the model. Recommended AVE value must be greater than 0.5. In Table V

shows the AVE value of each variable greater than 0.5, so it can be concluded that the variables used are valid and reliable.

Table 1 – Profile of Respondents

	n	%
<i>Position</i>		
Site Administration Manager	6	15%
Accounting Staff	5	13%
Logistics	7	18%
Site Engineer Manager	6	15%
Officer, VAT Section	1	3%
Officer, Accounting Section	4	10%
Officer, Accounts Payable Section	1	3%
Officer, Cashier Section	1	3%
Officer, Tax Section	2	5%
Officer, Production and Cost Control Section	2	5%
Manager, Head of Production and Cost Control Section	2	5%
Manager, Head of Purchasing Section	2	5%
Manager, Head of Tax Section	1	3%
<i>Length of work</i>		
1-10	29	73%
11-20	3	8%
21-30	6	15%
> 30	2	5%

Table 2 – Demographics Sample

	N	%
<i>Gender</i>		
Man	33	83%
Woman	7	18%
<i>Last education</i>		
SMU	6	15%
D3	1	3%
S1	33	83%

Table 3 – The average and standard deviation of the item

items	mean Value	SD
<i>User expertise</i>		
I understand how to get the data and information required.	4.15	0.48
I know the information is relevant to take that into consideration in making a decision.	4.28	0.6
I am easy to search for the causes of errors and can provide recommendations to eliminate / minimize causes.	3.95	0.68
I'm easy to run existing accounting information system thanks to the training undertaken.	4.08	0.73
I feel the training makes it easy for me to make judgments related to the available data.	4.35	0.62
I feel that there is facilitate training in detecting errors in the data provided.	4.18	0.64
I understand the accounting cycle contained in the company.	4.03	0.77
I understand the accounting rules applicable to the industrial sector my company	3.88	0.76
I know the accounting information system in the company in accordance with applicable regulations.	3.90	0.71
I know the existing accounting information systems contributes to more easily understand the accounting cycle.	4.03	0.73
<i>emotion</i>		
In my opinion, the existing information systems pose a burden to learn more	2.90	1.15
In my opinion, the existing information systems cause trouble in operation.	2.63	0.93
In my opinion, the information system provides workload becomes more	2.35	0.83
In my opinion, the existing information systems caused disagreement between colleagues associated with the account in the work	2.85	1.00
In my opinion, the existing information systems lead to differences in perception between leaders and employees associated with the account in the work	2.85	1.08
<i>Data Quality</i>		
In my opinion, the information conveyed by the information system is clear and easy to understand	3.83	0.55
In my opinion, the information conveyed by the information system is accurate.	3.78	0.7
In my opinion, the information conveyed by the information system facilitates the work	4.18	0.64
In my opinion, the information conveyed by the information system is reliable information.	3.98	0.62
In my opinion, the information conveyed by the information system is the relevant information	4.00	0.60

Based on the results in Table 6 it can be concluded that the emotional variable does not affect the quality of the system data. This can be seen based on p-values of 0.191 where the value is greater than 0.05. Based on the estimated value of the regression coefficient

(path coefficient), which is equal to 0.132. The positive sign of the regression coefficient shows the unidirectional relationship between the emotion and the quality of the system data, where if the emotion increases once, then the system data quality will increase by 0.132 times. It can be concluded that the hypothesis 1 (one) that emotional variables do not affect the data quality of ERP systems.

Table 4 – The results of the factor analysis and reliability analysis

		Outer Loading	Reliability
exp1	I understand how to get the data and information required.	0.587	0.885
EXP7	I understand the accounting cycle contained in the company.	0.875	
EXP8	I understand the accounting rules applicable to the industrial sector my company	0.863	
EXP9	I know the accounting information system in the company in accordance with applicable regulations.	0.903	
EXP10	I know the existing accounting information systems contributes to more easily understand the accounting cycle.	0.627	
EMO1	In my opinion, the existing information systems pose a burden to learn more.	0.746	
EMO2	In my opinion, the existing information systems cause trouble in operation.	0.917	
EMO3	In my opinion, the information system provides workload be increased.	0.862	
EMO4	In my opinion, the existing information systems caused disagreement between colleagues in the work associated with the account.	0.908	
EMO5	In my opinion, the existing information systems lead to differences in perception between leaders and employees associated with the account in the work.	0.854	
QUA1	In my opinion, the information conveyed by the information system is clear and easy to understand.	0.642	0.848
QUA2	In my opinion, the information conveyed by the information system is accurate.	0.826	
QUA3	In my opinion, the information conveyed by the information system facilitates the work.	0.652	
QUA4	In my opinion, the information conveyed by the information system is reliable information.	0.740	
QUA5	In my opinion, the information conveyed by the information system is relevant information.	0.765	

Table 5 – Value Outer Loading and AVE

Variables	Indicator	Outer Loadings	AVE	composite Reliability	Conclusion
EXP	EXP 1	0.587	0.612	0.934	Significant
	EXP 7	0.875			Significant
	EXP 8	0.863			Significant
	EXP 9	0.903			Significant
	EXP 10	0.627			Significant
EMO	EMO 1	0,746	0.739	0.885	Significant
	EMO 2	0.917			Significant
	EMO 3	0.862			Significant
	EMO 4	0.908			Significant
	EMO 5	0.854			Significant
QUA	QUA 1	0.642	0.531	0.848	Significant
	QUA 2	0.826			Significant
	QUA 3	0.652			Significant
	QUA 4	0.740			Significant
	QUA 5	0.765			Significant

Table 6 – Path Analysis

Path	Path Coefficient	P-Value
EMO → QUA	0,132	0,191
EXP * EMO → QUA	0,468	< 0,001

Whereas for user skill variable have a significant positive effect to system data quality. It can be seen from the p-values of < 0.001. Based on the estimated value of the regression coefficient (path coefficient), which is equal to 0.468. The positive sign of the regression

coefficient shows a direct relationship between the user's expertise and the quality of the system data, which if the user's expertise increases once, then the system data quality will increase by 0.468 times. It can be concluded that the hypothesis of 2 (two) user expertise variables has a significant positive effect on the quality of ERP system data.

The results of testing hypothesis 1 state that the user's emotions do not affect the data quality of the ERP system. Basically, the implementation of new system or work given to the employees is the responsibility that must be completed by the employees and not become the work load. So in the use of any system, employees must be responsible and do not consider the work as a burden. Therefore, emotion does not affect the quality of ERP system data.

Hypothesis 2 states that user expertise reduces the relationship between users' emotions and ERP system data quality. The results showed a significant positive effect on the quality of system data. The results of this study are in line with research conducted by Bano and Zowghi (2013), Guimaraes et al. (2004) which states that the expertise of each user individually has a positive relationship with the quality of the system. More experienced and / or more trained users are more likely to participate actively in system development and have lower levels of stress. Indirectly, better communication with system developers will be established and it can improve the quality of corporate ERP data.

More skilled users will tend to be able to control their emotions, supported by the ability of those qualified to use the system then the possibility of a mistake in the use of the system the smaller. This can affect the quality of system data to be generated.

## **CONCLUSION**

This study aims to find out how the quality of ERP system data is influenced by the user's emotional response and whether the user's expertise is able to reduce the emotional impact on the data quality of the ERP system. In this study we found negative results from the influence of users' emotions on ERP system data quality. This is because the use of the system is a responsibility for all users of the system, not a workload for users. As for user expertise, our research obtained positive results in accordance with the hypothesis formulated. Our findings indicate that the ability of users of the system is essential to support the quality of the ERP system data. Expert users can understand the cycle of the system and understand how to obtain data for the system and understand relevant information as a consideration in making decisions. We find that this expertise is gained through training conducted to improve the ability to use the system. Our conclusion emphasizes that emotions can be reduced with the expertise of the users of the ERP system so that the quality of the resulting data is relevant.

Limitations in this study are the use only one company as a sample of research, so less able to generalize the results of these findings. Therefore, further research can use more than one company to make the results more relevant.

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## **COLLABORATION VERSUS COORDINATION: A DILEMMA ABOUT STATE ACTORS' POSITION IN A POLICY**

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### **ABSTRACT**

This paper was composed regarding to the dilemma about the position and the role of the government in the collaborative governance along with its various logical consequences. In this context, the concept of coordination has a point of relevance. However, it was considered unnecessary for all involved parties to be bounded in a formal forum as the government was expected to act as a leader who holds the authority. The concept of collaboration might not be appropriate to be applied in any situation since the government needs to stabilize the public affairs of a nation in which the government should be given stronger position than non-government actors. In order to obtain better understanding about the dilemma related to government's position in the collaborative governance, some technical terms related to the issue of collaborative governance needed to be clarified.

### **KEY WORDS**

Collaborative governance, dominance, coordination, public service.

A number of empirical studies put spotlight on the benefits and impacts of collaborative governance, showing that collaborative governance is an ideal approach to improve the quality of governance, public service and public policy performance (Innes, et al., 2006; Montero, 2006; Kim, 2010; Sranko, 2011; Vij, 2011; Zeppel, 2012; Gollagher and Janette, 2013; Indriati, 2015; Zaenuri, 2018). Literatures frame collaborative governance as an order that is often associated with good outputs and outcomes. The use of collaborative governance can increase the political legitimacy and significant level of public confidence in government performance amid government limitations in terms of resource capability, funding sources, and networks. The implementation of collaborative governance is able to significantly enhance the effects of political legitimacy and public trust toward the performance of government within a situation where resources, fund, and network are limited.

Henton in Susanti, (2016) highlighted the core of collaborative governance, namely (1) forum for public deliberation, (2) community problem solving, and (3) multi-stakeholders dispute resolution. Furthermore, they also explained the four main components in collaborative governance: consensus, joint vision, rules to evaluate certain decisions, and the organizational or institutional structure. The four components illustrate the need for collaboration forums that involve multi-stakeholders conduct interactive discussion based on multiple perspective in order to gain mutual understanding and obtain collective recommendations.

The forum is called the inter-organizational collaboration, involving the roles of the government, community or community actors, as well as the private sector for long periods of time and to solve general problems. Balogh, et al, (2011) asserted that collaborative governance does not only apply to stakeholders that consist of government and non-government actors, but it also forms the "multi-partner governance" covering private sector,

society and civil society. Balogh, et al, (2011) stated that: *"the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished"*.

Meanwhile, Robertson and Choi in Kumorotomo, (2013) define collaborative governance as a collective and egalitarian process in which each participant possesses substantial authority in decision-making process. Besides, every stakeholder has equal opportunity to speak up and share any idea. This concept has been put into written rule, giving each collaborating party equal position and opportunity to collaboratively involve in the process of public policy formulation and implementation.

In a broader framework, the above argument indicates the importance of collaborative governance as a model that allows intensive interaction among actors within good governance system, i.e. a nation, business, and society, especially in the implementation of public policy. Moreover, collaborative governance enables collaboration of those three actors within institutionalized forums, rules and collective agreements, besides it enhances the principle of equality. The keywords of equal position and opportunity in the process of public policy-making are aligned with the concept of governance as "the exercise of political power to manage a nation's affair" which is a starting point in understanding governance.

Those conceptual backgrounds eventually tap on these aspects, (i). Implementation of collaborative governance, in which formal forum should be deliberately formed as a forum that facilitates the ongoing process and accomplishment of a common consensus, and (ii) .the achievement of a common consensus should be built upon equal opportunity, equality, and strength among the collaborating actors. However, Rahardja (2008) states that although the government is one of the actors in the collaboration forum and thus has equal alignment and strength with other actors, the government still has the authority and privilege to set certain regulation which authority is not owned by other actors.

In this context, the dilemma arises. In one side, the government has the authority and function to rule as the representative of the public, yet in the other hand, the government must compromise its authority as the member of the collaboration forum to implement the principle. A problem then appears, questioning on how to come up to the equal point of the roles without violating the alignment and the authority. The question is strongly relevant because Syafrudin (1976) also states that even though the government has equal authority, the government should lead the formulation process and policy implementation, whether or not the policy involves non-government parties. The dilemma in finding the balance between collaboration and coordination is the main point of this paper.

*Collaboration versus Coordination.* This section discusses the similarities and differences between collaborative terms with other equivalent terms, ie partnership, network, coordination, and cooperation. Various literatures see those terms as an answer to the problems that arise regarding to the concept of good governance which is expected to put emphasizes on the principles of participatory, transparency, accountability, rule of law, and responsiveness. Those terms share general meaning, yet it is considered important to analyze the different meanings of those terms in certain context.

The first term is partnership. In a simple way, partnerships refer to the collaboration between two organizations that collect and pool resources to pursue common goals. Etymologically, the word partnership is derived from the word partner. Partner can relate to "spouse, soul mate, ally or companion". Then the word partnership also relates to fellowship. Sulistiyani (2004) defines partnership as a form of relationship between two parties that forms a cooperative bond on the basis of agreement and mutual need to increase the capacity and capability in a particular field of business or a particular purpose in order to obtain better outcome. The concept of partnership is more often used in business context to obtain economic benefits.

The second term is network. The term network refers to the inter-organization system that is the developed based on traditional intra-organization theory. Furthermore, the term network is also used in program implementation theory proposed by Cheema and Roddineli in Subarsono (2005). They asserted that, the success of public policy implementation

depends on networks adequacy and effectiveness in supporting the implementation of the program. This shows the importance of network in a policy, especially in the policy implementation.

The third difference relates to the fact that collaboration involves power and coercion, the ability to target certain results and to set certain preferences on others using their obedience and participation. Fifth, collaboration also involves future commitments and intentions, attitude, planning and preparation to align the activities. Sixth, collaboration improves the engagement, internal motivation, and personal commitment to held various activities, decisions, organizational goals or more strategic objectives. However, Wanna (2008) asserts that the six definition of collaboration are broader than the concept of coordination, which can be optimally selected when the awareness of actors to engage themselves in a good collaboration appears out of their consciousness.

Within this particular context, Syafrudin (1976) has actually asserted that coordination or any terminology equivalent to coordination matters if there is a leader in charge. Appointing non-government parties to take the lead raises the risks of losing the public interest as private sectors are profit oriented. Thus, state actors should lead the process because state actor is the only party that has the authority to control the process and the motives of a policy. However, appointing state actors to take lead opens up the opportunities for dominance, whereas dominance is something to avoid within collaboration.

The plan to move the central government to Lampung Province is a unique case regarding to the fact that government holds the authority as a leader. However, as the success of program implementation depends on land acquisition from private parties, then the authority owned by the state is not absolute and it is no longer the determinant of the implementation success. As the implication, the alignment of positions among actors prevails, but the dominance remains because state actors are regulators.

Consequently, the interaction within this system tends to be vulnerable to personal conflict of interests or institutional interests by the name of collaboration. This collaboration model can be employed only as a tactic to use the available opportunities to obtain personal interests. This is a clear example of how collaborative governance faces various challenges and dilemmas, especially in Indonesia, which governance is rather traditional.

The fourth terms are coordination, cooperation and collaboration. O'Flynn and Wanna (2008) believe that three equally refers to the mechanism or step to achieve goals within certain transformation process that begins with coordination to form collaboration. Those terms distinguish the term commands. Furthermore, they explained that command refers to the centralized process of control within certain hierarchical authority lines, then it is proceeded or transformed into coordination which refers to collective decision-making processes among participating institutions. Cooperation is a process of ideas and resources sharing for mutual benefit. Collaboration is also defined as the process of creating shared goals that are mediated or facilitated by independent institutions / institutions.

The terms coordination, cooperation, and collaboration together refers to the mechanisms for decision making and mutual goal determination among participating actors. However, to emphasize the role of the government as an authoritative and autonomous institution, the term collaboration is more appropriate when it is associated with research topics on governance, which eventually leads to the term collaborative governance.

Table 1 – The Transformation of Process

Command	The process of centralized control – with clear lines of hierarchical authority
Coordination	The process of collective decision making - imposed on participating institutions
Cooperation	The process of sharing ideas and resources —for mutual benefit
Collaboration	The process of shared creation - brokered between autonomous institutions

Source: O'Flynn and Wanna (2008).

In addition to the transformation of collaboration process as explained by Flynn and Wanna (2008), several researchers also take into account the explanation of the terms collaboration and partnership. Bovaird in Zaenuri, (2018) defines partnership as an arranged

work that is designed based on reciprocal commitments beyond the contract made between public organizations and organizations outside the public sector. Likewise Munro (2008) sees partnership as a form of cooperation between community leaders and public managers to enhance the effectiveness of democracy. It is practically difficult to distinguish those two approaches (collaborative and partnership). Then, Cooper (2006) generally calls it a citizen-centered governance.

The explanation above clearly shows that collaboration essentially has broader meaning beyond coordination, partnership, or cooperation. One of the fundamental differences is that collaboration involves power and coercion, rights to determine certain results or impose certain preferences using others' compliance or involvement in the forum.

*Equality and Dominance of Actors within Collaboration.* One of the keys to successful collaborative governance is the facilitation of leadership, in addition to initial conditions and inclusive institutional design that strictly regulates the rules of collaboration, Ansell and Gash, (2007). Next, one of the core facets of leadership facilitation is that the collaborative process will be strongly determined by the presence of key actors in taking the control (guarantee that collaboration will work according to the roles) of the collaborative process. Mandell & Keist, in Wargadinata, (2015).

Along with the risk of tension arising from social dynamics in the collaboration forum, the role of power is also seen as an important challenge in collaborative governance. This means the term 'control' formal power structure within a collaboration forum cannot be interpreted as domination if rules strictly apply. The power of state actors exists or arises together simultaneously with the power dynamic social communication that involves other actors. Nevertheless, the formal authority or discursive authority, resources, and legitimacy can be challenging if they dominate both parties in determining the role, meaning, practice and outcome of collaboration (Plotnikof, 2015)

In general, the existence of formal structural domination of power is characterized by several aspects: (i) The control upon top-down mechanism by the government in establishing collaboration with other parties; (ii) The presence of government's dominance in controlling the process and outcomes; (iii) Violation upon mutual consensus based on cooperation and egalitarian. Collaboration might fail if the actors do not give adequate participations, causing dominance of certain actor over the others, which eventually leads to misalignment.

In relation to the parallel relationship among actors, Ansell and Gash (2007) added that there some other related to the interdependence among collaborators. Interdependence is seen as a logical consequence or expression of differences in the level of power and resources among actors (Gray, 1989). Interdependence is actually a prerequisite for the emergence of collaboration which at the same time might trigger conflicts if it is not properly managed. Strong dependency among collaborators lessens the possibility of conflict since one's interests can only be achieved through strong dependency. This dependency will grow stronger collaboration among actors. However, Gray (1989) highlights that if interdependence arises from apathy over some actors' dominances, the interdependence will give negative impacts on collaboration process.

*Power Dominance in Collaboration.* The notion of collaboration versus coordination triggers another dilemma as clearly shown in the case of the plan to move the center of the governance of Lampung Province, Indonesia. Due to entangled problems in city, the government of Lampung province lead by Sjachroedin ZP governor in 2007 planned to move the center of municipal governance of the province by establishing a new city in Jati Agung Sub-district, South Lampung. Ever since the issuance, the plan to move the center of municipal governance (sub target) and to establish a new city (final target) has been designed to employ a collaborative governance.

This case makes a good example of collaborative governance concept as proposed by Ansell and Gash (2007). The governor of Lampung Province involved the participation of non-government parties and the society. Various decisions in the process were taken on the basis of collaboration and role distribution among participating actors. Formal coordination in the project was done in formal forum meeting attended by *Tim Koordinasi Perencanaan* or the Coordination and Planning Team dan *Badan Pengelola Kawasan* or the Management of

the Site, which meeting has reached a mutual consensus written in Regional Regulation Number 2 of 2013 about Bandar Lampung City and the plan to move the center of municipal governance should be implemented based on collaboration among actors. Activities which have been conducted ever since the formulation and the implementation of this policy as seen from the view proposed by Emerson in Ulibarri (2015) show that the collaboration among actors in the policy has resulted in various outcome, agreement, and actions which become the core of the process and the main element of the general framework of the collaboration system.

The implementation of the policy to move the center of municipal governance was followed by power dominance and unequal power distribution among actors as well as among formal structural holders even between the state and other actors (non-government actors). The success of collaboration is strongly determined by the presence of a major actor that “controls” the collaboration process. Furthermore, even though coordination and planning team and management team had been appointed to facilitate formal forum for collaboration process, in fact, some institutions and the governor himself intervened and controlled the process themselves. This phenomena becomes an important issue to discuss as it disrupted the principle of equality among actors and the need to eliminate interdependence among actors within a collaboration. The fact shows that some actors dominated the process and interdependence among actors was massive. Gray (1989) asserts that the level of interdependence among actors determines the success of a collaboration process. Unfortunately, in the collaboration to move the center of municipal governance of Lampung province, this essential point did not occur.

During the implementation of the policy, the governor showed his dominance. Starting from the planning of the idea in the form of a revised Urban Planning (*RT/RT*) in 2007 up to the determination of targets in 2014, all activities of Lampung Province government has been moved to the new city of municipal governance center. Due to the rush in designing to Regional Regulation number 13 of 2007, some stakeholders that represented regional public interest and private interest were not involved in the discussion process. The governor then asserted that the rush was not any political movement from of certain interest since it occurred due to the need for the policy to have legal basis immediately as it was a strategic policy.

*Dominance.* The case study shows that dominance might result in inequality which might lead to distrust. Whereas in the long run, distrust is the source of conflict. Thompson in Rahim, (2001), argues that conflict in collaboration arises from differences in perceptions among people whose interests cannot be reconciled due to strong distrust in collaboration.

In addition to the domination of the government in the perspective of structural domination, the dominance of actors in the policy of moving the center of municipal governance of Lampung Province, function domination also occurred. Structural dominance is perceived as actors’ authority or government formal authority to facilitate various transfers of resources as well as incentives. Meanwhile, functional dominance refers to substantial control authority and rationale of certain policy made by certain actors which lead to mutual understanding and agreement upon the rationale and objectives of certain policy that finally bound them into collaboration.

In this context, actors’ dominance is a challenge for collaborative governance in coming to an ambivalence. Theoretically, the dominance of one actor should be avoided as it might inhibit collaboration. In fact, actors’ dominance often provides benefits if is not perceived as an intervention towards other actors. Instead, it is rather seen as extra role given to other actors since they have superior ability and resources to manage the ongoing collaboration process.

*Coordination and Quasi Collaboration.* The view that certain actor’s dominance might appear as a risk that leads to collaboration failure if it is not appropriately perceived and comprehended. This section briefly discusses whether coordination is the answer of problems related to power dominance in collaboration. The discussion above describes that the practice of both approaches (collaboration and coordination) is very difficult to

distinguish. In a general context, Cooper (2006) calls both of them as models of governance based on the role of citizens (citizen-centered governance).

Bovaird and Munro in Zaenuri, (2018) call collaboration as an institutionalized partnership, but those two concepts basically have quite fundamental differences. Partnership is different from collaboration, because collaboration covers a broader scope than partnership. According to Wildavsky, as quoted by Wanna (2008), collaboration involves several different dimensions. First, collaboration can involve cooperation to build common interest, enhance consistency, and align activities among actors. Second, collaboration also refers to the negotiation process that involves readiness to compromise and form trade-offs. Third, collaboration includes supervision, inspection, decision making and central coordination in the forum.

*Conclusion.* Collaborative governance refers to strategies used in the implementation of public policy to achieve good outputs and outcomes. In the perspective of governance, collaborative governance is also way implement good governance when the concept of good governance is often accused to prioritize certain principles without offering feasible strategy. Collaborative governance is believed to consist of series of firm and measurable work patterns that allow open communication and build mutual consensus between the government and society as well as other non-government actors in certain governance and implementation of certain public policy.

Unfortunately, the implementation of ideal collaborative governance is rather challenging in Indonesia. The major challenge is often triggered by unequal dominance of certain actors over the others. The government as one of the actors also triggers this challenge as the government holds the authority to regulate and intervene the process. The principle of equality and in collaboration forums is not something that can be easily enforced. In more severe cases, 'flirting' actions often done by state actors and private actors as the ones that hold the authority to determine the direction and alignment governance which often beat the role of the community / community actors. Moreover, the role of the state is often weaker than the one of private sector in various policy implementation in Indonesia due to the availability of opportunities and the principles of equality itself.

Therefore, the implementation of collaborative governance is not a feasible strategy to be applied in every situation. However, the dominance of state actors over non-state actors is reasonable because each party has the rights over authority, while the principle of equal role alignment triggers risks which may eliminate the arranged authority distribution. The authority that regulates the involvement of foreign actors is called coordination. Coordination allows the state to continue involving non-government actors under the authority of the state as the leader.

In this context, it is important to note that in Indonesia, coordination is considered more appropriate to implement as it facilitates the implementation of public policy in which the government is involved. The dominance of the state actors should not be seen as unequal distribution of power, instead it should be seen as the entity of the authority.

Probably, collaborative governance might be the last option to use if a policy demands participation of non-government actors as major determinants to the success of the policy implementation. In the other word, collaborative governance is preferred if the government could not give adequate guarantee upon the success of certain policy implementation. Finally, the use of either collaboration or coordination system in the implementation of certain policy should be determined based on comprehensive understanding of the policy itself.

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**THE EFFECTS OF ORGANIZATIONAL CULTURE, WORK COMMITMENT, AND  
COMPETENCE ON EMPLOYEE SATISFACTION AND PERFORMANCE  
IN PT BANK RAKYAT INDONESIA (PERSERO) TBK**

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**ABSTRACT**

The role of human resources in banking companies is the most important because the existence of human resources will affect the smoothness of bank activities in achieving the goals. The populations of this research were employees who had working period above 2 years at PT Bank Rakyat Indonesia (Persero) Tbk. The data collection method used in this research came from the results of questionnaires that were distributed to the respondents. Previous researchers applied multiple linear regression analysis whereas the research conducted by the researchers applied path analysis with Structural Model Equation approach through the application of Smart Partial Least Square (SEM PLS 2.0).

**KEY WORDS**

Organizational culture, work commitment, employee, satisfaction.

The role of human resources in banking companies is the most essential part because the human resources will affect the smoothness of bank activities in achieving its goals. Thus, it needs to be supported by human resources which will improve employee performance. Bintoro and Daryanto (2017: 1) argued that the employee performance is the quality and quantity of work achieved by an employee in performing their duties in accordance with their responsibilities.

The phenomenon, related to employee performance, has been done through the annual appraisal mechanism for employee performance using Performance Management System (PMS) or in common language what so-called Key Performance Indicators (KPI) in PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang. This assessment system is not only used to measure employee performance but also to measure the target achievement of employee work.

The issues of employee performance within the scope of banking relate to the success of a bank in achieving its goals. Sinambela (2012) mentioned that the performance can be optimized through the determination of salary, employee selection, goal orientation, training and development, description of organizational planning and description of responsibilities. Next, Zubair and Chair (2015) stated that the factors affecting employee performance are the organizational culture, leadership, organizational commitment and job satisfaction. Furthermore, Supiyanto (2015) said that performance can be improved with leadership, competence, organizational commitment and job satisfaction. However, not all of the above variables will be researched. The researchers limit only on the variables of organizational culture, work commitment and competence.

Employee performance is the most essential part and plays an important role in achieving the goals of a bank. One of the factors affecting employee performance is job satisfaction. According to Luthans (2012: 243), job satisfaction is the result of employee's perceptions of how well their work is in delivering what is considered to be important. The correlation of job satisfaction and employee performance has an effect which is in accordance with the opinion put forward by Robbins and Judge (2015: 52) who mentioned that the correlation of job satisfaction and employee performance is a myth. On the contrary, the review of 300 studies stated that the correlation is strong enough, so the opinions put forward by Robbins and Judge stated that there was a strong correlation between job satisfaction and employee performance.

In terms of employee satisfaction and performance relations, according to Wibowo (2013: 141), job satisfaction had a moderate positive effect on performance. People who have higher level of job satisfaction tend to have higher level of performance, higher level of citizenship behavior and lower level of counter-productive behavior. Supiyanto (2015) examined the effect of leadership, competence and organizational commitment to employee performance mediated by job satisfaction. The findings showed that compensation, competence and organizational commitment have a significant effect on employee performance and job satisfaction does not have a significant effect on employee performance. Meanwhile, Mardiani and Dewi (2015) found that job satisfaction and organizational commitment have a positive and significant effect on the employee performance of a bank in South Borneo either simultaneously or partially.

Meanwhile, Javed (2014) found that there is a positive and significant correlation of employee empowerment, work environment, job loyalty, and job satisfaction on employee performance. Meanwhile, Vrinda and Jacob (2015) found that employees would be more satisfied if they got what they expected so that it would affect employee performance. Similarly, Inuwa's research (2015) found that there is a positive effect between job satisfaction, work attitude and equity on the employee performance in an organization. Based on previous research, there is a research gap in which there is a difference between the findings of previous research; some found significant effect and some found no significant effect, so this becomes the research gap from this research.

Organizational culture is a system of shared meanings adopted by the members of the organization in which it differentiates the organization from other organizations. This system of shared meanings is a set of key characteristics upheld by the organization (Sunyoto, 2012: 225). Based on the opinion expressed by Sunyoto, it can be said that organizational culture for the company is a factor that plays an important role in increasing employee job satisfaction. It was stated by Koesmono (2005), in which the findings of his research found that organizational culture affects job satisfaction and employee performance. Widagdo's research (2013) found that organizational culture and organizational commitment affect job satisfaction.

Research conducted by Rohayati (2013) showed that partially organizational culture, leadership style and work motivation do not have significant effect on job satisfaction. Then, the research findings of Sabri et al. (2011) found that organizational culture is categorized into two components: organizational culture related to manager and leader (OCM) and organizational culture related to employee (OCE). In this case, the effect of studies of both types of culture on job satisfaction is positive and significant. There is a research gap because the findings are inconsistent among those research findings, so it is still necessary to conduct a research in this case.

Moreover, the effect of organizational culture on employee performance, according to Suzanto and Solihin (2012), showed that organizational culture, interpersonal commitment and organizational commitment have a positive and significant effect on employee performance. Meanwhile, Soedjono (2005) found that organizational culture affects the organizational behavior and employee performance. Meanwhile, Wanjiku and Agusioma (2014) found that organizational culture has an effect on employee performance. Based on previous research, there are inconsistent research findings in which some previous research found significant effect and some others found no significant effect. Therefore, this is the research gap of this research.

Organizational commitment is related to the strength of one's introduction and involvement in a particular organization (Panggabean, 2011: 137), so it can be concluded that organizational commitment affects job satisfaction. The findings of a research conducted by Arifah and Romadhon (2015) showed that organizational commitment has an effect on job satisfaction with positive regression coefficient direction. The findings of a research conducted by Sunarno and Liana (2015) found that organizational commitment was not proven to affect employee performance. Meanwhile, Adekola research findings (2012) indicated that there is significant effect between organizational commitment and employee job satisfaction.

Based on the previous researches, there are inconsistent research findings in terms of the effect of organizational commitment to job satisfaction. It is because some researchers found significant effect and some others found insignificant effect. In terms of organizational commitment to employee performance, Gunawan (2015) found that organizational commitment and locus of control have a significant effect on employee performance. Widi (2015) found that there is no significant effect between organizational commitment and employee performance. Furthermore Putrayana (2016) found that organizational commitment has a negative effect on employee performance. In addition, Giri et al. (2016) found that organizational commitment significantly affects employee performance.

Based on the findings of previous researches, there is a research gap in which some previous researches found positive and significant effect and some others found significant but negative effect. Next, competence in an organization is the most essential part. According to Sudarmanto (2010: 96), this competence is associated with a desire to work well or meet/ exceed the performance standards or the urge to work properly.

Edison et al. (2016: 142) mentioned that competence is related to the ability of individuals who perform a job properly and have an advantage based on the matters of knowledge, skill, and attitude. Employee competence plays an important role because competence will affect job satisfaction and employee performance. It is based on a research conducted by Bagia (2015) who suggested that competence affects job satisfaction. Meanwhile, a research conducted by Zainuddin et al. (2015) found that competence has an effect on job satisfaction and employee performance. Murgianto et al. (2016) showed that commitment, competence, and job satisfaction have a significant effect on work motivation. Meanwhile, commitment, competence, and job satisfaction have a significant effect on employee performance at Integrated Service Office in East Java.

Moreover, the research findings of Arifin (2012) showed that competence and organizational culture have a positive and significant effect on job satisfaction. Similarly, Dhermawan et al. (2012) found that competence has no significant effect on employee performance.

The research findings on the effect of competence on job satisfaction and employee performance contain research gap because some previous researches found significant effect on job satisfaction and employee performance and some others found that there is no significant effect.

Based on the background of the research that has been described previously, the formulation of the research problem becomes the following:

- 1) Does organizational culture affect employee job satisfaction?
- 2) Does work commitment affect employee job satisfaction?
- 3) Does competence affect employee job satisfaction?
- 4) Does the organizational culture affect employee performance?
- 5) Does work commitment affect employee performance?
- 6) Does competence affect employee performance?
- 7) Does job satisfaction affect employee performance?

The objectives of this research are to test the effect of:

- 1) Organizational culture on employee job satisfaction
- 2) Work commitment on employee job satisfaction
- 3) Competence on employee job satisfaction
- 4) Organizational culture on employee performance
- 5) Work commitment on employee performance
- 6) Competence on employee performance
- 7) Job satisfaction on employee performance

## **METHODS OF RESEARCH**

The research design used by researchers emphasized quantitative research. Indrawan and Yaniawati (2014: 51) argued that quantitative approach is a form of scientific research that examines one problem of one phenomenon and sees the possibility of linkage or

relationships between variables in the issues. This research was designed to examine the effect of organizational culture, work commitment and competence on employee performance mediated by job satisfaction.

*Population and Sample.* Populations of this research were permanent employee with working period over 2 years at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang as many as 871 people from 22 branches and 1 region. The samples used in this research were 274 respondents. In addition, the determination of research samples proportionally was performed by using random sampling technique.

*Research Setting.* This research was conducted at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang. The reasons for choosing PT. Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang were under the consideration that there was a correction to the performance and research gap. Moreover, the bank was one of the largest state-owned banks. In addition, it facilitated the researchers in obtaining and collecting the available data required for this research. The time required for the completion of this dissertation was from March to May of 2017.

*The Procedure of Data Collection.* The data collection method used in this research was through the results of distributing the questionnaires to the respondents. The results of the questionnaire distribution were the procedure that lifted the variables under the research such as organizational culture, organizational commitment, competence, job satisfaction, and employee performance. The data collection of this research was addressed to 274 employees in 23 offices (22 branch offices and 1 regional office) in the work area of PT BRI, Regional Office of Semarang.

*Analysis Using Structural Equation Model of Partial Least Square (SEM-PLS).* SEM application used in this research was variant-based SEM with statistical technique of SEM-PLS (Partial Least Square). The researchers' reason in using SEM-PLS was because after applying variant-based SEM test using Software Amos, it showed that multivariate normality was 47,62. Santoso (2013) in Bahri and Zamzam (2014: 28) argued that if the critical ratio (CR) skewness or CR kurtosis lies between -2.58 to +2.58, it is considered to be normally distributed. In this case, the multivariate normality was  $47.62 > 2.58$ , so it could be said that the data were not normally distributed. Therefore, this research would be more feasible to use SEM-PLS because it does not require normal distributed data. The findings of this research aimed to perform hypothesis testing by using SEM-Partial Least Square (PLS) analysis model. This research was conducted by using 2 models of approach consisting of measurement model (outer model) and structural model (inner model).

*Analysis of Measurement Model (Outer Model).* The analysis of measurement model (outer model) aimed to measure the validity and reliability of the model through the Algorithm process in SEM-PLS 2.0. The outer model included the validity test (convergence validity and discrimination validity) in which the reliability test (composite reliability and cronbach's alpha) with R2 value was a measuring instrument in measuring the accuracy of the research model. It can be described as the following: Construct Validity Test; Construct Reliability Test.

*Analysis of Structural Model (Inner Model).* The structural model was evaluated by using R square for the dependent construct. Stone-Geisser Q square test was used for predictive relevance and t-test as well as the significance of the structural path parameter coefficients. Changes in R square values were used to assess the effect of certain latent independent variables on latent dependent variables. The effect of  $f^2$  value was calculated using the formula:

$$f^2 = \frac{R^2_{included} - R^2_{excluded}}{1 - R^2_{included}}$$

$R^2_{included}$  and  $R^2_{excluded}$  were the R-square of the dependent latent variable when the predictors of latent variables were used or excluded in structural equations. The  $f^2$  value

equaled to 0.02, 0.015 and 0.35. They were interpreted by the predictors of latent variables to have small, medium and large effects on the structural level.

The PLS model for the construct model was also evaluated by looking at Q-square of predictive relevance to measure how well the observed values that were generated by the model and its parameter estimation. A Q-square value greater than 0 (zero) indicated that the model had a predictive relevance value whereas a Q-square value less than 0 indicated that the model had less predictive relevance.

*Hypothesis Testing.* According to Sarwono and Narimawati (2015: 178), hypothesis testing in SEM PLS could be performed by comparing t-value to t-table. The testing steps included among others: formulating the hypotheses, calculating the value of t-table, calculating the value of t-count, and conducting hypothesis testing. According to Jogiyanto and Abdillah (2009: 197), the score of the coefficient path or inner model shown by the value of t-statistic should be above 1.96 for hypothesis testing at 5 percent alpha.

Some of the fit indexes used in SEM-PLS were: in the outer model stage, it included outer loading, cross loading, composite reliability, cronbach's alpha, AVE, AVE roots whereas in the inner model stage, it included path coefficient test both indirect effect and direct effect. SEM-PLS hypothesis testing method used was structural model. Structural model testing was carried out to find out the effect of the path coefficient directly or indirectly between the variables under the research, the effect between the group and its indicator, between the constructs either endogenous or exogenous or between the two. Ferdinand (2002) stated that the structural model was a model that describes the correlation between constructs or hypothesized research variables which explain the causality including tiered causality.

*Mediation Test Using Sobel Test.* In this research, there might be intervening variables between independent and dependent variables. It meant that the effect of independent variable on dependent variable was not directly but through a process of transformation represented by the intervening variables (Baron and Kenney, 1986; in Jogiyanto and Abdillah, 2009: 117). The correlation of intervening variables between independent and dependent variables could be described as the following:

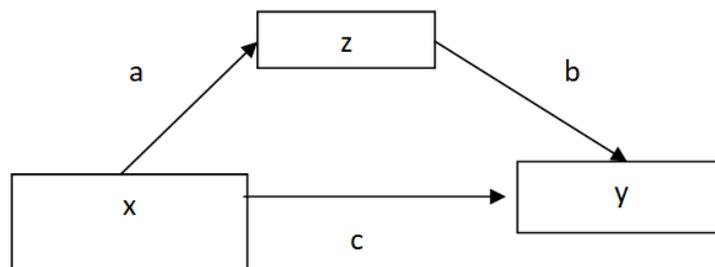


Figure 1 – Intervening (Mediation)

Figure 1 above was called partial mediation model in which one hypothesis described the direct relationship (from X to Y) and the hypothesis described the indirect relationship (from X to Y via Z) from the independent variable to the dependent variable.

## RESULTS OF STUDY

*Analysis Results Using Structural Equation Model of Partial Least Square (SEM-PLS).* According to Wiyono (2011: 428), standard loading values greater than 0.50 could be regarded as a valid research indicator whereas Jogiyanto and Abdillah (2009: 60) suggested that loading values greater than 0.50 was considered to be significantly practical. Thus, the higher the loading value, the more important the role of loading in interpreting the matrix factor. Figure of structural model using SEM Smart PLS 2.0 Algorithm (initial model) is presented in the following figure:

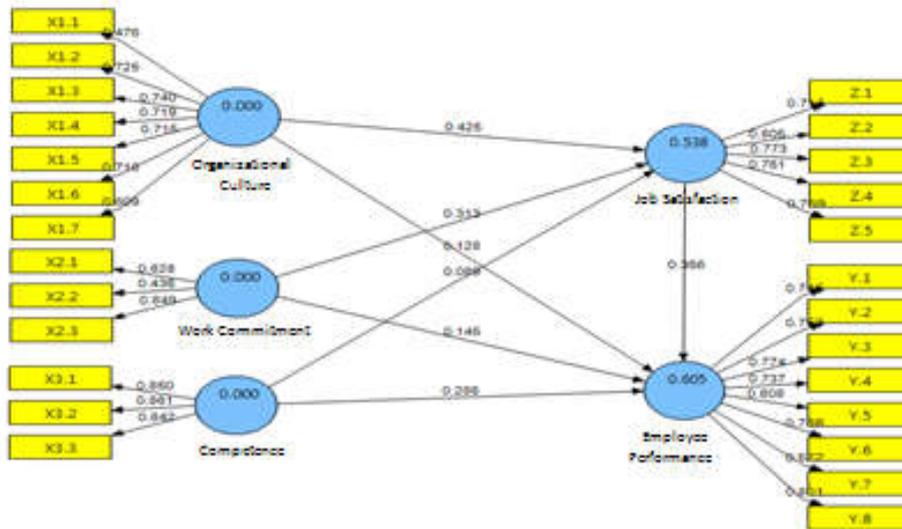


Figure 2 – The Results of SEM-PLS Algorithm (Initial Model)

Based on the range of loading values processed by using SEM-PLS (initial model), it showed that organizational culture was measured by 7 research indicators with a loading range of 0.476-0.740. Thus, there was an invalid research indicator that was X1.1 with loading value of 0.476 in which it should be dropped from this research. Then, work commitment was measured by 3 research indicators and had a loading range of 0.436-0.849. Thus, work commitment that had the X2.2 indicator was invalid so that X2.2 indicator must be dropped. Furthermore, competence was measured by 3 research indicators with loading value of 0.842-0.861. Since the range of loading values greater than 0.50, it meant that all research indicators were already valid. Furthermore, job satisfaction was measured by 5 research indicators and had a loading range of 0.715-0.805. Since the loading range was greater than 0.50, it meant that all research indicators were already valid. Meanwhile, the variable of employee performance was measured by 8 research indicators with loading range of 0.622-0.808. Since the loading range was greater than 0.50, it meant that all research indicators were already valid.

The figure of the structural model using SEM Smart PLS 2.0 Algorithm (after the improvement) is presented in the following figure:

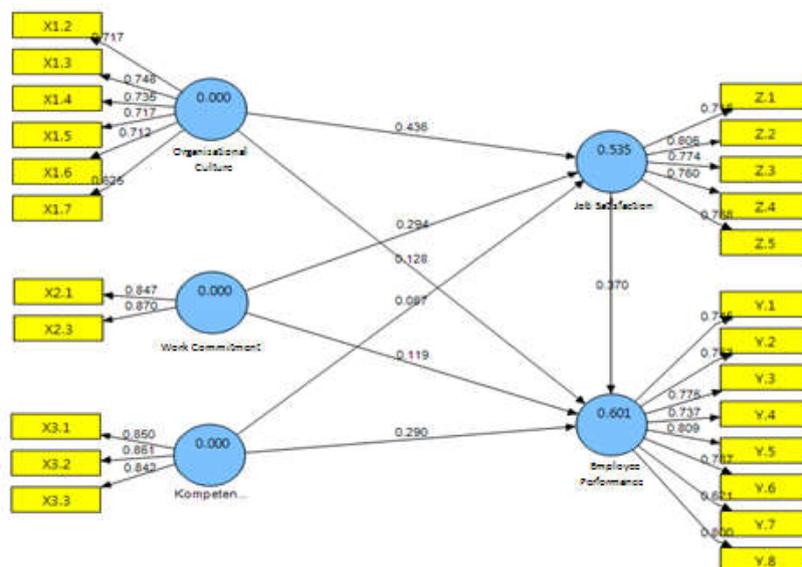


Figure 3 – The Results of SEM-PLS Algorithm (Model after the Improvement)

Based on the loading range of each research indicator, all indicators of each research variable to be used in hypothesis testing were valid, this could be seen from the loading range of each research variable namely organizational culture measured by 6 indicators (X1.2-X1.7) with a loading range of 0.625-0.748 which was already greater than 0.50. It meant that the six indicators of organizational culture were valid.

Then, work commitment was measured by 2 research indicators (X2.1-X2.3) with a loading range of 0.847-0.870 that was already greater than 0.50. It meant that all research indicators were already valid. The competence variable was measured by 3 research indicators (0.842-0.861) in which it was already greater than 0.50. It meant that all research indicators were valid in measuring competence variable. Furthermore, job satisfaction variable was measured by 5 research indicators (Z1-Z5) with loading range of 0.716-0.806. Since the loading range was greater than 0.50, it meant that all the research indicators were valid. In addition, employee performance variable was measured by 8 research indicators (Y.1-Y.8) with a loading range of 0.621-0.809 which was greater than 0.50. It meant that all research indicators were valid in measuring employee performance variable.

**Construct Reliability Test.** The reliability test in SEM-PLS analysis was performed to show the accuracy, consistency and accuracy of a measuring instrument in the measurement. In other words, reliability is a measure that shows the stability and consistency of an instrument in measuring a concept or a variable. The reliability was measured to see the value of cronbach's alpha with composite reliability.

**Cronbach's Alpha.** Cronbach's alpha in reliability test was used to measure the lower limit of a construct's reliable value. Based on the above description, the following will present the value of cronbach's alpha in the initial model and the model after the improvement that was processed using SEM-PLS in the table below:

Table 1 – The Values of Cronbach's Alpha Before and After the Improvement

No	Research Variables	Initial Model of Cronbach's Alpha	Cronbach's Alpha Model After the Improvement
1	Organizational Culture	0.800	0.802
2	Work Commitment	0.553	0.643
3	Competence	0.810	0.810
4	Job Satisfaction	0.823	0.823
5	Employee Performance	0.892	0.892

Table 1 is a comparison of cronbach's alpha values before and after the improvement from each research variable to be used in hypothesis testing. It could be seen that the value of cronbach's alpha for work commitment was less than 0.60. It meant that every research indicator was less reliable in measuring work commitment because after the improvement, the value of cronbach's alpha was already above 0.60. It was based on the opinion put forward by Jogiyanto and Abdillah (2009: 132) that the alpha value of rule of thumb or composite reliability must be greater than 0.70 although a value of 0.60 is still acceptable in the exploitation study. Thus, from that opinion, it can be concluded that all the research indicators used in hypothesis testing were already reliable in measuring every research indicator.

**Composite Reliability.** Composite reliability was used to measure the real value of construct reliability so that it presented the ratio of composite reliability before the improvement (initial model) and after the improvement in which it will be presented in the following table.

Table 2 – Composite Reliability Before and After the Improvement with the Research Indicators

No.	Research Variables	The Initial Model of Composite Reliability	Composite Reliability Model After the Improvement
1	Organizational Culture	0.854	0.859
2	Work Commitment	0.761	0.848
3	Competence	0.888	0.888
4	Job Satisfaction	0.876	0.876
5	Employee Performance	0.914	0.914

Table 2 is comparison results of composite reliability before the improvement (initial model) and after the improvement. The values of composite reliability, after the improvement, were much better compared to the before-the-improvement model (initial model). Therefore, the model used in this research was the model that had been through the improvement.

*Analysis of Structural Model (Inner Model).* Analysis of structural model (inner model) was a structural model that linked among the latent variables. Therefore, before conducting the analysis of structural model (inner model), the structural model of bootstrapping (initial model) would first be presented which can be seen through the following figure:

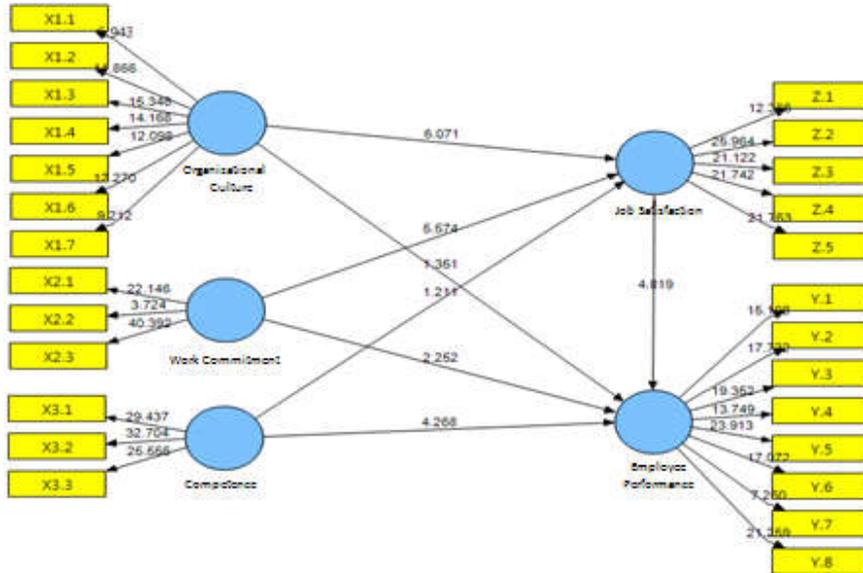


Figure 4 – The Results of Bootstrapping (Initial Model) Using SEM-PLS

Then structural model of bootstrapping (after the improvement) will be presented which can be seen in the following figure:

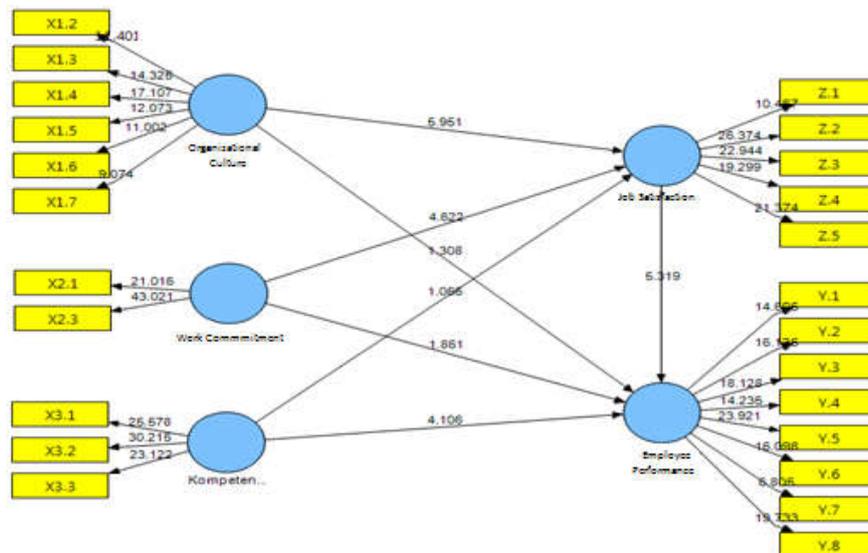


Figure 5 – The Results of Bootstrapping (After the Improvement) Using SEM-PLS

Based on the structural model (inner model) through the results of bootstrapping before and after the improvement, the determinant coefficient (R square), predictive relevance (Q square) and goodness of fit would be done first.

*Analysis of Determination Coefficient.* Analysis of determinant coefficient was used to measure the level of variation improvement of independent variable to dependent variable. The higher the value of R2 meant that the prediction model with the proposed research model was the better. Based on the result of bootstrapping in analysis model of SEM-PLS, R2 values of each endogenous variable are:

Table 3 – The Values of R Square

Research Variables	R Square
Job Satisfaction (Z)	0.535
Employee Performance	0.601

Based on table 3, the R square was 0.535. It could be interpreted that 53.50% (0.535 x 100) of job satisfaction could be explained by organizational culture, work commitment and competence. Meanwhile, the remaining 46.5% (1 - 0.535 x 100) was determined by other factors not included in this research model. Then, the R square = 0,601 could be interpreted that 60.10% (0,601 x 100) of employee performance could be explained by the existence of organizational culture, work commitment, competence and employee satisfaction. Meanwhile, the remaining 39.9% (1 - 0.601 x 100) was determined by other factors not included in this research.

*Analysis of Predictive Relevance (Q Square).* Analysis of predictive relevance (Q square) was used to describe good predictive level of endogenous variables. These results were determined by regression equation as the following:

$$Q2 = 1 - (1 - R1^2) (1 - R2^2) (1 - Rp^2) = 0.814$$

Based on the calculation of Q square, it produced a Q square value of 0.814. Then the value of Q square greater than 0 can be concluded that the organizational culture variable, work commitment, competence, and job satisfaction had a good level of prediction on employee performance.

*Test of Goodness of Fit Model.* The test on the structural model equation (SEM) was performed by looking at the R square value which included the test of goodness of fit. Based on the results of data processing using SEM-PLS, the R square and Q square could be presented in the following table:

Table 4 – The Values of R Square and Q Square

Research Variables	Values
Job Satisfaction	0.535
Employee Performance	0.601
Predictive Relevance (Q square)	0.814

Based on table 4, on the predictive relevance value of this research model, the Q square value was 0.814 in which it was already high. Thus, it could be concluded that this model was feasible to be used to test the hypothesis.

*Hypothesis Testing:*

*The Effect of Organizational Culture on Job Satisfaction.* Based on the test results, the t-statistic was 5.951, greater than t-table 1.96. It could be interpreted that organizational culture had a significant effect on job satisfaction. Therefore, in this research, the first hypothesis (H1) was accepted.

*The Effect of Work Commitment on Job Satisfaction.* Based on the result of hypothesis testing, the t-statistic was 4.622, bigger than t-table 1.96. It could be interpreted that work commitment had a significant effect on job satisfaction. Thus, in this research, the second hypothesis (H2) was accepted.

*The Effect of Competence on Job Satisfaction.* Based on the test results, the t-statistic was 1.066, smaller than t-table 1.96. Thus, it could be concluded that competence had no

significant effect on job satisfaction. Therefore, in this research, the third hypothesis (H3) was rejected.

*The Effect of Organizational Culture on Employee Performance.* Based on the test results, the t-statistic was 1.308, smaller than t-table 1.96. Thus, it could be interpreted that organizational culture had no significant effect on employee performance. Thus, in this research, the fourth hypothesis (H4) was rejected.

*The Effect of Work Commitment on Employee Performance.* Based on the results of the test analysis, the t-statistic was 1.861, smaller than t-table 1.96. Thus, it could be concluded that work commitment had no significant effect on employee performance. Thus, in this research, the fifth hypothesis (H5) was rejected.

*The Effect of Competence on Employee Performance.* Based on the results of the analysis test through the questionnaire distribution, the t-statistic value was 4.106, greater than t-table 1.96. Thus, it could be interpreted that the competence had a significant effect on employee performance. Thus, from the analysis results of this research, the sixth hypothesis (H6) was accepted.

*The Effect of Job Satisfaction on Employee Performance.* Based on result of analysis in this research, the t-statistic value was 5.319, bigger than t-table value 1.96. Thus, it could be concluded that job satisfaction had a significant effect on employee performance. Thus, from the results of the analysis in this research, the seventh hypothesis (H7) was accepted.

*The Results of Mediation Test.* The result of the path test on the effect of organizational culture through job satisfaction on employee performance showed that the direct effect was 0.128 while the indirect effect was 0.162. Thus, the total effect was 0.289. Therefore, it could be said that the effect of organizational culture through job satisfaction on employee performance was 0.289. To test the mediation effect, it needed to be tested using the Sobel test as the following:

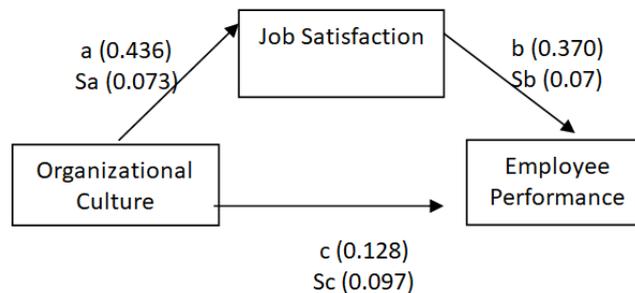


Figure 6 – Sobel Test to the Effect of Organizational Culture on Employee Performance through Job Satisfaction

Based on the calculation from the online calculator, the value of Z was 3.958. The Z value (3.958) > 1.96, it could be concluded that job satisfaction mediates the effect of organizational culture on employee performance. Thus, in this research, the empirical findings found that job satisfaction perceived by employees during work at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang could mediate the effect of organizational culture on employee performance.



Figure 7 – Sobel Test to the Effect of Work Commitment on Employee Performance through Job Satisfaction

Based on the results of the path test using SEM-PLS on the effect of work commitment through job satisfaction on employee performance, the direct effect was 0.119 whereas the indirect effect of work commitment through job satisfaction on employee performance was 0.109. Based on the results of the SEM-PLS path test above, the total effect of organizational commitment through job satisfaction on employee performance was 0.228.

Based on the calculation from the online calculator, the value of Z was 3.467. The Z value (3.467) > 1.96, it could be concluded that job satisfaction mediated the effect of work commitment on employee performance. Thus, in this research, empirical findings found that job satisfaction perceived by employees during work at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang could encourage the employee to have high work commitment which affected the employee performance.

Based on the results of path test on the effect of competence through job satisfaction on employee performance, the direct effect was 0.290 whereas the indirect effect was 0.032. Thus, the total effect of competence through job satisfaction on employee performance was 0.322. To test the effect of such mediation, it needed to be tested using the Sobel test as the following:

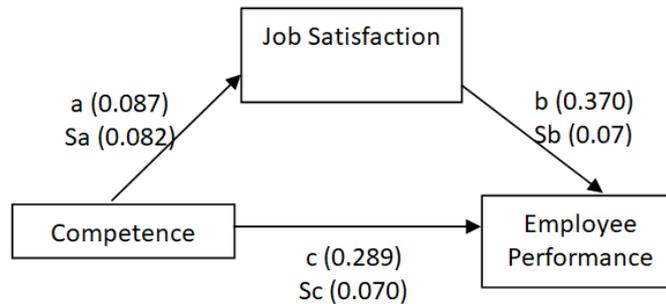


Figure 8 – Sobel Test on the Effect of Competence on Employee Performance through Job Satisfaction

Based on the calculation from the online calculator, the Z value was 1.040. The Z value (1.040) < 1.96, it could be concluded that job satisfaction could not mediate the effect of competence on employee performance. These results indicated that competence did not encourage employee job satisfaction in PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang.

## DISCUSSION OF RESULTS

*The Effect of Organizational Culture on Job Satisfaction.* The organizational culture in Bank Rakyat Indonesia (Persero) Tbk was integrity, professionalism, trust, innovation and customer centric. Based on the results of the observation through the distribution of questionnaires, it showed that employees' perceptions regarding the implementation of organizational culture so far had been quite good. It was based on the criteria of description analysis 3.40-4.19 which could be interpreted as good/ high (Muhidin and Abdurahman, 2011: 146). It is considered that the application of organizational culture was already quite good because of the innovative ideas. In addition, it was known that the employees' perceptions had provided an opportunity for every employee to always create innovative ideas in doing the job.

Then, it is seen from the employee's perception to the detail attention in doing the job. On average, the employees had perceived well because the score had ranged from 3.40 to 4.19. The reason was because every employee had had detail attention of every job and was always oriented to the work results in completing the work, especially within the scope of PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang.

Furthermore, the employees' perceptions of PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang had responded that leaders often paid attention to employees

during the work. In addition, every employee of PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang always finished the work which was more oriented to teamwork.

Then employees were required to work aggressively in completing the job that became their respective responsibilities. It could be seen that every employee was required to perform the duties that were his/her responsibility and in addition the employees had been comfortable with the work conditions at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang.

Based on the test results on the effect of organizational culture on employee job satisfaction at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang, empirically it was found that organizational culture had a significant effect on employee job satisfaction which meant that efforts in improving employee job satisfaction could be improved through organizational culture.

Research conducted by Koesmono (2005) and Widagdo (2013) supported that organizational culture affected job satisfaction. Meanwhile, Rohayati (2013) and Sabri et al. (2011) suggested that it had a positive and significant effect on job satisfaction. Thus, this research supported the research conducted by Koesmono (2005), Widagdo (2013), and Sabri et al. (2011) and did not support the research conducted by Rohayati (2013).

*The Effect of Work Commitment on Job Satisfaction.* Based on the analysis results obtained from the results of field observation at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang and its branches, it obtained the findings from employees' perceptions in PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang in which they had given good responses because the score was in the range of 3.40-4.19. It could be seen from the pride of the employees working at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang.

In addition, the employees stated that they did not intend to leave the company. Thus, based on the perception of the employees working at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang, they would continue working and did not intend to leave the company.

Then, from the analysis of the effect of work commitment on job satisfaction at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang, it showed that work commitment had a significant effect on employee job satisfaction.

Research conducted by Arifah and Romadhon (2015) found the findings that work commitment affected the employee job satisfaction. Meanwhile, Sunarno and Liana (2015) found that work commitment had no effect on job satisfaction. In addition, Adekola (2012) found that there was a significant effect between work commitment and job satisfaction. Thus, this research supported the research conducted by Arifah and Romadhon (2015) and Adekola (2012), but did not support the research conducted by Sunarno and Liana (2015).

*The Effect of Competence on Job Satisfaction.* Based on the research findings through the distribution of questionnaires, the findings showed that the perception of the respondents about the employee competence of PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang was already high because it was in the range between 3.40-4.19 score. It could be known that the level of knowledge owned by the employees working at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang was good. The reason was because the employees already had the ability to do the work they had handled so far.

Next, if it was viewed from the expertise of employees in doing the work, it showed that the expertise of the employees working at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang was considered as high. It could be seen that the employees working at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang perceived that all employees already had the competence of every job they handled so far.

Employees' perceptions had given enough responses to the behavior or attitude in running work activities. This could be seen from the employee's responses in which they already had behavior or work attitude in doing the work they have handled so far.

Based on the results of the path test, it was found empirically that employee competence proved to have no significant effect on employee job satisfaction at PT Bank

Rakyat Indonesia Tbk, Regional Office of Semarang because there were still a small number of employees who had less expertise in the field of competence they had handled. In addition, there were still a small number of employees who were less satisfied with the employee placement that was less in accordance with the field of competence owned by employees so far.

The findings of previous research supporting that competence had a significant effect on job satisfaction were Bagia (2014), Zainuddin et al. (2015), Murgianto and Suhermin (2016), and Arifin (2015). Meanwhile, research conducted by Dhermawan et al. (2016) did not support that competence had an insignificant effect on employee performance. Thus, this research conducted by the researchers did not support the research conducted by Bagia (2014), Zainuddin (2015), Murgianto and Suhermin (2016), and Arifin (2015), and supported the research conducted by Dhermawan et al. (2016).

*The Effect of Organizational Culture on Employee Performance.* The analysis results of this research indicated that the implementation of organizational culture conducted by PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang had not improved employee performance. It was seen that the employees' perception of PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang was still lacking, so the working conditions needed to be improved in order to provide comfort and create an atmosphere supporting the satisfaction for every employee.

Research conducted by Suzanto and Solihin (2012), Soedjono (2005), Wanjiku and Agusioma (2014) supported that organizational culture affected the employee performance whereas the research findings of Nurhalim and Sudarsih (2015) found that organizational culture had no effect on employee performance. Thus, this research did not support the research conducted by Suzanto and Solihin (2012), Soedjono (2005) and Wanjiku and Agusioma (2014), and supported the research conducted by Nurhalim and Sudarsih (2015).

*The Effect of Work Commitment to Employee Performance.* The analysis result of this research found that work commitment had an insignificant effect on employee performance in PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang. The reason was that based on employee perception, work commitment still needed to be enhanced through the attention of leader to always pay attention to the salary and allowance aspects so that the employees might be satisfied and they would keep working and not intended to leave the company.

The previous research conducted by Gunawan (2015), Widi (2015), and Giri et al. (2016) found that work commitment had a significant effect on employee performance. Thus, this research conducted by the researchers did not support the previous research.

*The Effect of Competence on Employee Performance.* Based on the findings of this research namely the effect of competence on employee performance at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang, it was obtained the empirical findings that competence had a significant effect on employee performance. Factors that could improve employee performance were determined by the competence (knowledge and expertise) owned by every employee in completing their works at PT Bank Rakyat Indonesia Tbk, Regional Office of Semarang.

Findings from the previous research conducted by Zainuddin et al, (2015) stated that competence affected employee satisfaction and performance. Meanwhile, research conducted by Murgianto and Suhermin (2016) found that competence affected employee performance. Another research conducted by Dhermawan et al. (2016) showed that competence had a significant effect on employee performance. Thus, this research supported research conducted by Zainuddin et al, (2015) and Murgianto and Suhermin (2016) and did not support the research conducted by Dhermawan et al. (2016).

*The Effect of Job Satisfaction on Employee Performance.* Based on the observations conducted at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang which could be seen from the work handled by the employees, most employees' perceptions had been satisfied with the work they had handled so far. In addition, the working relationship between the leaders and the employees had already created a good working relationship.

Mostly, one colleague and another at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang supported the creation of daily work settlements that affected employee performance. In addition, the terms of promotion of positions conducted by PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang had provided job satisfaction for every employee. Similarly, salaries and benefits were received by employees in which, there were still employees who received a low enough allowance.

The results of hypothesis testing had been conducted showed that job satisfaction had positive and significant effect to employee performance. The higher the employee job satisfaction then the employee performance could be further improved. Thus, this research found the factors that could improve employee performance was job satisfaction perceived by each employee. This was in accordance with the theory revealed by Gibson et al, (2004: 98) which explained that job satisfaction led to an increase or decrease in employee performance so that satisfied employees would be more productive compared with unsatisfied employees. When the employees feel dissatisfaction over their work, it would cause the performance to decline. In addition, Gibson et al, (2004: 99) revealed that it illustrated a reciprocal relationship between job satisfaction and employee performance.

The findings of this research were in line with research conducted by Inuwa (2015) who found that job satisfaction had a positive and significant effect on employee performance. Similarly, the research conducted by Mardiani and Dewi (2015) found that job satisfaction had a significant effect on employee performance. Another research in line with this research was Vrinda and Jacob's (2015) research found that job satisfaction affected employee performance. However, it was different from the research findings of Supiyanto (2015) who found that job satisfaction did not affect the employee performance.

*Discussion on Indirect Effect.* Test results on indirect effect explained the effect of intervening variable of job satisfaction on the correlation between independent variable and dependent variable. The intervening variable (mediation) could strengthen or weaken the correlation of independent variable and dependent variable. Explanation of indirect effect of this research could be explained as the following:

The test results of indirect effect from the sobel test showed that job satisfaction mediated the effect of organizational culture on employee performance in PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang. Good organizational culture could improve employee job satisfaction that would give effect on improving employee performance. The operational implementation of the organization was already running well. According to the employees' perception of the employees working at PT Bank Rakyat Indonesia (Persero) Tbk, Regional office of Semarang, they always gave detail attention on the tasks or jobs they had handled so far. In addition, any work that had been handled was always oriented to the work results in completing the task. This showed a good organizational culture which would increase employee job satisfaction. If the employees get job satisfaction, then they would work without having to be supervised by the leaders so that their performance would be higher. This was in accordance with the theory revealed by Gibson et al. (2004: 98) who explained that job satisfaction caused an increase or decrease in employee performance so that satisfied employees would be more productive than unsatisfied employees. If an employee feels unsatisfied with his or her work, it would cause a decrease in performance. In addition, Gibson et al. (2004: 99) revealed that it illustrated a reciprocal correlation between job satisfaction and employee performance.

The test results of indirect effect from the sobel test showed that job satisfaction mediated the effect of organizational commitment on employee performance in PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang. A high commitment would make a person feel satisfied with what they are doing. This research indicated that level of employee commitment in PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang needed to be improved in order to increase employee satisfaction and improve employee performance. This research also found that work commitment had an insignificant effect on employee performance. Therefore it was necessary to increase employee job satisfaction as performed in mediation test in which job satisfaction was able to mediate the effect of work commitment on employee performance.

The test results from indirect effect of the sobel test showed that job satisfaction did not mediate the effect of competence on employee performance in PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang. This could be explained because employees who had high work competence might not be satisfied with their works. However, high competence would facilitate employees in performing their duties. Competence owned by the employees could encourage someone to finish the job appropriately so that their performances would increase. Therefore, competence was still needed to improve employee performance in PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang.

*Implication of the Findings.* Implication of the findings of this research expected that the findings from the field observations could be used as the development of management theory of human resource, especially to the matters relating to organizational culture, work commitment, competence, job satisfaction, and employee performance in the scope of banking.

*Practical Implication.* The implications of this research indicated that the research findings provided a practical contribution that could explain the research gap in this research. In addition, it could provide empirical findings to improve the performance of bank employees. Thus, it is advisable to improve organizational culture, work commitment, competence, and job satisfaction. Thus, PT Bank Rakyat Indonesia (Persero) Tbk, Semarang Regional Office needs to improve the aspects that can enhance job satisfaction such as: salary and allowances, employment relationship between the leaders and the employees, and attention to the provisions of promotion conducted so far by PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang.

*Limitations of the Research.* The limitations of this research was that the researchers only conducted the observations and did not conduct interview so that the conclusions were drawn only based on the data collected by using written instrument (questionnaire).

*Novelty of the Research.* The novelty of this research, compared to the previous research, was that it emphasized more in examining the effect of organizational culture, work commitment, and competence to employee performance by using job satisfaction as the intervening variable. On average, the previous researchers applied multiple linear regression analysis whereas this research applied path analysis using Structural Model Equation (SEM) approach through the application of Smart Partial Least Square (SEM PLS 2.0).

## **CONCLUSION**

Based on the analysis results and discussion from the research findings, some conclusions from the analysis results can be drawn as the following:

The analysis results of this research namely the effect of organizational culture on employee job satisfaction at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang empirically found that organizational culture had a significant effect on job satisfaction of the employees working in PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang. Thus, in this research, the hypothesis was accepted.

The research findings on the effect of work commitment to employee job satisfaction empirically found that work commitment had a significant effect on job satisfaction at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang. Thus, in this research, the hypothesis was accepted.

The research findings on the effect of competence on job satisfaction at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang empirically found that the competence had a significant effect on job satisfaction of the employees working in PT Bank Rakyat Indonesia Tbk, Regional Office of Semarang. Thus, in this research, the hypothesis was rejected.

The analysis results of the research on the effect of organizational culture on employee performance at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang found that organizational culture had no significant effect on employee performance at PT Bank Rakyat Indonesia Tbk, Regional Office of Semarang. Thus, the research hypothesis was rejected.

The analysis results of the research on the effect of work commitment on employee performance empirically obtained the findings that work commitment had no significant effect on employee performance, so the hypothesis was rejected.

The analysis results of the research on the effect of competence on employee performance at PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang found empirically that competence had a significant effect on employee performance. Thus, the hypothesis was accepted.

The analysis results of the research found that job satisfaction had a significant effect on employee performance of the employees working in PT Bank Rakyat Indonesia (Persero) Tbk, Regional Office of Semarang. Thus, the research hypothesis was accepted.

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**THE ROLE OF SERVICE EMPATHIZE TOWARDS PUBLIC SATISFACTION:  
A CASE STUDY AT POPULATION AND CIVIL REGISTRATION AGENT  
OF SOUTH CENTRAL TIMOR REGENCY**

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**ABSTRACT**

The research aims to understand the role of empathy dimensions towards the public satisfaction to the service of Population and Civil Service Agent of South Central Timor Regency. The large number of complaints against the service quality is the reason for this research. To find out the cause of the importance of service empathize by the apparatus, it is necessary to understand the public complaints about the quality services they received, especially in the dimension of empathy. The research method used is descriptive qualitative. The results of the study prove that services empathize by apparatus is essential for the satisfaction of the community towards public service. The high expectations of the community to empathetic services of apparatus caused by cultural factor, psychological and social status.

**KEY WORDS**

Empathy, public service, satisfaction, service quality.

One of the indicators of community satisfaction towards the services received is full service attention to consumer (empathy). In accordance with the basic principles of good governance that is the realization of a democratic services, any bureaucratic actors need to uphold humanitarian principles and moral values. Public satisfaction to the public service in Indonesia has always been an important issue to be discussed. It is inseparable from the work behavior of the bureaucracy that has been getting low ratings from the public. The problems that occurred in The Population and Civil Registration agent of South Central Timor Regency is the public dissatisfaction to the service of the apparatus.

Some research proved that the satisfaction of the public focus more on elements of service of process. The research conducted by Fahmi Reza (2016) on the influence of the quality of public services against the public satisfaction. The indicators used are tangible, responsiveness, assurance, and empathy. The results showed a significant influence. Furthermore, a study conducted by Muhsin and Ikhsani (2017), there is a simultaneous influence on dimensions of empathy towards the public satisfaction. Mentioned that the influence simultaneously between the empathy of employees to public satisfaction reached 61.3%. Based on the results of this study, we can see that empathy is very influential on service quality.

To measure quality of service an organization, cannot be done simply by using a single indicator, but to improve the quality of service, it can be done by a specific dimension on a priority. Such as research conducted by Khanifatul Khusna (2017) by focusing on dimensions of empathy with indicators understanding the community, service orientation, developing others and capitalize on its diversity.

Each community with geographical conditions and different cultures will certainly give a different assessment to the same social problem. In contrast to research conducted by Khanifatul Khusna, this research will be focused on public service quality dimensions of empathy. Formulation of the problem in this research is how complaints against the public service in the Office of the Population and civil registration agent of South Central Timor

Regency, and what are the factors that lead to high complaints on dimensions of empathy. Therefore, the researcher tried to find the extent of apparatus empathy in serving the community. The reason of focusing this study on dimensions of empathy is based on the results of pra research conducted on October 12 to October 19, 2017 at the offices of the population and civil registration agent of South Central Timor Regency, there were many complains by the community about apparatus behavior that is considered not understand the needs and expectations of society as the customer.

If the previous studies have attempted to find the drivers and inhibiting factors of service empathized by apparatus, this research will try to find the factors that cause the service empathize is important for the satisfaction of public to the service quality. The importance of the dimensions of empathy in this research is seen from the community viewpoint, so the purpose is to describe the role dimensions of empathy for the public satisfaction to the service of apparatus in the Office The population and Civil registration agent of South Central Timor Regency.

## LITERATURE REVIEW

The satisfaction of the community largely determine the success rate of the public service of a government agency. This problem requires major attention from the service provider. Service providers in the public service is the Government apparatus who providing services in accordance with the legislation. While the public as consumers or recipients of services are people, communities or institutions who benefit from a public service activities.

There are five dimensions of service quality according to Zeithaml, et al (1990):

- Reliability is the ability of the apparatus to provide accurate, credible, on time, and avoid repeating the mistake;
- Responsiveness is the willingness of the apparatus to provides services depending on the public expectations;
- Assurance; including knowledge, ability, friendly, courteous and trustworthy;
- Empathy is the ability to understand both the needs and the difficulty of consumers including good communication, personal attention and ease in doing communications;
- Tangible; including the availability of physical facilities and equipment.

This research is focused on dimensions of empathy. Empathy possessed by any public servant will establish a good system of service. Empathy is used in assessing the quality of public services in order to find all the requirements desired by the consumer. Howe (2005), said that empathy is the ability to identify what is in others mind, so we can appropriately respond to their thoughts and feelings.

Empathy is the basic ability to understand social skills at work. These skills according to Goleman (2003) are understanding others, serving orientation, developing others and appreciating diversity. In this study, the indicators used are understanding others and service orientation. Understanding others according to Goleman (2003) consists of the ability to pay attention and listen properly, showed sensitivity to other people's perspective, and understand the needs of others. While the service orientation consists of understand and adjust the service to the public needs, try a variety of ways to give satisfaction towards the services and act as a trusted advisor.

According to Sciffman and Kanuk (2008), customer behavior is a process of searching, using, evaluating and acting in consuming products or services that are expected to meet the needs of the person. Furthermore, Kotler (2008) suggests factors that affect customer behavior that is culture, social status, personal and psychological. The behavioral indicators used in this study are cultural, social status and psychological. Culture is the determinant of the desire and the most basic constituent of behavior. Each culture is composed of sub-culture that is more revealing identification and socialization for its members. social status is also one of the factors

that can influence customer behavior. A person with higher social status will have an effect on the attitude and sense of high esteem in the community. Another factor is psychological. Psychological factors are more focussed on the public perception and motivation.

## **METHODS OF RESEARCH**

The approach used in this research is descriptive qualitative approach. This research was conducted at the offices of The population and Civil Registration Agent of South Central Timor Regency. Informants in this study were five persons selected randomly to the community who have repeatedly received service at the Office of Population and Civil Registration agent of South Central Timor Regency.

## **RESULTS AND DISCUSSION**

Based on regional regulation No. 13, 2011 as the changes of regulation No. 21, 2007 about organization and functioning of regional technical agencies, The Population and Civil Registration Agent of South Central Timor Regency is a unit of Local Government Agency (called SKPD) is responsible for planning, developing, controlling, and evaluation based on the local governments authority in the field of the administration of population and civil registration.

Distribution of the population in South Central Timor Regency generally uneven. This is due to the geographical and natural environmental condition. Based on the registration of inhabitant in 2016, the population of South Central Timor Regency amounted to 456,152 inhabitants. The area of South Central Timor Regency is 3947 km<sup>2</sup>. There are 32 sub-districts administration consisting of 240 villages. The population administration services is centered in the office of the population and civil registration agent .

Population administration services in the district of South Central Timor as a whole are served in the Office of Population and Civil Registration Agent located at the capital city of the regency, while the number of human resources owned only amounted to 32 people. It can be concluded that with a small number of employees and a large service area, sufficient empathy is required by the apparatus in serving the community.

To assess the empathy of the apparatus in an institution, it is necessary to understand the community as an object of service. Based on the observation and interviews, apparatus are considered not able to provide services that empathize to the community. The measured indicator is the ability of apparatus to understand the community. This is in accordance with the statement in the pass by MYA (informant) that:

"To be able to get here (Office of Population and Civil Registration Agent of South Central Timor Regency) from the village, requires effort and expense. Our hope is to get priority service from the apparatus, including friendly service and ease of service. But that was not happened, when you make a little mistake then they will ask you to go back to fix it which of course will take time and cost "

Based on the above statement, then it can be said that apparatus still have not understand the community. The community expectation to have full empathy by apparatus of The Population and Registration agent of South Central Timor Regency was not seen in terms of understanding others.

Another indicator of empathy is service orientation. The description of service orientation at The Population and Civil Registration Agent of South Central Timor regency is to provide services and fulfill every interest of the community as the recipient of the service. The motto was used in the service is to provide a friendly service and oriented to the satisfaction of the community. An informant initials ON who asked about the motto, he said that:

"Talking about friendly, I don't want to say that the apparatus is not friendly but with the large number of people queuing to get service here everyday, the hospitality of the officers does

not seem to be a priority. Then if they say that service is oriented to the public satisfaction, I see it is still not so obvious, because if we want to ask about the requirements, the officer will reason that there are still many people who queue, don't take too much time to ask ".

Some informants also said that friendly service here is still considered poorly when compared with services obtained at other agencies. In addition, service delay is one indicator of public complaints towards service orientation. Apparatus are considered insensitive to the public needs. An informant says that:

"The Service here is still hard to be on time, they promise to be completed within three days but sometimes we have to wait for months. So, the villagers must repeatedly waste time and money for just one document ".

The above statements show the public's complaints about services that are felt not empathetic. So, researcher will try to find the causes why people want empathetic service.

The reason the public want empathetic service is measured based on customer behavior toward a service product which indicator consist of cultural factor, social status, personal and psychological.

Based on the observation and interviews, people in South Central Timor Regency still upholding the values of local culture. Local cultural values that are used in this research is a moral value. Moral values are largely determined by the attitudes, behavior and speech of someone in interacting with others. Interview conducted against YA (speaker) says that:

"At a time when our name was called to get service, surely we will greet to the apparatus, but they rarely answered. They direct ask, what do you want to do? the question of apparatus like we are in the investigation of a crime case. Even once there was a village chief who was shouted by the officer, although it was not appropriate for a village head to be shouted like that ".

The above statement is very clear that moral values are very important for society, especially in rural communities. Attitudes of the apparatus are considered incompatible with moral values held by society, where a leader must be respected and treated well.

The other indicator in the role of empathy is social status. Social status is the position of a person in a hierarchical order in society. A person with a high social status within a particular group of people will be treated differently from that member of the community. Based on observations, people who want to get service come from different backgrounds. Those who have high positions in the community always want to be prioritized even though the Department of Population and Civil Registration of Timor Tengah Selatan district has its own mechanism and service procedure. TA, one of the interviewees said that he did not want to jostle to register a name because he thought it was very disrespectful to the public. After further questioning by the researcher, it turns out that the source is a highly respected public figure in his village. This is certainly one of the reasons that it desperately needs the special attention of the apparatus whose desirability is already contrary to the principle of equity.

Another factor that also affects the public expectation of empathetic service is psychological factor. Psychological factors can be measured based on public perceptions or motivations. Perception is a process done to select and organize the information obtained, while motivation is a drive that requires a person to do something. Based on the results of interviews conducted on a person with the initials AB, he said that:

"The services we get here from past until now never changes. All those who came here will definitely go home with the same story like the rude service and did not allowed us to ask question ".

The above statement can be concluded that the perception conveyed by the informant is the result of experience and information that he got. However, based on observations, apparatus was not always rude to the public, the attitude and appearance of the people that was the reason why the apparatus became abusive, such as people who comes by using impolite dress or dishonest about the previous identity. The motivation of the community to complete the document of population administration is also one of the reasons for the people to get

empathetic service. Based on the interviews, public have less awareness to the completeness of the document of population administration. ON (informant), said that:

“If it were not for my children's schooling, maybe I never came here to make ID cards or anything else”

This statement indicates that the motivation of the community to complete the document of population administration is due to the demands of the child's schooling needs. So this makes them sensitive to the service received. Few mistakes made by the apparatus will be considered unworthy by the community.

### **CONCLUSION**

According to the analysis, It can be concluded that the dimension of empathy in Population and Civil Registration Agent of South Central Timor regency services tend to be considered negative by society. People complain about apparatus behavior that do not understand their needs and expectation. Public expectation for the empathetic service is quite high. It is caused by cultural factors, social status and psychological.

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## **THE ROLE OF CORPORATE SOCIAL RESPONSIBILITY DISCLOSURE IN MODERATING THE EFFECT OF CAPITAL STRUCTURE ON FIRM VALUE**

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### **ABSTRACT**

This study aims to prove empirically the effect of capital structure on firm value moderated by CSR disclosure. Signaling theory is used as the theoretical basis in this study. The population is all companies in the mining sector of Indonesia Stock Exchange during 2012-2016. Sampling method uses purposive sampling method. Hypotheses were tested with Moderated Regression Analysis (MRA) with a classical assumption test first. The result of the analysis shows that CSR disclosure variable is able to moderate the effect of capital structure on firm value. It means that more companies expose their social responsibility to the environment and society will further strengthen the interest of investors to invest in companies that are considered environmentally friendly and see CSR activities as a guide to assess the potential sustainability of a company, but when the company's capital structure where the proportion of debt more than its equity will be able to lower the firm value because investors judge the company is too risky financial difficulties. If the company's debt can be reduced then it can increase the firm value.

### **KEY WORDS**

Capital structure, firm value, disclosure, signaling theory.

Firm value is a value that reflects what price investors can afford for a company. The value of the firm in this study is measured by market to book ratio or market value comparison to the book value of a company's equity used to find out how much the price per share is in the market compared to the book value per share (Weston & Copeland, 1992; Apriada, 2013).

The welfare of shareholders is affected by the financial decisions made by the management. The financial manager as the party responsible, has an important role in determining financial decisions. One of the important decisions faced by financial managers is the decision of funding or the determination of capital structure. The amount of funds required each company is not the same, tailored to the conditions of each company.

The capital structure is the proportion of long-term debt financing and equity financing. If the company's capital needs are increased, while the funds are limited then the company has no choice but to use the funds from outside, either in the form of debt or issuing bonds to meet its capital needs (Brealey, et al., 2007). Therefore, the problem of capital structure is a very important issue for the company, because the funding policy determines the company's operations.

The type of funding chosen will affect the company's investment decision. In addition, capital structure decisions directly affect the amount of risk that must be borne by the shareholders, as well as the magnitude of the expected rate of return or profit. The wrong decision about the capital structure will cause the company to experience financial distress or even to bankruptcy. Conversely, appropriate funding decisions will improve the cost efficiency of capital and firm value. Therefore, choosing funding strategy becomes important in establishing optimal capital structure.

Research on capital structure aims to determine a model that can explain the company's funding decisions. Theoretically, the factors that affect the decision of the funding structure are difficult to measure (Sulistiyowati, 2009). Firm funding sources can be obtained from both internal and external sources. Trade off theory itself is more inclined to the use of external funding sources. The capital structure policy involves a trade off between return and

risk (Brigham & Houston, 2001: 5). Using debt means increasing the risk borne by shareholders and also enlarging the rate of return. Static trade off theory states that the balance between the interested tax shield with leverage related costs such as financial distress and bankruptcy will be able to optimize the capital structure (Ramlal, 2009). Trade off theory explains that the manager's decision in determining the order of structure and source of funding begins with the use of debt.

In this research the moderating variable used is Corporate Social Responsibility disclosure hereinafter abbreviated as CSR which is calculated using content analysis method. CSR activity is a form of firm responsibility to improve social and environmental problems that occur due to the company's operational activities; therefore CSR is instrumental to increase the firm value. Companies should regard CSR as a profitable long-term strategy, not as a harmful activity (Heinkel, et al., 2001).

By expressing CSR the company will not get direct profit, which is expected from the activity is a benefit in the form of image or firm reputation. To companies that have gone public or capital market issuers, the reputation of the company tends to increase the assessment of investors, which in turn will facilitate the company to obtain capital. Reputation will increase firm value implicitly and can be sold to its stakeholders (Dobson, 1989).

In Indonesia itself, research on corporate social responsibility as one of the firm reputation proxies is done by (Suta, 2005) which analyzes the effect between firm reputation and market performance. The study begins with the analysis of factors and dimensional reduction of some of the adaptation reputation criteria of AMAC's reputation model and other methods called "Harris Fombrun Reputation Quotient (RQ)" resulting in several new factors forming the company's reputation, i.e. social responsibility, accounting measurements, firm governance, and reputation. This study shows that there is a effect which is positive between the firm reputation with the firm market performance, where in measuring market performance, used four measurement variables, namely stock liquidity, stock price growth, stock distribution, and market capitalization. The results of this study show that corporate governance and reputation of top management have a very significant effect on the market performance of the firm followed by social responsibility and accounting measures.

## LITERATURE REVIEW

Financial information is conveyed by the company through the financial statements regarding the accountability of the management of the economic resources it manages. The financial information disclosed in the financial statements can reflect how large the value of a company is through its stock market price (Fama, 1978). Soliha and Taswan (2002) stated that the higher the stock price the higher the firm value. High firm value is the desire of the company owner, high firm value indicates high shareholder wealth.

The welfare of shareholders is effect by the financial decisions made by the management. The financial manager as a responsible party has an important role in determining financial decisions such as funding decisions or capital structure determination. The amount of funds required each company is not the same, tailored to the conditions of each company. If the company's capital needs are increasing, while the funds are limited then the company has no choice but to use the funds that come from outside, either in the form of debt or issuing bonds to meet their capital needs. Therefore, the problem of capital structure is a very important issue for the company, because the funding policy determines the company's operations.

Some researchers mention many factors that determine the firm value, one of which is the capital structure. According to Brigham & Houston (2009) several factors that are generally considered in making decisions about the firm value are sales stability, asset structure, leverage operations, growth rates, profitability, taxes, controls, management attitudes, lender attitudes, credibility appraisers, market conditions, internal company conditions, and financial flexibility.

CSR activity becomes very important because many investors are concerned with the environment so that the company's managers try to make the company can run its business

without damaging the environment. The existence of various environmental damage caused by the acceleration of economic development in order to accelerate economic improvement sometimes sacrificed a lot of the natural environment. CSR disclosure of company does not give a profit or profit directly, which is expected to be a long-term benefit in the form of image or reputation of the company.

The advantage of a company that has a good reputation as an intangible assets and can improve the performance of his company (Wernerfelt, 1984). Going public companies have confidence that the company's reputation tends to increase investor appraisal, which in turn can enable companies to attract capital (Srivastava, et al., 1997 in Suta (2005). The capital is used maximally to increase the firm value. For Chen (2002) factors that can affect the firm value, including the capital structure, profitability, tax rate, capital expenditure, and firm size. Riyanto (2001) mentions the interest rate of stability of earnings, the composition of assets, the level of risk of the assets, the amount of capital required, the state of the capital market, the nature of management, and the firm size in determining the firm value.

## METHODS OF RESEARCH

The location of this research is conducted in Indonesia Stock Exchange especially in mining sector by accessing official website [www.idx.com](http://www.idx.com). The year of research used is observation year 2012-2016. The technique used by researchers in the sample selection is nonprobability sampling that is purposive sampling. Nonprobability sampling is a sampling technique that does not provide the same opportunity / opportunity for each element or member of the population to be selected as a sample. Purposive sampling is a technique of determining samples with certain considerations. By using purposive sampling method is expected to produce sample criteria that really represent the population, in accordance with the purpose of research can solve research problems and can provide a more representative value.

## RESULTS AND DISCUSSION

The data collected were analyzed by using statistical analysis tool that is moderated regression analysis. Moderated Regression Analysis is a specialized application of multiple linear regressions to determine the effect between two variables that are affected by the third variable or moderating variable (Ghozali, 2006).

This analysis is used to determine the effect of independent variables, namely capital structure (DER) and interaction variable that is capital structure with CSR disclosure to dependent variable that is firm value. Based on the results of data processing, obtained the following results on Table 1:

Table 1 – MRA Testing Result

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1,700	0,378		4,493	0,000
1 X <sub>1</sub>	-0,169	0,261	-0,104	-0,646	0,519
X <sub>2</sub>	-0,539	0,911	-0,079	-0,592	0,555
X <sub>1</sub> X <sub>2</sub>	1,280	0,595	0,415	2,150	0,034
R <sup>2</sup>	0,091				
Adjusted (R <sup>2</sup> )	0,068				
F	3,990				
Sig. F	0,010				

Source: Primary Data, 2017.

Based on Table 1 can be made a model of regression equation is as follows:

$$Y = 1,700 - 0,169X_1 - 0,539X_2 + 1,280X_1X_2$$

The result of regression analysis in Table 1 shows the coefficient of  $\beta$  is 1,280 with significance level equal to 0,034 smaller than 0,05 meaning that capital structure interaction and CSR disclosure have positive and significant effect on firm value. This result proves that CSR discloses moderate and strengthen the effect of capital structure on the value of the mining company so that the first hypothesis is accepted. These results also prove that the disclosure of CSR is a pure moderating variable (Pure Moderator). This condition can be explained that the higher the CSR disclosure of the mining company, the capital structure of the company viewed from its debts can be reduced to increase the firm value.

The capital structure theory explains the company's debt-related and equity financing policies used to maximize firm value. Selection of the right capital structure will be able to improve the efficiency of capital cost and firm value and avoid the company from financial difficulties. High debt usage in the capital structure will cause the company to be in a financial distress position. Trade of theory states that the use of debt will increase the firm value but only up to a certain point, after exceeding that point the use of debt will lower the firm value (Sari, 2017). The point in question is the ability of the company to repay the loan along with its interest. Eli (2008) stated that there is no certain characteristic to determine the optimum point of debt usage in capital structure of a company, but Sugihen's research (2003: 208) stated optimum point of capital structure ranged from 0.3 to 0.4. By using these numerical guidelines, the level of debt use in mining companies in 2012-2016 is high.

The characteristics of the mining industry require enormous, long-term, risk-bearing investment costs and high uncertainty, making funding a key issue related to enterprise development (Sakinah & Ibrahim, 2017). Mining companies need enormous capital in exploring natural resources in developing mining. To that end, many mining companies enter the capital market to absorb the investment and to strengthen its financial position.

Theoretically, the more CSR activity expressed by the company, the firm value will increase because the market will give a positive appreciation to the company that performs CSR which is indicated by the increase of stock price of the company. Investors appreciate CSR practices and see CSR activity as a guide to assess the company's sustainability potential. Therefore, in making investment decisions, many investors pay enough attention to the CSR expressed by the company (Ghoul, et al., 2011). By carrying out social responsibility, the company is expected to not only pursue short-term profits, but also contribute to improving the welfare and quality of life of people and the environment around in the long term. Furthermore, consistent implementation of CSR in the long run will foster a sense of public acceptance of the company's presence. One of the benefits of CSR for companies is to maintain and boost the company's reputation and brand image (Untung, 2008: 6). For a publicly listed company or a capital market issuer, the company's reputation can increase investors' valuation before deciding to invest, which in turn will make it easier for companies to earn capital (Suta, 2005).

Based on Signaling theory, the social activities disclosed by firms in the annual report provide information to investors about substantial future return prospects. Appropriate disclosure of CSR and in accordance with stakeholder expectations is a good news signal given by the management to the public and shows that the company has good prospects in the future as well as ensuring the creation of the company's going concern. The company discloses CSR in the hope of enhancing the reputation and firm value through the increase of share price (Apriwandi and Pratama, in Astuti & Nugrahanti, 2015).

Good corporate reputation is a scarce and valuable resource, and a source of competitive advantage to get above average return (Barney, 1991). Moreover, reputation is an important part because of its wide scope and is potentially very profitable for the company because it integrates several blends considerations of finance, management, advertising and public relations (Srivastava 1997).

The results of Fombrun & Shanle (1990) suggest that the greater a corporate contribution to social welfare environment, the better the company's reputation. In line with the results of the research of Pfeffer & Salancik (1978), Parket & Eibert (1975), and Cornel & Shapiro (1987) which show the result that social and political involvement in the immediate environment of the company will positively affect the continuity of the company's operations

and will get support from stakeholders in facing environmental challenges. The results of the Dowling (2001) study say that if a company has a reputation beyond the average, then the company can achieve superior profit. For the company that has achieved it, the reputation status will be able to help the superior profit resilience. This of course will attract the attention of investors to invest their shares in the company that has a good value. This result supported by Srivastava (1997) and Suta (2005) who found evidence of a positive effect between corporate social responsibilities on stock market performance.

### SUGESTIONS AND CONCLUSION

This study shows that CSR disclosure moderates the effect of capital structure on firm value. The existence of this influence indicates that more and more companies express their social responsibility to the environment and society will further strengthen the interest of investors to invest in companies that are considered environmentally friendly and see CSR activities as a guide to assess the potential sustainability of a company, but when the capital structure of the company where the proportion more debt than its equity will be able to lower the value of the company because investors judge the company is too risky financial difficulties. If the company's debt can be reduced then it can increase the firm value. For investors to be cautious of companies that use most of the debt in the proportion of their capital structure to support the operations of the company especially if it can lower the value of the company.

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## **THE EFFECT OF MANAGERIAL ABILITY ON FIRM PERFORMANCE WITH EARNING MANAGEMENT AS INTERVENING VARIABLE**

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### **ABSTRACT**

This study aimed to examine the effect of managerial ability on the firm's performance with earnings management as intervening. managerial ability analyzed using Data Envelopment Analysis, firm's performance measured using return on assets, while for the earnings management proxy by discretionary accruals using The Modified Jones models. The sample in this research were 99 consumer goods manufacture companies listed on the Indonesia stock exchanges for the period 2014-2016. The results showed that managerial ability have a significant effect on firm performance and earnings management has a direct influence on it.

### **KEY WORDS**

Managerial skills, managerial ability, firm performance, earning management, discretionary accruals, data envelopment analysis.

Manipulation of financial statements ever conducted by PT Kimia Farma in 2001, proves that the practice of manipulation of financial statements remains done by the corporate in Indonesia. Manipulation practices often occur because the company is required to meet the needs of corporate stakeholders in maintaining a company. In addition, the company must also be able to develop its company in order to compete with other companies to achieve competitive advantage. Growth and development of the company can not be separated from the role of a manager.

Managers of companies that generate high profitability also have a high knowledge. Athanasios et al. (2014) states that knowledgeable management to generate high profitability means having an understanding of the company's operational mechanism. Good financial performance is one of the main objectives of the company because financial performance becomes one of the aspects seen by investors in measuring how good and efficient management in operating the company.

Stakeholder theory proposed by Freeman (1984) states that managers are obliged to run the company's operations and meet the needs of the company and able to provide added value for investors and meet the needs of other corporate stakeholders. The relationship between managerial skills and firm performance has long been ignored with the assumption that managers are largely homogeneous entities that follow the company's main objectives (Bamber et al., 2010). The statement was opposed by Djuitaningsih and Rahman (2012) and began to examine the impact of managerial skills on company performance. The research gives result that managerial skill have positive effect to company performance as measured by company profitability.

The agency theory by Jensen and Meckling (1976) explains that there is a difference of interest between the management (agent) and the owner (principal) so that the agency problems arise. The problem provides an opportunity for managers to act opportunistically, for personal gain. One way that managers can do is to take a deviant action in the process of preparing financial statements.

Andreou (2015) states that a manager with high skills will tend to avoid actions that would damage his reputation. However, a skilled manager may also be able to degrade the company's performance by committing a fraudulent act. Demerjian et al. (2012) finds that higher-ability managers have a drive to improve earnings reporting by leveraging higher skills than their counterparts with accrual profit management. It is different from Graham et al.

(2005) that reputable managers will receive higher executive compensation so that they will tend to avoid profit management actions in order not to tarnish their reputation.

The impact of earnings management on the performance of the company is considered not too clear. While earnings management has been the subject of much research in recent times, the research has focused more on certain incentives or incentives that facilitate managers to manipulate earnings. The current earnings manipulation can affect a company's performance. Accrual income management is used to develop profit that will be reported so that the perusahaan performance looks good for investors, because investors will only see the reported earnings and ignore the behavior of profit manipulation. The explanation indicates a relationship between earnings management to company performance.

The difference of this study with previous studies is the use of earnings management as an intervening variable, which is as an intermediary between managerial skills to company performance. The variable of earnings management is chosen as intervening variable by the researcher on the basis of previous research result which found a positive and significant correlation between managerial skill to earnings management and earnings management to company performance. Therefore, research needs to be done to know more clearly whether there is direct influence between managerial skill to company performance or indirect influence between two variables through existence of earnings management practice as intervening variable.

## LITERATURE REVIEW

*The Effect of Managerial Ability on Earning Management.* Scott (2012: 434) mentions that managers have a strong impetus to ensure expectations or expectations of desired earnings are achieved. A competent manager who understands the business conditions of his company will be able to see the opportunities of the existing accruals component for earning management in order to meet his personal interests. The opportunity exists because the information the manager has is far more than the investor has. This condition is in accordance with the agency theory expressed by Jensen and Meckling (1976).

Managerial ability also relate to the context of earnings quality. Demerjian et al. (2013) examines the relationship between managerial skills and earnings quality. The quality of the intended profit is about the accrual estimate, the study concludes that a more capable manager will make better judgments and estimates than incompetent managers so that the resulting returns are qualified.

Based on the above description, the researcher develops the following hypothesis:

H1: Managerial skills affect earnings management.

*Effect of Earnings Management on Company Performance.* The shareholder or owner will demand the company's management to have a good corporate performance. To meet the demands provided by investors and stakeholders the company's managers perform manipulation activities by choosing accounting policies with the aim of achieving certain profit targets. Earnings management conducted by corporate managers can affect a company's earnings. Profit itself is information generated from financial statements as the output of the company that can be used to measure the performance of the company and management. When earnings management can affect corporate profits, then earnings management can also affect the company's performance

Research conducted Hillegeist (2012) provides empirical evidence that the practice of earnings management conducted by the management company does not affect the performance of the company. This is because the accounting policy in the practice of earnings management practices conducted by the company is still within normal limits so as not to cause a large deviation from the actual profit generated. According to Gunny (2005), short-term earnings management measures will indeed show good corporate performance, but in the long term will hurt the company. Research conducted by Fitriyani et al. (2014) gives result that accrual earnings management influence to company performance, while real earnings management does not show any influence to company performance. To improve

the profit and performance of the company, managers make earnings management for the company's performance in the short term will look good in the eyes of investors.

Based on the above description, the researcher develops the following hypothesis:

H2: Earning management has an effect on company performance.

*The Effect of Managerial Skills on Corporate Performance.* Company managers are people who are selected by shareholders and have the expertise to assume shareholders' trust in managing and running the company effectively and efficiently. Managers are also in charge of making decisions that if can add value to the company then the company will progress and have a good performance. This is in line with the stakeholder theory that companies should be able to play a dual role of meeting the needs of the company itself by running daily operational activities and must be able to meet the needs of stakeholders who also contribute to the success of the company (Gray et al., 1995).

Corporate level decision-making will reflect different levels of competence from managers. As a person who knows the way a company manager should have better information about future prospects. Managers can estimate well the earnings of the company and be informed to investors or users of other financial statements. Managers can use the accrual discretion to reflect the company's performance through earnings reports (Gul et al., 2003).

Chang et al. (2010) provides evidence that capable managers will receive higher wages and affect the value and performance of the company. Andreou et al. (2015) show that a manager's ability to understand and effectively utilize company resources is an important resource that can generate competitive advantage for the company. Similarly, Holcomb et al. (2009) suggests that managerial skills can form the basis of value creation and performance gains when resources are used effectively and efficiently.

Based on the above description, the researcher develops the following hypothesis:

H3: Managerial Ability affect the company's performance.

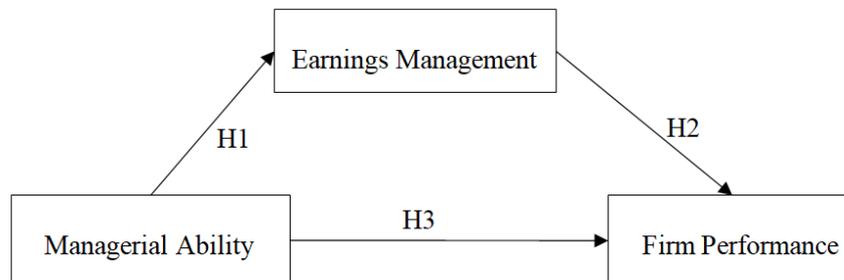


Figure 1 – Conceptual Framework

## METHODS OF RESEARCH

Managerial ability are basic talent, motivation, executive personality, and reputation as another's assessment of the manager's capabilities based on available information (Demerjian et al., 2012b). In this study, managerial skills are analyzed by comparing inputs (total assets and total labor) with output (Days COGS in Inventory and Day Sales Outstanding). After determining the inputs and outputs used, then calculated the efficiency with the technique Data Envelopment Analysis (DEA) and symbolized by the symbol MA.

Firm performance is a condition of good or bad corporate finance as a reflection of the success and achievements that have been achieved by the company in a certain period. Parties responsible for good or bad company performance one of them is the manager of the company. In this study, company performance is measured by using Return on Asset (ROA). ROA can measure the overall profitability of a company's assets (Kieso et al., 2011: 222).

Scott (2012: 423) defines earnings management as a way of serving a profit that aims to maximize management utility and / or increase market value through the selection of set of accounting management procedures by management. The earnings management variable in

this study is proxied by using discretionary accruals developed by Jones (1991) and denoted by the DA symbol. Discretionary accruals are the result of earnings engineering by managers to reduce the difficulty of detecting reported earnings through the manipulation of accounting policies with regard to accruals (Scott, 2012: 313). The Modified Jones Model is used because it is considered as the best model in detecting earnings management compared to other models and gives the strongest results (Dechow et al., 1995).

The population used in this research is a consumer goods manufacturing company listed in Indonesia Stock Exchange (IDX) for 2014 until 2016. The reason for choosing the consumer sector manufacturing company in this research is because the manufacturing sector of consumption is the most complex sector of operations than other sectors and also in terms of business finance, the sector generates transaction value from a large product or output sale so as to better reflect how the manager's efficiency in managing inputs to outputs and also management more easily seizes the opportunity for earnings management.

Sample selection in this research using purposive sampling technique. The criteria used by researchers in the selection of samples are as follows:

- Consumer manufacturing companies listed on the Indonesia Stock Exchange in the period 2014-2016, not including companies that experienced delisting because they do not meet companies listed on the Stock Exchange in the period 2014-2016;
- Consumer goods manufacturing company that issues the full annual financial statements and denominated in Rupiah in the period 2014-2016, which includes the annual report and complete audited financial statements.

## RESULTS OF STUDY

*Data Envelopment Analysis.* The following table 1 shows the classification of managerial efficiency efficiency for manufacturing companies selected to be sampled in the period 2012-2014 based on the results of Data Envelopment Analysis:

Table 1 – Classification of Efficiency of Managerial Skills

UKE Score	Classification	2014	2015	2016	Total
1	Efficient	2	2	2	6
< 1	Not efficient yet	31	31	31	93
Total Firm		33	33	33	33

Based on table 1 above, companies categorized as efficient companies or have MA-Score equal to 1 (100%) a number of 6 companies and the rest of 93 companies entered in the category not yet efficient with MA-Score less than 1 (100%).

*Managerial skills affect earnings management.* The value of the managerial ability regression coefficient shows a positive value of 0,517, this indicates if the managerial skill is increased once, then the DA value will increase by 0.517 times and vice versa assuming the other independent variables are considered constant.

Table 2 – Managerial Ability (MA) - Earning Management (DA)

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,010	,018		,573	,568
MA	,239	,040	,517	5,943	,000

From the results of hypothesis testing using t test value that the significance value of 0.000 is smaller than 0.05 with a confidence value of 5%, then H1 accepted that managerial skills affect the earnings management.

The results of this study prove that managerial ability significantly influence managers to practice earnings management. Managerial skills show that managers of a company are reliable and have high competence in making decisions so as to lead the company to a high

level of corporate resource management efficiency. Managers with these criteria will be able to make value-added decisions for the company.

The results of this study indicate that managers who are reliable and have high competence may be doing earnings management. Based on agency theory, agency conflict can not be avoided. the existence of information asymmetry and the difference of interests between the shareholder and the manager (agency theory), so capable managers can flexibly to take advantage of opportunities on the accruals for the sake of personal interests Agent and principal will continue to have a tendency to emphasize its own benefits. The actions of managers also can not be directly observed by shareholders. In this condition the manager has hidden information that can be exploited for the manager's personal interest.

Although no matter how small a manager is, earnings management practices can not be avoided. Managers will still have the drive to benefit themselves and benefit the company by manipulating earnings. The results of this study in accordance with research conducted by Isnugrahadi and Kusuma (2009) and Purwanti (2012). Both of these studies provide results that managerial skills have a positive and significant impact on earnings management.

*Earning management has an effect on firm performance.* The value of earnings management regression coefficient (DA) of 0.949, this shows if the earnings management increased once, then the value of ROA will increase by 0.949 times and vice versa assuming other independent variables are considered constant.

Table 2 – Earnings Management (DA) - Firm Performance (ROA)

Coefficients					
Model	Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	-,007	,005		-1,548	,125
DA	,983	,033	,949	29,588	,000

From the results of hypothesis testing using t test value that the significance value of 0.000 is smaller than 0.05 with a confidence value of 5%, then H2 accepted the earnings management has a positive effect on firm performance.

The results show that earnings management practices with high levels of manipulation can not improve company performance significantly. Company managers strive to improve company performance by manipulating their profits. However, the company will manipulate earnings within normal limits because the company does not want to take big risks.

Based on agency theory, earnings management arises because of agency conflict between agent and principal. Company managers as much as possible try to give the best company performance so as to gain the trust of shareholders to invest. As for the shareholder of the company's performance today is a benchmark to assess whether the company can receive benefits for it. The emerging agency issues encourage corporate managers to practice earnings management. The existence of information asymmetry makes managers look for loopholes to manipulate earnings. The results of this study in accordance with research Fitriyani (2014) provide empirical evidence that the practice of earnings management accruals affect the firm performance. Management will choose certain methods to earn profits that match their motivation. This will affect the quality of performance reported by management.

*Managerial ability affect the firm performance.* The direct effect of PS given to CS is 0.236, whereas the indirect effect of PS to EG is the multiplication of beta value of PS to EG with beta value of EG to CS ie:  $-0.455 \times 0.763 = -0.347$ . Then the total effect given by PS to CS is direct influence plus indirect effect that is:  $0,236 + (-0,347) = -0,111$ . Based on the results of the calculation is known that the value of direct influence of 0.236 and indirect influence of -0.111 which means that the value of direct influence is greater than the value of indirect influence, these results indicate that directly PS has an influence on CS. Then H3 can be accepted that managerial ability affects the firm performance.

The results of this study prove that a capable manager in running the company's operational activities will significantly improve the performance of the company so that the

firm performance looks good in the eyes of investors and other stakeholders in the company. High competence managers will be more able to support and open up wide opportunities for companies to continue to grow and develop so that companies are able to compete with other companies. Managers who are reliable and have a high ability will be able to manage and utilize the resources of the company efficient to produce maximum output in line with expectations. Efficient enterprise resource management will bring the company's performance into a better and able to provide added value to the company's stakeholders.

Table 3 – Managerial Ability (MA) - Firm Performance (ROA)

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
MA	-,007	,018	-,014	-,365	,717
DA	,990	,039	,956	25,407	,000

Stakeholder theory states that as a manager must be able to play a double role as a person who runs the company's operational activities and must also be able to meet the needs of corporate stakeholders. This theory supports the results of this study. The needs of the company's stakeholders are the firm performance. The company's stakeholders will see and measure a company's success from the company's performance. The performance of a well-performing company shows that the company has succeeded in managing capital invested by stakeholders in the company. The results of such investments will benefit them. Decisions made by competent managers more reflect professional judgment of managers who not only benefit themselves. The results of this study are in line with the research conducted by Chang et al. (2010) and Andreou et al. (2015)

## CONCLUSION

Managerial ability has a significant effect on earnings management. Managers who are reliable and have a high competence may be doing earnings management. Although no matter how small a manager is, earnings management practices can not be avoided. Managers will still have the drive to benefit themselves and benefit the company by manipulating earnings. Earnings management has a significant effect on company performance. Great earnings management practices as well as small earnings management practices have a significant effect on the performance of the company. The agency problem that arises in the company encourages the company manager to practice earnings management. Managerial ability have a significant effect on firm performance. Managers who are competent in running the company's operations will be able to improve the firm performance so that the company's performance looks good in the eyes of investors and other stakeholders in the company.

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## **THE PROBLEMS AND UTILIZATION OF CREDITS AND THEIR EFFECT ON THE INCOME OF OIL PALM FARMERS IN MUSI BANYUASIN REGENCY OF INDONESIA**

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### **ABSTRACT**

Agricultural financing is one of the necessary components for the development of oil palm as one of the main commodities in Musi Banyuasin Regency, Indonesia. This research aimed to investigate the financial problems faced by oil palm farmers, describe the utilization of credit provided by the banks, and analyze the influence of credit and other factors on the income of oil palm farmers. A sample of 120 farmers were selected using disproportionate stratified random sampling method. The results showed that several problems still existed in the budgeting of oil palm plantation in the study area, among these the inavailability of credits was the highest contributor to problems. However, among farmers received credits from the financial institutions, most of the credit was effectively used for oil palm related expenditures. Statistical analysis indicated that the amount of credit received, the credit instalment and the area of oil palm significantly affected the income of oil palm farmers in the study area. It was suggested that credits from formal financial institution should be widely made available for oil palm farmers such that they can increase the area of plantation and income.

### **KEY WORDS**

Credit, oil palm, farmers, income.

South Sumatera province, according to the agricultural, forestry, and fishery sectors, contributes toward the Gross Regional Domestic Products (GRDP) on current price as much as 16,06%. Contribution of this sector is the second after mining and excavating sectors. However, the contribution of agricultural sector toward the GRDP continues to decline in the last 5 years. Sub-sector of plantation is the greatest contributor toward the agricultural sector as much as 31,36% of the entire agricultural, forestry, and fishery (BPS, 2016).

Based on the considerable contribution of GRDP in agricultural sector in South Sumatera Province, therefore South Sumatera has great economy and able to support the Indonesian development. Yet, this great potency has not been able to increase the welfare of the South Sumatera farmers. This is caused by various problems faced by the agricultural sector such as the large number of poor farmers, low level of education, and the continuous reduction of farm field. Another problem identified as a major problem is the limited access to financial service. Therefore, limited capital becomes a weakness of farmers (Rizieq, 2010). Farmers' limitation to finance their work causes the current productivity is lower than the potential productivity. In addition, agricultural sector is the sector considered to possess high risk, a situation in which some factors can not be controlled that cause unexpected result for the farmers (Wahyudi, 2011). The existence of budgeting resource in form of credit is very necessary in developing the productivity in agricultural sector, mainly to small farmers. The availability of adequate budgeting can create capital establishment for the farming that may increase production and income which in turn can be utilized to pay back the credit. National banking theoretically has great potential as one of the budgeting resources in agricultural sector. This institution has core business to collect fund from the society and to dispense it to the businesses in form of credit or budgeting (Ashari, 2009). Yet, the fact shows that the national banking tends not quite enthusiastic to dispense credit for agricultural sector.

The regional economics and finance study of South Sumatera Province (February 2017) shows that the slow growth of credit in agricultural, forestry, and fishery sectors were as much as 5,2% which is really far compared to that of the manufacture and industrial

sector as much as 39,26%, the accomodation and food provider sector as much as 31,17%, and construction sector as much as 24,75% (Bank of Indonesia, 2017). Generally the formal financial institution has not shown adequate support to agricultural sector. The lowness of the credit development in this sector is due to the high interest. This can be seen from the development avarage of interest in the agricultural and plantation sector as much as 2,07%, a bit lower than the mining and excavating sector as much as 2,57% (Agricultural Ministry, 2016). This is one of the causes of low credit allocation in agricultural sector since there has been no specific treatment from budgeting institutions for agricultural sector. So far, the policy for the agricultural budgeting has been integrated to the non agricultural budgeting with the result that this sector is not competitive. This underlies the importance of the research to investigate the problems and the budgeting utilization faced by the farmers and to analyze what credit factors that influence the palm fruit farmers' income in Musi Banyuasin Regency, Indonesia.

## METHODS OF RESEARCH

This research was conducted in South Sumatera Province, the location was purposively determined with a consideration that South Sumatera Province was one of the centrals of financial dispense of for agricultural sectors in the working areas of banking in South Sumatera Province. Musi Banyuasin Regency as selected as the research area since it has been the biggest budgeting dispense for the agricultural sector according to the Bank of Indonesia (2017). This regency is expected to represent some regencies or cities in South Sumatera Province. Within this regency, a subdistrict which is the sentral of oil palm plantation namely Subdistrict Sungai Lilin. Within this subdistrict, a village was chosen to become the research area. This research employed a survey method. The data consisted of primary and secondary data. The primary data were collected by conducting direct interview with the sample farmers using questionnaires. Secondary data were collected from institutions related to the research such as Bank of Indonesia, Central Agency of Statistics, Regency Office of Agriculture, and other instances that could support the research. The population of the research was the farm households which cultivated oil palm who received credit from conventional and syariah financial institution as many as 841 houses. The samples of 120 farm households were selected using cluster sampling.

Based on the theoritical observation, to investigate the problems faced by the farmers in budgeting utilization, the data collected were tabulated and descriptively analyzed. Meanwhile, to analyze the credit factors that influenced the oil palm farmers' income, an ordinary least square method was employed based on the following equation:

$$Y = \alpha + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e$$

Where: Y = Income of farmers;  $\alpha$  = Constant;  $b_{1-6}$  = Parameters;  $X_1$  = Credit received by the farmers;  $X_2$  = Credit instalment;  $X_3$  = Credit period;  $X_4$  = Land area owned;  $X_5$  = Age;  $X_6$  = Education; e = Residual.

## RESULTS AND DISCUSSION

The establishment of the capital aims to increase the production and income of farmers and to enable further establishment of the capital (Soekartawi, 1986). Until recently, limited capital has been becoming constraint to agricultural development, espacially in oil palm farming.

The result showed that problems related to budgeting in oil palm farming were: (a) inavailability of financial resources, (b) interest rate remain high, (c) limited amount of money that can be borrowed, (d) considerable reduction of capital upon approval, (e) poor service, (f) difficulties in obtaining the credits, and (g) the process was time-consuming. Among these problems, inavailability of financial source experienced by farmers accounted the highest (Figure 1).

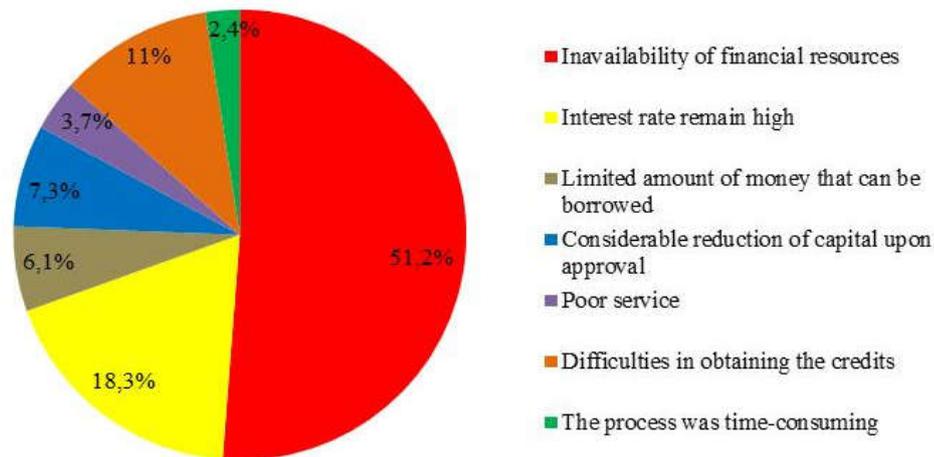


Figure 1 – Distribution of sample farmers according to problems faced in budgeting

The second purpose, the assessment of the utilization of capital gained from the bank, indicated that most of the capital (97.5 percent) was used for oil palm cultivation. This high percentage indicated that the fund has been effectively utilized according to the purpose of the fund. The rest of the fund was used for other needs such as to complement the capital for bird nest farming, local shop selling daily needs, daily household expenditure, and school fee for children.

The third objective, the effect of factors related to credit on the income of farmers was analyzed using linear regression. Prior to the analysis, all assumptions for regression (normality of error, have been checked and proved to fulfill the assumptions. The result of analysis were shown in Table 1.

Table 1 – Results of Regression Analysis

Variables	Coefficient	Std. Error	t	Sign.
Constant	2133063.466	350893.247	6.079	.000
Amount of credit received	.008	.002	3.242	.002
Credit instalment	.564	.087	6.471	.000
Credit period	-4575.349	4656.757	-.0983	.328
Land area	261535.947	76220.622	3.431	.001
Age	-1240.176	4942.494	-.251	.802
Education	-4950.886	15791.453	-.314	.754
F-test	141.625			
Sig. of F-test	.000			
R-square	.883			

*Dependent variable: Farmers' income.*

The result indicated that the overall analysis (F-test) was significant statistically. The R-square of .883 explained that majority of variation in farmers' income can be explained by the independent variables simultaneously. Individual t-test proved that the independent variables related to credits (amount of credit received and credit instalment) were good predictors of farmers' income. In addition, land area was also a good predictor of farmers' income. Whereas, none of the individual variables were good predictors of oil palm farmers' income. The individual effect of the significant predictors are explained the subsequent parts.

The amount of credit received by oil palm farmers was a significant predictor of their income. The value of its coefficient indicated that every million Rupiah of the credit received by farmers would increase as much as Rp 8,000 of their monthly income. This was parallel with the Iski's research (2016) which explained the credit or budgeting used for the production activity could increase the production and income of farmers.

The credit instalment was also a significant predictor of oil palm farmers' income. It positively affected the farmers' income in which every Rupiah increase in credit instalment will

increase farmers' income as much as Rp.564. This indicated that the higher the credit instalment the higher the effort of farmers to increase their income.

Land area of oil palm was the only factor other than credit related factors that significantly affected the income of oil palm farmers. The effect of land area on the income was positive in which every additional hectare of oil palm will increase the monthly income of farmers by Rp 261,535. This finding was parallel to that of Adriana's research (2015) which found that the land area influenced positively the income of oil palm farmers.

The effect of farmers' age on their income were not significant statistically. However, the effect of age was negative on the income since the older the farmers the less their willingness to take credit from the bank due to the apprehension to pay the instalment. This was parallel with the Anyiro's and Oriaku's research (2011) which discovered that age had negative coefficient in which the older farmers tended not take risk of using money from others such that they relied more on self capital. The influence of farmers' formal education on their income was also insignificant which meant formal education did not affect their income. Instead, informal education might had the effect on their ways of doing their business that might contribute positively on their income.

### CONCLUSION

Oil palm farmers faced several problems related to budgeting of their plantation. Among these problems, the availability of credits contributed the highest to the budgeting problems.

However, for the farmers who had access to financial institutions, most of the capital gained from the institutions (mainly bank) was used for oil palm cultivation. This indicated that the fund has been effectively utilized.

Statistical analysis proved that among six independent variables assumed to affect the income of oil palm farmers, three of these were the significant predictors of the income. Amount of credit obtained, credit instalment, and land area had significant effect on the income. These three factors contributed positively to the income of oil palm farmers.

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## **THE EFFECT OF EXPERIENCE, COMMITMENTS, ORIENTATION OF ETHICS AND ETHICS CULTURE ORGANIZATION ON SENSITIVITY ETHICS OF AUDITOR IN PUBLIC ACCOUNTANTS FIRM IN BALI**

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### **ABSTRACT**

This research aims to test the impact of experience, commitment, ethical orientation and ethical culture of the organization on the auditor's ethics sensitivity Public Accountant Firm in Denpasar Bali. The results showed that experience, commitment, ethical orientation and organizational ethical culture had an effect on auditor ethics sensitivity. Hypothesis testing results provide synthesis that the better experience, commitment and ethical orientation, as well as the stronger ethical organizational culture in the KAP, the auditor's auditor ethics sensitivity will also be better.

### **KEY WORDS**

Ethical sensitivity, experience, commitment, ethical orientation, ethical culture.

The rules concerning the profession of public accountants are structured to realize ideal conditions in accounting and auditing. But in practice, a rule cannot always anticipate problems that exist. One example is the ethical dilemma facing KAP auditors. Ethics is an issue that is often discussed in every discussion of professionalism in accounting and auditing (O'Leary and Cotter, 2000). This shows the profession in the field of accounting and auditing can not be separated from ethical issues. Especially in the field of auditing, the public accounting profession often faces the ethical dilemma. Ethical issues arise when public accountants balance the interests of the various stakeholders (Shaub et al., 1993).

(Anderson and Ellyson, 1986) claim the American Institute of Certified Public Accountants (AICPA) provides a condition for auditors to exercise ethical and moral sensitivity in all their activities. Ethical sensitivity forms the basis for understanding the ethical nature of a decision (Shaub et al., 1993). Indonesia can adopt such requirements to create ideal conditions through the application of Public Accountants Act by practicing ethical sensitivity. Audit cases that occur can be evaluated in improving ethical orientation, increasing professional commitment and experience of auditors to face ethical issues. Evaluations can also be made within the professional accounting organization's environment to eliminate inherent ethical issues (Poneman and Gabhart, 1993; Leung and Cooper, 1995).

Ethical sensitivity is defined by (Shaub et al., 1993) as the ability to take a decision by considering the ethical nature of the decisions made. This ability is very important for auditors when faced with ethical dilemmas in performing their duties. (Hunt and Vitell, 1986) argue that one's understanding of the ethical problem is influenced by experience and the environment. Measurement of ethical sensitivity is done by considering the failure of time-related accountants, the use of time for personal gain and accountant judgment related to accounting principles. Irawati and (Supriyadi, 2012) developed a measure of ethical sensitivity in their research by modifying (Shaub, 1989) research instruments. This study uses both measures to measure ethical sensitivity.

An auditor must also have a commitment (Irawati and Supriyadi, 2012). Commitment is divided into two, namely professional commitment and organizational commitment (Bline et al., 1992). This is reinforced by (Chang and Choi's, 2007) research which found that organizational

commitment and professional commitment are two different things. (Larkin, 1990) states that professional commitment is loyalty to the profession owned by individuals, while (Kwon and Banks, 2004) state that organizational commitment is a loyalty to the organization. Commitment to organizations and professions raises the desire to maintain membership in organizations and professions (Aranya et al., 1981; Aranya and Ferris, 1984).

Several studies on ethical sensitivity have been conducted. (Irawati and Supriyadi, 2012) stated that there is an influence of organizational commitment to ethical sensitivity. These results are different from (Shaub et al., 1993) and (Aziza and Salim, 2007) who argue that there is no relationship between organizational commitment and ethical sensitivity. (Januarti, 2011) states that ethical orientation has a significant effect on ethical perceptions and judgments, whereas experience, professional commitment, and organizational ethical values have no significant effect on perceptions and ethical considerations. Different results show (Khomsiyah and Indriantoro, 1998) who found that professional commitment affects ethical sensitivity. (Fallah, 2006) shows that organizational ethical culture influences idealism and has no effect on relativism, whereas relativism has a significant effect on ethical sensitivity and idealism has no significant effect on ethical sensitivity.

## LITERATURE REVIEW

Ethics becomes one of the guides for the auditor profession in accounting for all its activities (Januarti, 2011). Auditor Public Accounting Firm is one of the professions that can not be separated from ethical issues. This was proven through a sanctioned case by the Honorary Board of the Indonesian Institute of Accountants (IAI) to 10 KAPs that violated audit standards in 2002 (Rustiana, 2006). The case relates to the auditor's process in taking a right and quick decision while performing the task. Auditors in all their activities must consider many things because of the many interests inherent in the audit process (Damman, 2003). (Tsui, 1996) and (Tsui and Gul, 1996) also stated the same thing, an auditor is often in an audit conflict while performing his duties. The conflict will develop into an ethical dilemma when the auditor faces a decision-making situation involving independence and integrity with economic rewards on the other (Windsor and Askhanasy, 1995).

(Jones, 1991) also states that one's understanding of morale in taking an ethical decision depends on himself (experience, ethical orientation and professional commitment) and situations (organizational ethical values). In addition, (Trevino, 1986) states that organizational factors affect an individual's ethical behavior. A person has reason to do an action that is considered true based on commitment and see it as a basis for evaluating a rule (Velasques, 2005).

Behavioral accounting is part of an accounting study that studies the relationship between human behavior and accounting systems (Siegel et al., 1989). The accounting system is linked to the entire design of management control tools, including control systems, budgeting systems, accounting design responsibilities, organizational design, cost collection design, performance appraisal design and financial reporting. The scope of accounting behavior not only cover the field of management accounting, but also related to ethics, auditing, accounting information systems and even financial accounting.

(Boyton, 2003) stating that auditing is a systematic process of obtaining and evaluating objectively the assertions of an activity and an economic event aimed at establishing conformity between assertions with established criteria, then the results communicated to interested parties. While (Agoes, 2004) argues that the audit is critical and systematic, the activity is carried out by an independent party, by examining the financial statements of management along with the accounting records and supporting evidence, with the aim of providing an opinion on the fairness of the financial statements.

According to (Siegel and Marconi, 1989), the auditor must be able to escape from the personality factor while carrying out the audit activity. Personality can lead to audit failure and

high risk for the auditor. There are two conditions faced by the auditor. First, auditors are influenced by their perception of the audit environment. Second, the auditor should be aligned and synergized in the work of the group, so that the interaction arises that will lead to the process behavior. (Suartana, 2010) argues that behavioral accounting is part of the accounting discipline that examines the relationships of human behavior and accounting systems, as well as the dimensions of behavior of organizations in which human and accounting systems reside. So, it can be concluded that there are aspects behavior in audit.

(Irawati and Supriyadi, 2012) that measure ethical sensitivity by modifying the ethical sensitivity scenario of (Shaub, 1989), i.e failure of time-related accountants, the use of time for personal gain and accountant judgment associated with accounting principles. Professional Standard of Public Accountant (SPAP) on Quality Control Standard Number 1 for KAP states that every individual in KAP must comply with applicable provisions. This standard clarifies the definition of audit (Shaub et al., 1993) and (Vitell, 1986) for auditors to further enhance their ability to understand ethical values.

(Januarti, 2011) argues that the auditor's experience evolves with audit experience, audit discussions, training, and standard usage. (Jones, 1991) also states that a person's cognitive moral development is influenced by experience. Auditors with experience are considered more conservative when facing ethical dilemmas (Larkin, 2000). This conservative attitude helps the auditor to increase his ethical sensitivity. (Gusnardi, 2003) measures audit experience through auditor positions, length of work, skills upgrades, and audit training that has been followed.

(Blaine et al., 1992) found that professional commitment and organizational commitment indicate two different things. Organizational commitment and professional commitment are distinguished empirically and predicted by different variables (Brierly, 1996; Leong et al., 2003). (Kwon and Banks, 2004) argue that organizational commitment is related to the type of employee organization, while professional commitment is estimated by support for the group, positive attitudes toward the profession and occupational characteristics. The explanation of professional commitment is also expressed by (Jeffrey and Weatherholt, 1996), a strong professional commitment will lead the auditor to obey the rules. (Chang and Choi, 2007) found that professional and organizational commitment is a psychological experience that can be explained by different individual and organizational variables.

An ethical orientation is an alternative to one's behavioral patterns to resolve the ethical dilemmas and consequences expected by different functions (Higgins and Kelleher, 2005). The ethical orientation deals with external factors such as the cultural environment, the industrial environment, the organizational environment and personal experiences that are the internal factors of the individual (Hunt and Vitell, 1986). Ethical norms, standards of individual behavior, standards of behavior in the family, and behavioral standards in the community direct one's behavior to recognize problems (Tsalikis and Fritzsche, 1989; Wiley, 1998).

(Schein, 1992) states culture is a process of transferring values to new members as a guide to behave. Culture can evolve from unconscious, but systematic efforts over a period of time. Organizational culture is the pattern of thoughts, feelings and actions of a social group, which distinguishes it from other social groups (Hofstede, 1994). The ethical culture of the organization is a broad view of the employee's perception of the ethical actions of the leader of the importance of ethics in the company and rewards or sanctions for immoral acts (Hurt et al., 1986). Organizational culture is one of the important variables for a leader, because it reflects the values that are recognized and the guidelines for the members of the organization.

*Hypotheses:*

- H1: Experience has a positive effect on the auditor ethics sensitivity Public Accountant Firm in Denpasar Bali.
- H2a: Professional commitment has a positive effect on the auditor ethics sensitivity Public Accountant Firm in Denpasar Bali.

- H2b: Organizational commitment has a positive effect on the auditor ethical sensitivity Public Accountant Firm in Denpasar Bali.
- H3a: Idealism has a positive effect on the auditor ethical sensitivity Public Accountant Firm in Denpasar Bali.
- H3b: Relativism has a negative effect on the auditor ethical sensitivity Public Accountant Firm in Denpasar Bali.
- H4: The organizational ethical culture has a positive effect on the auditor ethical sensitivity Public Accountant Firm in Denpasar Bali.

## METHODS OF RESEARCH

Data collection method used in this research is survey method with questionnaire technique. Questionnaires in this study used modification of questionnaires (Irawati and Supriyadi, 2012), (Januarti, 2011) and (Gusnardi, 2003). The experimental questionnaire was developed based on research conducted by (Januarti, 2011) and (Gusnardi, 2003), while the questionnaire of commitment, ethical orientation, organizational ethical culture and ethical sensitivity were developed based on research conducted by (Fallah, 2006), (Irawati and Supriyadi, 2012) and (Shaub, 1989). This study changed the measurements by using Likert scale 1 to 4 that used Likert scale 1 through 7. The reason for changing the scale was with consideration to get the auditor's view more clearly about the statement and the case presented in the questionnaire. If the scale 7 is used, there is a tendency for respondents to choose to think neutrally about a case.

Multiple linear regression analysis was used to determine the effect of experience, commitment, ethical orientation and organizational ethical culture on the sensitivity of KAP auditor ethics in Denpasar Bali by using Statistical Package for Social Science (SPSS) program.

## RESULTS AND DISCUSSION

The result of multiple linear regression tests can be seen in Table 1. The tests are conducted on experience variables, professional commitment, organizational commitment, idealism, relativism and organizational ethical culture on ethical sensitivity.

Table 1 – Multiple Linier Regression Testing Result

Model No. Variabel	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 Experiences (X1)	0,320	0,113	0,304	2,818	0,007
2 Professional Commitment (X2a)	0,158	0,071	0,202	2,222	0,031
3 Org. Commitment(X2b)	0,405	0,089	0,421	4,568	0,000
4 Idealism (X3a)	0,081	0,038	0,209	2,112	0,039
5 Relativism (X3b)	-0,141	0,038	-0,322	-3,668	0,001
6 Org. Ethical Culture (X4)	0,217	0,077	0,303	2,835	0,006
Constanta =	0,440				
Sig. F	0,000				
Adjusted R Square	0,611				

Source: Primary Data, 2017.

The first hypothesis (H1) states that experience positively affects the auditor's ethical sensitivity of the Public Accounting Firm in Denpasar Bali. Tests on the effect of experience on ethical sensitivity are done by looking at the results of statistical tests t. The probability level (sig.) T of the experiential variable is  $0.007 < \alpha = 0.05$ . This indicates that H1 is accepted and H0 is rejected. The conclusion is that the experience had a positive effect on the auditor's ethical sensitivity of the Public Accountant Firm in Denpasar Bali.

The second hypothesis (H2a) states that professional commitment has a positive effect on the ethical sensitivity of auditors Public Accountant Firm in Denpasar Bali. To test the effect of professional commitment on ethical sensitivity done by looking at statistical test result t. The probability level (sig.) T of the professional commitment variable is  $0.031 < \alpha = 0.05$ . This indicates that H2a is accepted and H0 is rejected. The conclusion is that professional commitment has a positive effect on the auditor ethics sensitivity of Public Accountant Firm in Denpasar Bali.

The third hypothesis (H2b) states that organizational commitment has a positive effect on the ethical sensitivity of auditors Public Accountant Firm in Denpasar Bali. A test on the effect of organizational commitment on ethical sensitivity is done by looking at the results of statistical tests t. The probability level (sig.) T of the organizational commitment variable is  $0,000 < \alpha = 0.05$ . This indicates that H2b is accepted and H0 is rejected. The conclusion is organizational commitment have positive effect on sensitivity of auditor ethics of Public Accountant Firm in Denpasar Bali.

The fourth hypothesis (H3a) states that idealism positively affects the ethical sensitivity of auditors Public Accountant Firm in Denpasar Bali. Tests against the influence of idealism on ethical sensitivity is done by looking at the results of statistical tests t. The probability level (sig.) T idealism variable is  $0.039 < \alpha = 0.05$ . This indicates that H3a is accepted and H0 is rejected. The conclusion is that idealism has a positive effect on the auditor's ethics sensitivity Public Accountant Firm in Denpasar Bali.

The fifth hypothesis (H3b) states that relativism negatively affects the ethical sensitivity of auditors Public Accounting Firm in Denpasar Bali. Tests on the effect of relativism on ethical sensitivity are done by looking at the results of statistical tests t. The probability level (sig.) T of the relativism variable is  $0.001 < \alpha = 0.05$ . This indicates that H3b is accepted and H0 is rejected. The conclusion is that relativism has a negative effect on the ethical sensitivity of auditors Public Accountant Firm in Denpasar Bali.

The sixth hypothesis (H4) states that the ethical culture of the organization has a positive effect on the ethical sensitivity of auditors Public Accountant Firm in Denpasar Bali. Tests on the influence of organizational ethical culture on ethical sensitivity are done by looking at the results of statistical tests t. The probability level (sig.) T the ethical organizational culture variable is  $0.006 < \alpha = 0.05$ . This indicates that H4 is accepted and H0 is rejected, which means that the ethical culture of the organization positively affects the auditor's ethical sensitivity of the Public Accountant Firm in Denpasar Bali.

## CONCLUSION AND SUGESTIONS

Experience has a positive effect on the sensitivity of auditor ethics Public Accountant Firm in Denpasar Bali. An experienced auditor will have a good level of ethical sensitivity. Professional commitment positively affects the ethical sensitivity of auditors Public Accountant Firm in Denpasar Bali. Auditors with high professional commitment will have a strong level of ethical sensitivity. Organizational commitment has a positive effect on the ethical sensitivity of auditors Public Accountant Firm in Denpasar Bali. Auditors with organizational commitment will have a strong level of ethical sensitivity. Idealism positively effects the ethical sensitivity of auditors Public Accountant Firm in Denpasar Bali. Auditors who have high ideals will have a good level of ethical sensitivity. Relativism has a negative effect on the ethical sensitivity of auditors Public Accountant Firm in Denpasar Bali. Auditors who have relativism will have low levels of ethical sensitivity. Ethical Culture The organization positively affects the auditor's ethics sensitivity Public Accountant Firm in Denpasar Bali. Auditors who have an organizational ethical culture will have a strong level of ethical sensitivity.

The focus of this study is the auditor Public Accounting Firm in Denpasar Bali, so the results of this study cannot be generalized to all Public Accounting Firm in Indonesia.

Subsequent research can use this research as one of the reference on auditor ethics sensitivity Public Accounting Firm in other region. Subsequent research can use samples with ethical dilemmas phenomena, such as BPK auditors, internal corporate auditors, and do not rule out the possibility for other parties. Further research opportunities are expected to find new variables that have an effect on ethical sensitivity, such as audit fees and age. Research can also be done by comparing KAP with BPK.

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## **EFFECT OF ACCOUNTING INFORMATION SYSTEM FOR INTERNAL CONTROL «SIPPUH ONLINE» IN PT. DWIMAJAYA UTAMA**

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### **ABSTRACT**

This study aims to determine the effect of the application of accounting information system-SIPPUH Online on internal control inventory PT Dwimajaya Utama. The sample used in this study is the staff of the timber business and accounting staff as much as 34 respondents. Data analysis technique used regression. The results showed there are significant application of the effects of the application of accounting information system-SIPPUH Online on internal control inventory PT Dwimajaya Utama.

### **KEY WORDS**

Accounting, information, systems, inventories.

The role of accounting in the business world to be one thing that is taken into account at the moment, business development increasingly fast was also accompanied by the development of an advanced accounting knowledge applied in the business world. Economic development faster and faster pushing the company to improve its performance in order to survive and thrive. The objective of establishing a company to continue to operate and generate profits sufficient for the survival of the company. Before going into the process of production and sales to be considered is the supply of goods. The present study discusses the application of SIPPUH Online in inventory systems at PT Dwimajaya Utama, the company is moving dbidang forestry and forest management activities by IUPHHKHA PT Dwimajaya Utama namely selective cropping Indonesia (TPTI). Where in the process of recording supplies the Ministry of environment and forestry publish Candy LHK No. P.43 / Menlhk-Secretariat / 2015 dated December 12, 2015, since the enactment of the regulations then the whole company engaged in forestry and hutanwajib to use SIPUHH (Business Licensing Information System Forest Products) ONLINE in the administration and publication of various documents wood,

The use SIPUHH Online is expected to help in controlling inetrnal related companies recording inventories, of the system can be monitored how the movement of supplies, in addition to facilitate the company to record inventory logs, these implementations also memebantu the ministry to monitor the circulation of wood for each company. So things that are illegal, mistakes will menyebabkan company's losses can be avoided.

### **LITERATURE REVIEW**

*Accounting information system.* According Niswonger, Fess & Warren (1995), accounting information system is an internal tool used by companies to obtain information that the information will be used as consideration for managing the company's financial reports and related presentation for stakeholders. Accounting Information Systems (AIS) is a part of a company that works to collect, clarify, process, analyze, and communicate information as a consideration of decision-making that decision is useful for internal and external parties companies (Moscove and Simkin, 1984; in Jogiyanto 2007: 17).

*Online Sipuhh.* Refer to Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number: P.43 / Menlhk-Secretariat / 2015 Concerning Administration of Timber Forest Products Derived From Natural Forests, a company engaged in forestry and forest management are required to use the Online Sipuhh issued by the Ministry of the Environment and Forestry of the Republic of Indonesia. The meaning of forest governance

timber forest products derived natural forests are intended to guarantee the rights of the state over all forest products timber from natural forests exploited and / or cut and / or collected by the permission / management rights in accordance with the provisions of the law -invitation. Tata forest management from natural forests aimed at ensuring legality and order circulation timber forest products as well as the availability of data and information. The scope includes the entire timber forest products are derived from natural forests exploited or felled by pengelolahutan / holder of a valid license and implemented self assessment through SIPUHH. The whole company engaged in forestry and forest management are required to make Production Report which must then be uploaded via Online SIPUHH application.

*Inventories.* According C.Rollin Niswonger, Philip E. Fess, and & Carl S.Warren (1995) interpret the definition of inventory (inventory) is used to denote items stored merchandise to be sold in the normal operation of the company, and that the material in the production process or saved for that purpose. Interest Inventory Accounting Information Systems:

- Provide accurate information related to admission to the receipt of inventory in accordance with the procedures adopted by the company;
- Provide information about the flow of existing inventory so that local governments can take into account the degree of control required;
- Inventory control so that supplies can be calculated economically existence.

*Internal Control Systems.* According to Mulyadi, 2008 states that the internal control system includes organizational structure, methods, measures that are coordinated to maintain the wealth of the organization, check the accuracy and reliability of accounting data, drive efficiency and encourage compliance with management policies. Meanwhile, according to the definition of internal control according to Amin Widjaja Tunggal (2010) mendefinikan system of internal control is a process that is run by the Board of Commissioners, Management, Personal other entities that are designed to provide reasonable assurance about the achievement of the three factions of the following purposes: (a) the reliability of financial reporting (b) Effectiveness and efficiency of operations, and (c) Compliance with laws and regulations.

## RESEARCH HYPOTHESES

*Effect of Accounting Information System implementation of the internal control inventory.* Based on research conducted by Djajun Djuhara (2014) states that there are effects of the application of the accounting information system of internal control of inventory.

H1: There Effect of Accounting Information System Implementation of the internal control.

## METHODS OF RESEARCH

*Population and Sample Research.* The population used in this study is karyawan working at PT Dwimajaya Utama in Palangkaraya. The sampling technique in this research use traditional methods of purposive sampling. The method is based on the criteria for determining the sample used in this study dalah as follows:

- Respondents in this penelitoan are active employees of PT Dwimajaya Utama;
- Respondents are administrative staff and financial staff wooden PT Dwimajaya Utama;
- Respondents are not restricted by long tenure.

*Dependent variables:*

*Internal Control Inventory.* Inventory in a company is an important asset, because almost all of the biggest expenditures are used for supplies. If the company does not record the entry and exit groove and appropriately then the company can lose money. This inventory account will be associated with third parties, loss can occur when the company experienced delays in product shipments, nonconformity records with physical evidence, if using improper methods, there will be damage to the inventory. Then that is where the role of

an accounting system in regulating the inventory account. Interest Inventory Accounting Information Systems: (1) Provide accurate information related to admission to the receipt of inventory in accordance with the procedures adopted by the company. (2) Provide information about the flow of existing inventory so that local governments can take into account the degree of control required. (3) Control of supply so that supplies can be calculated economically existence.

*Independent variables:*

*Accounting information system.* The accounting information system is a set of financial and non-financial processes that complement each other to produce a useful information to a company official. Indicators used in varaibel accounting information system is the hardware, software, human resources, procedures applied, the company's database, and the communication network.

*Hypothesis testing.* Model hypothesis test used in this study is a simple linear regression by using SPSS 20. The independent variables to be tested, namely Information accounting system, while the dependent variable used is the internal control of inventory logs. Thus developed the regression equation as follows:

$$PI = a + b1.SIA + e$$

Where: PI = Internal Control; a= constant; b= Coefficient independent varaibel (regression coefficient); SIA = Accounting Information Systems; E = *Error*.

## RESULTS AND DISCUSSION

*Test Correlations.* To test whether there is influence of variable X to Y varaibel the first step in this research is the correlation test using SPSS 20.0 software for Windows.

Table 1 – Validity Analysis Results

Item Questions	<i>Pearson Correlation</i>	significant	Information
SIA_1	0.473 **	0,005	VALID
SIA-2	0.778 **	0,000	VALID
SIA_3	0.783 **	0,000	VALID
SIA_4	0.663 **	0,000	VALID
SIA_5	0.713 **	0,000	VALID
SIA_6	0.612 **	0,000	VALID
SIA_7	0.623 **	0,000	VALID
SIA_8	0.575 **	0,000	VALID
SIA_9	0.649 **	0,000	VALID
SIA_10	0.780 **	0,000	VALID
SIA_11	0.582 **	0,000	VALID
SIA_12	0,400 **	0,019	VALID
SIA_13	0,795 **	0,000	VALID
SIA_14	0.572 **	0,000	VALID
PI_1	0.658 **	0,000	VALID
PI_2	0.508 **	0,002	VALID
PI_3	0,495 **	0,003	VALID
PI_4	0.704 **	0,000	VALID
PI_6	0.465 **	0,006	VALID
PI_7	0.588 **	0,000	VALID
PI_8	0.552 **	0,000	VALID
PI_9	0.563 **	0,001	VALID
PI_10	0.626 **	0,000	VALID
PI_11	0.660 **	0,000	VALID
PI_12	0.448 **	0,000	VALID
PI_13	0.450 **	0,000	VALID
PI_14	0.582 **	0,000	VALID

*Sources: Primary data are processed (SPSS output).*

Table 1 shows that the variable of Accounting Information Systems has a valid criterion in any statement items with significant value below 0.05. This suggests that the terms of validity of the measuring instrument are met and means that all the items of the statements used in this study could reveal something that was measured in the questionnaire.

**Test Reliable.** To test whether the data obtained from the questionnaire is reliable data, then after further correlation test test is reliable, the following are the results and their interpretation:

Table 2 – Reliable Test Results

Cronbach's Alpha 0.826	N of Items 13
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Sources: Primary data are processed (SPSS output).

Based on the above table, Alpha value of  $0.826 > 0.60$ , it can be said that the questionnaire is reliable.

**Test Regression.** Simple linear regression analysis is a regression method that can be used as a tool of statistical inference to determine the effect of a variable free (independent) on the dependent variable (dependent). Here is a regression test results:

Table 3 – Descriptive Statistics Table

	mean	Std. deviation	N
PI_RATA2	4.2024	0.30587	34
SIA_RATA2	4.1512	0.43771	34

Sources: Primary data are processed (SPSS output).

Descriptive statistics in the table above, the mean value for Internal Control (PI\_RATA2) and Accounting Information Systems (SIA\_RATA2) each by 4.2024 and 4.1512. the standard deviation value for Internal Control (PI\_RATA2) and Accounting Information Systems (SIA\_RATA2) respectively 0.30587 and 0.43771.

Table 4 – Test Results Analysis The coefficient of determination (Adjusted R<sup>2</sup>)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,622a	.387	0.368	0.24319

Sources: Primary data are processed (SPSS output).

In Table 4 displays the value of R which is a symbol of the value of the correlation coefficient. Correlation coefficient of 0.622 means that the independent variable Accounting Information Systems (AIS) has the effect of a contribution of 38.7% to the Internal Control variables and 61.3% are influenced by other factors outside the independent variable of Accounting Information Systems (AIS).

Table 5 – The results of F-test analysis

ANOVAa						
Model		Sum of Squares	df	mean Square	F	Sig.
1	Regression	1,195	1	1,195	20.203	0,000b
	residual	1.893	32	0.059		
	Total	3,087	33			

Sources: Primary data are processed (SPSS output).

From table 5 obtained significance probability value of  $0.000 < 0.05$ , significant difference effect of accounting information system of internal control.

**Test Results Multicollinearity.** Here is the result of a test multicollinearity:

Table 6 – Results Test Analysis Multicollinearity

	collinearity Statistics	
	tolerance	VIF
SIA_RATA2	1,000	1,000

Sources: Primary data are processed (SPSS output).

From table 6 obtained value and the value of tolerance 1 *Inflantion Variance Factor* (VIF) under the number 10 (ie: 1000) this means there is no regression model multikol problem and can be used in this study.

*Normality Test Results.* Normality test can be seen from the dissemination of data that follow the normal line as can be seen in Figure 1:

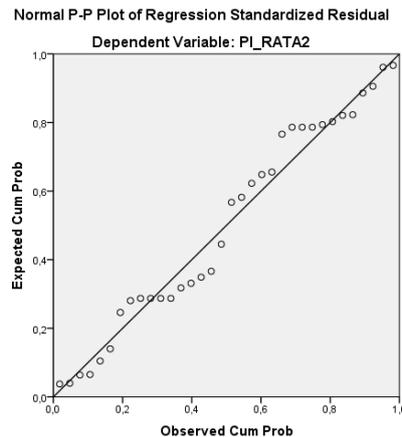


Figure 1 – Normality Test Results

Plot graphic display Normal Regression Standardized PI\_RATA2 seen that the points spread around the diagonal line, so that it can be concluded that the data has been collected and processed by investigators fit for use, although some plots were slightly deviates from the diagonal line.

## CONCLUSION

In the discussion has been explained that there is significant influence independent varaibel Accounting Information System on Internal Control Inventory logs on Dwimajaya Utama PT. After doing research, then there are some suggestions for future research such as: socialization of the user regarding Online SIPUHH either use, or how to anticipate machine error system further improved in order to avoid mistakes in the future; for further research please add other variables that may memepengaruhi internal control inventory.

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## **FACTORS INFLUENCING VOLUNTARY AUDITOR SWITCHING AND AUDIT FEE AS A MODERATING VARIABLE: AN INDONESIAN CASE STUDY**

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### **ABSTRACT**

The purpose of this study was to determine the factors that voluntary auditor switching on property and real estate companies with the audit fee as moderation. The data used in this study was obtained from BEI is as property and real estate company that publishes the complete audited financial statements (in rupiah) listed on the Stock Exchange from 2009-2014. The samples were 180 observations determined by purposive sampling technique. The data analysis technique was is logistic regression and interaction test. Based on the analysis conducted, the results showed that the percentage change audit opinion, change of management did not affect had companies to perform auditor switching, while financial distress and audit fee had significant influence on the company perform the auditor switching. Audit fee enhanced the effect financial distress of auditor switching.

### **KEY WORDS**

Audit opinion, financial distress, management, voluntary auditor, audit fee.

Companies registered on the stock exchange have responsibility on issuing financial statements audited by an independent auditor. According to (Astrini et al., 2013) that financial statements will be used as reference to determine the position and financial activities of a company. Related to the number of parties having an interest in the report cause the financial statements must be audited to ensure its fairness so it is not mislead the parties who use it so that the needs of each user report can be met. So the independency of auditor is the main key of the auditor profession. According to (Wijayani, 2011) that independency must be absolute to the auditor's belonging when the auditors perform auditing duties requiring the auditor to attest to the fairness of their client's financial statements. The independency attitude means that an auditor is not easily influenced, so the auditor will report what he or she discovered during the auditing process (SPAP, 2013). The conflict occurs because the possibility of the agent does not always act in accordance with the interests of the principal and trigger agency costs. In agency theory, the independent auditor acts as an intermediary between different interest between agent and principle. Independent auditors also serve to reduce agency costs arising from self-serving behavior by agents (managers). Thus, to prevent the loss of auditor independency, the government regulates auditor switching obligations. One of the government basis in regulate the auditor switching obligation is because of the case of Arthur Anderson's Public Accountant Firm with his client Enron.

The obligation regarding to auditor changing has been regulated by the government Regulation of the Minister of Finance of the Republic of Indonesia No. 17 / PMK.01 / 2008. Switchingof Public Accountant voluntary was conducted by many companies in Indonesia. This is evidenced by the existence of data showing that 30 companies of property and real estate registered on the stock exchange of Indonesia during the year 2009-2014. From the 30 companies, voluntary switching auditors recorded a total of 12 companies. According to Nasser et. Al (2006) frequent change of Public Accountant will result in increasing audit fees. When the auditor first audits a single client, the auditor should understand the client's business environment and the client's audit risk. For auditors who are totally unaware of the two issues, the start up costs are high so raising the audit fee.

According to (Sinarwati, 2010), if there is any change of auditor by the company outside the stipulated rules, it will cause suspicion from third party, so it is important to know the cause factors. This research intends to re-confirm the factors affecting the occurrence of

voluntary auditors switching in property and real estate companies. The different opinion about what factors cause the voluntary auditor switching at property and real estate companies in Indonesia is interesting to be a research topic considering the existence of parties that support and does not support with the implementation of voluntary auditor switching.

## LITERATURE REVIEW

*Agency Theory.* Agency Theory is an underlying theory base on auditors switching. According to (Jensen, 1976) raising the agency costs in order to overcome the agency conflict. Agency costs occur to protect the interests of the owner and to reduce the likelihood that the agent conducts mislead behaviour. Due to a conflict of interest between both parties (the principal and the agent), it is necessary to have an independent party that is an independent auditor. The independent auditor acts as a mediator between both parties (the principal and the agent). In Indonesia, auditor changing consists of two types, namely mandatory and voluntary. Auditor switching can be conducted from corporate will such as giving an audit opinion that does not meet management expectations, financial distress, CEO changing Public Accountant capacity, auditor reputation from the auditor's side such as audit fee. In this research, property and real estate companies in Indonesia are still frequently doing by voluntarily auditor. This is what needs to be investigated because as we know that too many auditors change, making investors suspicious and can lower stock prices on the stock exchange as well as the company's image getting worse.

*Audit Opinion.* Audit opinion is a statement or opinion given by the auditor, and statements or opinions are given for the company to know about the fairness of its financial statements (Putra, 2014). Audit opinion may trigger the client to change its auditor when the client does not agree with the audit opinion of the previous year provided by the auditor (Fitriani et al., 2014)

*Financial Distress.* According to (Astrini et al, 2013) financial distress is an uncertainty in the business of companies that are experiencing financial difficulties and even threatened to bankrupt raises the conditions encouraging companies to choose th Public Accountant.

*Management Changing.* Based on agency theory, management as an agent is assumed to have a personal interest and this maximizes its importance. With its authority, management has the authority to decide to replace the auditor (Yuka et al. 2016). The management changing occurred is caused by the decision of the general meeting of shareholders to evaluate the performance of the previous management is considered bad and not achieved the target according to the commissioner's ideal expectancy.

*Audit fee.* According to (Agoes, 2012) defines audit fee that is the amount of the cost depends on among others is the assignment risk, the services complexity provided, the expertise level required to perform the service, the cost structure of Public Accountant and other professional considerations.

This research has seven hypothesis as follow:

- H1: Audit opinion affects the auditor switching;
- H2: Financial Distress affects the auditor switching;
- H3: Management changing affects the auditor switching;
- H4: Audit fee affects the auditor switching;
- H5: Audit fee affects the relationship between audit opinion and the auditor switching;
- H6: Audit fee affects the relationship between management changing and auditor switching;
- H7: Audit fees affect the relationship between financial distress and the auditor switching.

## METHODS OF RESEARCH

Data collection methods in this research used literature study through books, journals, and using secondary data by accessing the financial statements of property and real estate

companies registered on the Indonesia Stock Exchange 2009-2014. The populations in this study were 48 property and real estate companies registered on Indonesia Stock Exchange (IDX) period 2009-2014. But in this research the researcher will use purposive sampling method because of 48 property companies and real estate that has established in Indonesia, 30 companies that have data for 6 consecutive years from 2009-2014 and according to criteria.

*Auditor Switching.* When the company conducts a changing of Public Accounting Firm (Auditor Switching) voluntarily then assigned a value of 1. Meanwhile, if the company does not change the Auditor Switching then assigned value of 0 (Chadegani et al., 2011).

*Audit Opinion.* Companies that receive fair opinions are assigned value of 1 (one) while zero (0) represents companies that get opinions other than unqualified (Wijayani, 2010).

*Financial Distress.* The term financial distress is used to reflect problems with liquidity that can not be answered or resolved without having to change the scale of operations or corporate restructuring (Munawir, 2012). These variable measurements previously referred to the research Taufiq et.al (2016), where the measurement of variables with ratios and calculations using the modified Altman formula is:

$$Z'' = 6,56X1 + 3,26X2 + 6,72X3 + 1,05X4$$

*Management Changing.* This variable measurement has previously been used by (Chadegani et al., 2011). Management changing variables are measured using dummy variables. If there is a director changing / CEO in the company then assigned the value of 1. But when there is no director changing in the company, then assigned the value of 0.

*Audit Fee.* The audit fee variable will be represented by the professional fees account contained in the financial statements of property and real estate registered in Stock exchange in 2009-2014. Measurements of these variables have previously been used by (Listya et al., 2014). In this research, audit fee symbolized by  $L_n$  fee. Natural logarithms are used to minimize the difference in numbers that are too far from the sample data obtained.

*Model Specification.* The analysis used in this research is logistic regression analysis:

$$SWITCH = \alpha + \beta_1 OA + \beta_2 FD + \beta_3 PM + e$$

Where: SWITCH = Dummy auditor switching variable (category 1 (one) to perform; auditor switching and 0 (zero) not to perform auditor switching;  $\alpha$  = constants;  $\beta_1$ -  $\beta_3$  = regression coefficient; OA = Audit Opinion; FD = Financial Distress; MC = Management Changing; e = Error.

*Moderated Regression Analysis (MRA).* In this research, the measurement instrument of moderation variable using Moderated Regression Analysis (MRA). According Wibowo (2009) Moderated Regression Analysis (MRA) is a special application of multiple linear regression containing elements of interaction (multiplication of two or independent). With the equations developed as follows.

$$\text{Model 1: } \ln \frac{p}{1-p} = \alpha + \beta_1 OA + \beta_2 FD + \beta_3 PM$$

$$\text{Model 2: } \ln \frac{p}{1-p} = \alpha + \beta_1 OA + \beta_2 FD + \beta_3 PM + \beta_4 AF$$

$$\text{Model 3: } \ln \frac{p}{1-p} = \alpha + \beta_1 OA + \beta_2 FD + \beta_3 PM + \beta_4 AF + \beta_5 (OA \times AF) + \beta_6 (FD \times AF) + \beta_7 (PM \times AF)$$

Methods in this study consists of 1) Descriptive statistics, 2) Hypothesis testing is conducted by using  $\alpha = 5\%$ . The rules of decision making are: If the probability value (sig.)  $< \alpha = 5\%$  then the hypothesis is accepted. If the probability value (sig.)  $> \alpha = 5\%$  then the hypothesis is rejected (Wijayani, 2011).

The stages of hypothesis testing in logistic regression are as follows:

Assessing Overall Model. Some statistical tests are given to assess this. The hypothesis for assessing the fit model are:

- $H_0$ : The hypothesized model fit with the data;

- $H_A$ : The hypothesized model is not fit with the data.

To test the null and alternative hypothesis, L is transformed into 2LogL: Likelihood decrease (-2LogL) shows a better regression model or in other words a hypothesized model fit with data (Ghozali, 2013: 340).

*Coefficient of Determination (Nagelkerke R Square).* Cox and Snell's R Square are measurement that attempt to imitate the size of R<sup>2</sup> in multiple regression based on the likelihood estimation technique with a maximum value of less than 1 (one) so that it is difficult to interpret. Nagelkerke's R square is a modification of Cox and Snell coefficients to ensure that its value varies from 0 (zero) to 1 (one) (Ghozali, 2013: 341).

*Regression Model Eligibility Test.* When the statistical value of Hosmer and Lemeshow's Goodness of Fit Test is to test the eligibility of the regression model is higher than 0.05, so the null hypothesis can not be rejected and it means the model is able to predict the observed value or it can be said that the model is acceptable because it matches the observation data (Ghozali, 2013: 341).

*Multicollinearity Test.* A good regression model should not be correlated between independent variables. If independent variables are correlated, these variables are not orthogonal. Orthogonal variables are independent variables that are mutually correlated among the same variables with zero (Ghozali, 2013: 105).

*Classification Matrix.* The classification matrix shows the predictive power of the regression model to predict the possibility of Public Accountant firmswitching by a company (Wijayani, 2011).

*Logistic Regression.* The analysis used in this research is logistic regression analysis, that is by looking at the influence of audit opinion, financial distress, switching management to voluntary auditor switching on the company of property sector and real estate. The regression model in this study as follows:

$$SWITCH = \alpha + \beta_1 OA + \beta_2 FD + \beta_3 PM + e$$

## RESULTS AND DISCUSSION

Descriptive statistics are used to provide an overview or description of the data under the research by looking at mean, standard deviation, and maximum-minimum of values.

Table 1 – Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
OA	180	,00	1,00	,4444	,49829
FD	180	,01	3,80	,8321	,58274
PM	180	,00	1,00	,6521	,47272
AF	180	18,14	25,43	21,6927	1,60955
AS	180	,00	1,00	,2444	,43096
Valid N (listwise)	180				

Source: Data Processing Results.

*Logistic Regression Test Results.* According to (Ghozali, 2013) that logistic regression can be used to analyze data with dummy variables as the dependent variable.

Table 2 – Variables in the Equation

Variable	B	Sign
Opini Audit	,149	0,687
Financial Distress	,038	0.002
Pergantian Manajemen	1,580	0.531
Constant	-2,036	

Source: Data Processing Results

$$\text{Switch} = -2,036 + 0,149OA + 0,038 FD + 1.580 PM \quad (1)$$

Audit opinion variable has a significance of 0.687 which means higher than 0.05. It shows that the first hypothesis (H1) is unsuccessful (rejected). Financial distress variable has the value of regression coefficient 0.038, financial distress significance value 0.002 which means smaller than the significance of 0.05. It shows that the second hypothesis (H2) is successfully supported (accepted). Variable of management changing has coefficient equal to 1,580 with value of significance 0,531 which means higher than significance value 0,05. It shows that the third hypothesis (H3) is rejected. Thus, the management changing has no effect on the voluntary auditor witching to the company.

Table 3 – Variables in the Equation

Variable	B	Sig
Opini Audit	,052	,891
<i>Financial Distress</i>	,019	,766
Pergantian Manajemen	1,540	,000
<i>Audit Fee</i>	-,223	,034
Constant	2,907	,283

Source: Data Processing Results.

$$\text{Switch} = 2,907 + 0,052 \text{ OA} + 0,019 \text{ FD} + 1,540 \text{ PM} - 0,223 \text{ AF} \quad (2)$$

From the processed data, the equation of the regression model formed in equation two that the audit opinion variable has a significance value of  $0.891 > \alpha = 5\%$  with the regression coefficient value of 0.005 which means the audit opinion variable in equation two is not significant. financial distresss significance value is  $0.766 > \alpha = 5\%$  with a positive regression coefficient value of 0.019 which means the variable financial distresss in equation two does not give effect to the voluntary auditor switching. In addition, the management changing variables has a value of 0.000 with regression coefficient value of 1,540 which means the management changing variable in equation two has an effect to the voluntary auditor switching. It shows that the hypothesis is accepted. So it can be concluded that the management changing has a positive and significant influence on the voluntary auditor switching.

The next discussion on the variable audit fee that it has a value of  $0.034 < \alpha = 5\%$  with the regression coefficient value of -0.223 which means that the audit fee variable in equation two has a negative influence on the voluntary auditor switching. It shows that the fourth hypothesis (H4) is accepted.

Table 4 – Variables in the Equation

	B	Sig.
Opini Audit	3,162	,732
<i>Financial Distress</i>	-1,779	,296
Pergantian Manajemen	-21,717	,997
<i>Audit Fee</i>	,173	,703
INTERAKSI_1	-,197	,652
INTERAKSI_2	,074	,014
INTERAKSI_3	45,397	,996
Constant	-6,102	,535

Source: Data Processing Results.

$$\text{Switch} = -6,102 + 3,162 \text{ OA} - 1,779 \text{ FD} - 21,717 \text{ PM} + 0,173 \text{ AF} - 0,197 \text{ OA} \times \text{AF} + 0,074 \text{ FD} \times \text{AF} + 45,397 \text{ PM} \times \text{AF} \quad (3)$$

From the processed data, the regression model equation formed at equation three, Interaction variable 1 has value equal to  $0,652 > \alpha = 5\%$  with negative regression coefficient value of -0,197 from result of interaction calculation between audit opinion variable with audit fee has negative direction hence hypothesis five (H5) shows that audit fee variable weakening influence of audit opinion on the auditor switching and not significant.

Then, the interaction variable 2 has a value of  $0.014 < \alpha = 5\%$  with a positive regression coefficient value of 0,074 from the calculation of interaction between financial distress variables with audit fee gives direction of positive relationship then the sixth hypothesis (H6) mentions audit fee variables strengthen the influence of financial distress on auditors switching is accepted.

After that, the interaction variable 3 has a significance value of  $0.996 > \alpha = 5\%$  with a positive regression coefficient value of 45,397 from the interaction calculation between the management changing variable and the audit fee giving the positive relationship then the hypothesis reinforces the effect of management changing on the auditor switching but not significant the seventh hypothesis (H7) is rejected.

The results of this research illustrate that voluntary auditor switching in property and real estate companies are due to financial distress and audit fees. It is reflected in the condition of the Indonesian economy that has grown below 7 (seven) percent in the last 5 years, resulting in lower public purchasing power on housing investment. This factor also causes the company's capital cash flows to be in hampered. This research is in accordance with (Dwiyanti et al., 2014); (Widyanti et al., 2016) shows that financial distress affects the voluntary auditor switching. According to (Nasser et al., 2006) the business uncertainty in companies facing financial difficulties can lead to a condition that encourages companies to switch their Public Accountants. Becoming threats to financial difficulties and also costs that companies will face.

Because there are conflicts of interest in which management is more likely to spend more time committed to avoiding bankruptcy and trying to reveal its performance than to make decisions to make better management of the company. So the companies that are lead to threat with bankruptcy and face unhealthy financial position will usually use the services of high independent auditors to increase shareholder and creditor confidence and also to reduce the risk of litigation.

## CONCLUSION

Based on the results of hypothesis testing in the logistic regression analysis, it was found that the percentage of audit opinion variable, the management changing did not affect the voluntary switching auditor, while the financial distress variable, audit fee statistically affect the voluntary auditor switching. And the moderate variable audit fee strengthens the effect of financial distress on voluntary auditors switching.

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**THE CONDUCT OF PSYCHOTROPIC USER BY UNDERAGE CHILD  
IN KENJERAN SECTOR POLICE AND TANJUNG PERAK DOCKYARD RESORT  
POLICE JURISDICTION**

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**ABSTRACT**

The lives of minors are in danger of being damaged by the influence of psychotropic emergence. The purpose of this study is to describe and analyze the handling of the use of child psychotropic in the jurisdiction of Kenjeran Police Resort. The results showed that the factors behind the children using psychotropic are the factor of family environment, residence environment and school environment. Obstacles in the use of psychotropic treatment by children are the lack of socialization budget for the prevention of psychotropic use, there are still duplicate duties given to members, the lack of active participation of the villagers in socialization, and the lack of community reports. The efforts to optimize the handling of child psychotropic use are a repressive effort with criminal act according to the law and cooperation with BNN Surabaya. While preventive efforts by cooperating with schools, socialization among students and students, counseling and approaches to the community, and conduct routine operations.

**KEY WORDS**

Optimization, psychotropic, child, jurisdiction.

The live of Indonesian citizens is developed in recent years. The development is followed by the increasing number of criminal actions which bring negative impact for the citizens. Thus, Indonesia, as law based country, must be well functioned as a social control instrument. It could also be as law enforcer to make people obey the principle of law. That is why the existence of a nation will be consistently implemented.

In one hand, the current issue of this state is the children behaviour case both as a victim and suspect who are violating the law. One of well developed issue among society is the psychotropic and drug addiction. In fact, the distribution of these illegal drugs do not only experienced by the adults but also by the under ages.

In this modern era, the misuse of drugs and psychotropic shows expansion in terms of its users, it affects children, teenage, and other young generation. They are supposed to be the next generation who continue the vision of a nation and to be excellent human resources for the development of the state. They are also expected to be the young leader who will be able to lead and maintain the unity of the nation.

Generally, the drugs addict's age range from 11 to 24 years old. It means that they are still on the productive time or student age. The underage who are involved in NAPZA (Drugs) become early crucial warning among society's nation and the country as well. Because, the teenagers are the ultimate weapon for the development of the country. It may be caused by the immature cognitive, the cognitive ability and good manners, in early age, will influence the future performance of individuals when they come to adult age.

Nowadays, the misuse of drugs and psychotropic is spread among underages who are very curious on new things and they will be easily to be deceived to have a try. Sometime, they try to start with smoking. Badan Narkotika Nasional (BNN: National Narcotic Council) of Surabaya states that the criminal illegal drugs use is increasing each year.

The fact shows that the distribution of drugs in east java is already in danger status. Though, in Surabaya, in less than a month, the number of drugs addict who got rehabilitation in 2015 are 415 people. Starting by smoking, the underages will be curious and start to try narcotics and psychotropic. This is the result of careless action of the parents toward the

children. It also as a result of inner family problems that makes child turn to choose these drugs.

Although the drugs could be in form of cigarette, there is another customisation that is easier to deceive police, one of the example is shown by a case done by underage junior high school students namely Praga Miftakhul Huda (PMH). This, 15<sup>th</sup> years old, student sell pills to his friends, this pill is known as Koplo within cheap price which is Rp. 1000 for a pill. He took the pills from some adults who ask him to sell it to his friends.

This is such a shame for the country. Because, children are part of next generation who are potentially continue the vision of our nation in future. The children need a certain counselling and protection to ensure their physical, social and mental growth in balance. It is ironic to see those poor children carry the burdens instead of studying and playing as a result of narcotics. This is a prove that even the youngest generation is threatened by the psychotropic.

## **METHODS OF RESEARCH**

This study uses descriptive qualitative as its style. The setting of study takes place in resort police of Tanjung Perak Dockyard jurisdiction as the conduct of drugs movement is still low in this area. The study focuses on Junior High School 31 of Surabaya. The subject was chosen as the number of addicts and drug dealers are found in this state school.

## **RESULTS AND DISCUSSION**

There are several factors that influence underages using psychotropic drugs in kenjeran sector police and sector police of Tanjung Perak jurisdiction. The factors are family environment, neighbourhood influence, and school environment.

The obstacles experienced in psychotropic conduct by under ages are the lack of socialisation budget to accommodate drugs use prevention, multi job system must be carried by one police, lack of socialisation participation by society, and few numbers of report about the case.

The law number 35 of 2014 article 59 point (e) about Child Protection, explicitly, stated that special protection is provided for children as victims of narcotics, alcohol, psychotropic, and other addictive misuse.

Moreover, in another law of child protection number 59A, stated that the protection for children with cases are attempted by following treatments, as follow:

- Quick action including the rehabilitation and medical treatment of their physical, mental, and social condition to prevent more diseases and other medical abnormality;
- Psychosocial counselling until the end of the treatment
- Provide more aid for the family of the children if the family was from low economic condition
- Provide counselling and law aid in every courts that they need to be attended.

In general, BNN is the council whose responsibility is to cut down the distribution of these illegal drugs and prevent the narcotics misuse. The function and duties of BNN is stated on law no 35 of 2009 about narcotics. The fundamental duties of BNN, which already stated in law, is in concerned with everything that has to do with narcotics. In order to prevent narcotics misuse, it hold several events such as socialisation and counselling to educate people with awareness and knowledge about dangerous use of narcotics or napza. This events were held to increase the objection desire of individuals, family, or society towards napza misuse.

The law number 20 of 2003 about national education system consolidates the importance of society's role in education process. (chapter XV article 54 act 1 and 2). Literary, it tries to tell people and use the role of parents and society towards education to achieve the vision of education. Moreover, it would be more intense in school autonomy era

(school based management). Now adays, the role of parent and society influence the character identity, thus the role of parent should be involved, because parents and teachers are ultimate partners to guide the young generation about the dangerous of narcotics misuse. In this case, the role of teacher is also important not only to teach their students but also to educate them. That is why, founding good characters toward student is very crucial, because, most of children spent their learning time in school environment, their friends will also contribute in their character growth.

The aim of the socialisation takes place in school environment is to spread the awareness among educated young generation not to try narcotics. Thus, the awareness, desired objection, and wary will be the foundation of teenagers to firmly refuse the narcotics. It is also stated by Fletcher, Calafat, Pirona, & Olszewski, (2010) that the using of narcotics will influence the mental growth of students both for users and other people. Narcotics is also use in medical study. But, some people tend to misuse and distribute it illegally without any recommendations from medical experts, it will result in very negative impact for individuals and society, especially for young generation, thus, the socialisation is very important.

By illuminating society, the information transfer between police and people, especially parents, will be conducted about the dangerous misuse of narcotics. Thus, the parents will be able to protect and prevent their children to get near with narcotics.

Social approach development means that humans, as social creature, positioned their self as receiver and suspect of the problem solving process in achieving the successfulness of development. thus, people need to be able to solve their problem and find their own solution. Illumination development, as social applied study, must be able to consolidate the quality of human resource in changing the behaviour of society to the right direction and achieve better quality of live.

Police Operation is a series of Police actions to overcome the disturbance of security and public order held in certain period of time, certain objectives, certain ways of acting, strength, and support of certain resources by several police functions in the form of task force. Kenjeran Sector Police is very aggressive in making efforts to combat illegal drugs especially among these teenagers, as evidenced by the routine operations conducted in various places, even in schools, and nightspots where there are children or adolescents who in this case very vulnerable to be targeted drug abuse.

## **CONCLUSION AND SUGGESTIONS**

According to the discussion above, the conclusions are as follow:

- There are several factors that influence underages using psychotropic drugs in kenjeran sector police and sector police of Tanjung Perak jurisdiction. The factors are family environment, neighbourhood influence, and school environment.
- the obstacles experienced in psychotropic conduct by under ages are the lack of socialisation budget to accommodate drugs use prevention, multi job system must be carried by one police, lack of socialisation participation by society, and few numbers of report about the case.
- The attempts of police to Conduct of Psychotropic User by Underage Child in Kenjeran Sector Police and Tanjung Perak Dockyard Resort Police Jurisdiction are repressive and preventive ways. The repressive way use civil law sanction by cooperating with BBN of Surabaya. Meanwhile, the preventive cooperates with school, socialisation among students, illumination and social approach, and routine operation by the police.

Based on the conclusions above, the suggested points are provided below:

- Provide and control the budget for socialisation towards junior and college students;
- Provide more personnel to get involved in illuminations by implementing cooperation with human resource division;

- To continue the active role of National Narcotics Council of Surabaya to pursue public figure, especially the families, schools, and governments to spread the dangerous of narcotics awareness among children and teenagers.

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## **THE STRATEGY OF TRAFFIC POLICE TO INTERCEPT VEHICLE USED BY UNDERAGE STUDENTS IN KEDIRI SECTOR POLICE JURISDICTION**

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### **ABSTRACT**

The development of the era makes the younger generation has a lot of expertise in all fields, but on the other hand many of the younger generation who do social deviation. One of them is riding a motorcycle by a child under age. This study aims to determine the level of vehicle use by underage children, factors influencing vehicle use by underage children and to analyze the Traffic Police strategy in preventing the level of motor vehicle usage by children underage in the Kediri Police area. The results of the study indicate that there is an increase in the number of underage child riders, especially in Junior High School and Senior High School students in Kediri Police area. Factors of motor vehicle usage by underage children are internal factors and external factors. Policies strategy in preventing the level of motor vehicle usage by students in jurisdiction of Kediri Police, that is by preventive and repressive effort.

### **KEY WORDS**

Traffic, child, rider, motor vehicle, student.

The highway transportation, as one of modes of transportation, is the most strategic and important infrastructure, within the increasing number of people mobility either to carry commodities or service across vast areas.

Thus, there is significant system to regulate this phenomenon which is developed into traffic rules by integrating and increasing the dynamic elements of traffic itself. The elements consist of street transportation web, the vehicles and its drivers, traffics, procedures and the methods which will result in solid system within excellent result used by vast societies. Because, the societies need high mobility to do their daily live business such as going to the workplace, school, groceries, and other social activities.

Eventually, transportation is the most vital and strategic infrastructure to run the wheel of economics, consolidate the unity among people, and affect all aspects of a nation. Whereas, this transporting activities are used by wide societies including children and adult, from the old to the youth, men or women.

Unfortunately, there are many traffic violations nowadays. The violations are dominated by motorcyclist as it is the number one population of vehicles used by Indonesian people compared with another vehicle. In total, the motorcyclists are responsible for 70% traffic accidents across the nation. Right now, it increases into 80% of total traffic accidents.

There are many factors that caused traffic accidents. Most of them are the result of human errors, because the level of awareness and obeying traffic rules is still low. In a certain age, especially in teenage phase, the emotional condition of somebody is so fragile to do arrogant action on the road. As a result, they will not pay attention to the safety of other drivers and it decreases the level of concentration of the driver itself.

Motorcycle is the most favourite vehicles in Indonesia. Someone who ride a motorcycle is called a rider. The rider is someone who operates the vehicle or someone who directly watch the driver skill while driving for the first time both motored or not. The increasing number of people who die in traffic accidents rises a new term that road is the most number one killer in Indonesia. In fact, even though the rules to intercept the riders violating traffics had been implemented, there is still numerous violations. Ironically, the government, who is responsible to prevent he underage students to ride motorcycle, does not give full attention to this phenomenon.

The youth is the next generation that must grow and develop to continue the existence of a nation, thus everybody is responsible to guide them to earn good characteristics, and determine their identity accordance with their growing golden age. This makes the youth possessed strategic position in the development of a nation. The rapid growth in globalisation tend to make children learn many skills in no time, but it also makes them inconvenient about the social aspects. One of it is by riding the motorcycle.

The underage motorcycle riding is considered as youth delinquency and mistaken as they do not have the riding license nor they are ready to ride the motorcycle, yet. Most of societies assume that underage motorcycle riding is a common phenomenon because it is still of what they called as normal use. But, because the age of them is still not old enough, they will have a potential to harm other riders because they are not yet able to control their self. The good riders are those who obey the traffic rules or the current regulation to avoid disadvantage from both riders and another rider.

Moreover, this phenomenon, which has been clarified as common event by societies, earns full supports from the parents by providing their children with motorcycles. By bluffing thousand reasons, they do not realise that the age of their children is still considered as underage by the law. Surprisingly, the parents feel so much pride when their under ages are able to ride motorcycles or drive cars while they are still on elementary or junior high school. The condition motivates the increasing number of vehicle using among under ages.

The increasing number of vehicle use by under ages triggers the traffic police department to do their duties and responsibilities correctly. Moreover, the law number 22 of 2009 about traffic rule and carrier transportation could be a guidance for police as one of legal institution that responsible to socialise and illuminates people about the importance of traffic rules.

Traffic police must demonstrate their strategies in overcoming and preventing the use of motor vehicles by under ages. A strategy is a set of managerial decisions and actions that determine the company's performance over the long term. Research conducted by Mattias Mauriz Tarigan (2014) shows that the strategy of the traffic police in preventing underage from driving on a public road is to carry out the police function through 2 actions: a) preventive action, with all kinds of precautions; and b) repressive measures, are actions taken to enforce traffic laws in the event of a violation on the road. But in practice, there are constraints in which there is a choice of sanctions between confinement and fines. Most of the people and minors who commit motor vehicle violations prefer to pay a fine so as not to have a deterrent effect on offenders and police who are considered enemies by minors due to lack of knowledge and understanding of the laws applicable in Street.

## **METHODS OF RESEARCH**

This study uses descriptive qualitative which takes its setting in Kediri Resort Police jurisdiction. Because, there are so many traffic violation cases by the underage found in this area. This becomes major concentration as the police should be able to guarantee the safety of society from dangerous aspects including the students.

## **RESULTS AND DISCUSSION**

*The level and factor of vehicle using by underage students in Kediri resort police jurisdiction.* It has been found relatively a lot of underage motorist, especially in children Junior High School (SMP) and High School (SMA). Based on the data of child perpetrators from Kediri Police, the perpetrator of accidents by minors for three years is 2015-2017 period amounting to 1.259, where the actors with the level of primary education as many as 241 children, junior numbered 328, and high school totaling 690 children. This is certainly an indication that the number of accidents, whether caused or cause of child victims should be a special attention for the Police Kediri. Underage motorist must be noticed by parents, so as not carelessly given a motorcycle license because it can endanger themselves and others.

*The factor of vehicle using by underage students in Kediri resort police jurisdiction.* In fact, the violation commenced by underage is not based on their evil will/evil mind, but it is more to be deviation of social norms. The child experts agreed that the term for this case is brat or *Juvenile Delinquency*. By using the term, the experts expect society not to include the children into criminal category. There are several factors that cause traffic violation by the children, as follow.

Internal Factor:

- The Immature Emotion Factor. Teenagers are known as time of finding that you are process. Their emotions become unpredictable as a result of physical and hormonal change. Thus, it needs a new self-control of their self. In this state, they become unconscious, unpredictable, and do harassment actions to cover their weakness or to increase their self-confident. The rage leads them to be intolerant to others and become arrogance/stubborn. They start to observe their teachers and friends objectively. In adolescents aged 15-18 years, adolescent rebellion is a universal expression and change from childhood to adulthood. In general, the parents provide their children with motor vehicle to get to school. Because, the parents are afraid of the criminality and safety of their children in public transportation. But, they do not aware of the discipline by letting their underage kids riding the motorcycle in highway. Another way to solve this problem is by using school bus to provide comfort and safety for both parents and children.
- Parenting pattern. Parenting is a series of forms or ordinances performed by parents in maintaining, nurturing and educating their children are consistent which is manifested in the form of interaction between parents and children. The underage riders are commonly found in village and city. Nowadays, the kids villager become has been grown braver to violates the traffics. But, the parents' omission construct social paradigm that turn this bad behaviour into a common culture. It is must be prevented as it will trigger other people to duplicate the action. Eventually, the number of underage riders will be increasing. Moreover, the low self-awareness capability of the young riders causes many traffic accidents.

External Factor:

- Environment Factor. The most capable external factor that causes this phenomenon is the environment. Wherever the students take place, if the environment supports them to ride motorcycle, they will use it as well as other children. Even though the parents who are already forbid their kids to ride motorcycle, eventually, the parents gave up and let their children to ride it as they always make a demand for the parents to be the same with other cool kids.
- *Friends Factor*. Another factor that causes underage to ride motorcycle is their friends. A friend will surely affect the underage behaviours. Moreover, junior high school is a crucial time that they will be easily deceived and affected by others. That is why, in some cases, the underage learn their riding skill from their neighbourhood friends. It proves that the effect of friendship is very strong. Sometimes, the students who do not ride motorcycle to school is called nerds by their friend and does not include in cool kids club as all kids wish to be. It is widely known as millennial trends, nowadays. Most of the underage who demand to ride motorcycle is those who still cannot control their emotions. Even though they are well aware that it is a traffic violation to ride motorcycle without license and not as old as 17 years old, this does not stop their desire to ride.

School Factor. As education infrastructure to study, school holds important role to educate discipline behaviour among youth. Unfortunately, some schools allow their student to ride motorcycle to school. It motivates the student to be more excited to ride their motorcycles. The low rate socialisation and illumination form police department causes the phenomenon to be overbalance.

*The Strategy of Traffic Police to Intercept the Number of Vehicle Using By Underage Students in Kediri Sector Police Jurisdiction.*

*Preventive Action.* By implementing safety riding program, the police traffic applied their socialisation by spreading the brochure of safe riding awareness. The brochure was distributed to settlements or regencies or in public places of Kediri where the youth love to gather. Commencing traffic education for some students to several schools such as senior high school r vocational high school

*Repressive Action.* in repressive action, to intercept the traffic violation by the riders or the drivers, ticket penalizing is the most effective way to judge the under age students, their motorcycle is taken to police office. The vehicle will be returned as the parents of the students accommodate the administration and receive some counselling from the police department.

## CONCLUSION AND SUGGESTIONS

From the explanations of previous chapter above, the conclusions will be, as follow:

There is a significance increase of vehicle using by underage that mostly come from junior and senior high school student in Kediri Resort Police jurisdiction.

The factor that motivates underage to ride motorcycle consists of internal and external factors. The internal factors are immature emotion controls and parenting pattern factors. Meanwhile, the external factors consist of environment, friends, and school factors.

The strategy of traffic police to intercept the number of vehicle using by underage students in Kediri sector police jurisdiction are preventive and repressive attempts. The preventive attempts are done by distributing awareness brochure to some public are. While, the repressive actions are using ticket to penalise the underage motorcyclist, their motorcycle is taken to police office. The vehicle will be returned as the parents of the students accommodate the administration and receive some counselling from the police department.

According to the conclusions above, the writer would love to suggest several points, as follow:

- To the parents. The parent must support the government to prioritise the safety riding program by not providing thei children with motorcycle. Instead of following the live style trend or to shorten time for their children to get to school, the underage is best to afford public transportation or by picking them up in school.
- To the School. The school could initiate to include traffic education in their curricula. It also could cooperate with police department to hold traffic awareness socialisation.
- To Human Resource and Social Illumination Department of Kediri Resort Police. By improving the synergy between teachers and police officers to increase the awareness to the parents about the dangerous decision letting their children to ride motorcycle. Eventually, the parents will well aware of their duties to accompany and pick their children to school. Moreover, the parents could afford their children with bicycle or public transportation instead of providing them with motorcycle as it against the law.

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## **CORPORATE SOCIAL PERFORMANCE, FEMALE DIRECTORS, OWNERSHIP CONCENTRATION AND HUMAN RESOURCE MANAGEMENT PRACTICE**

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### **ABSTRACT**

The purpose of this study was to test the spirit oversight of female directors, ownership concentration, and human resource practices which gement towards corporate social performance. Corporate social performance measurement with Program Penilaian Peningkatan Kinerja Perusahaan (PROPER). For measurement the percentage of female directors, the percentage of female directors to the directors of directors is used. For the measurement of ownership concentration, the percentage of shares held by the largest shareholder is used. For the measurement of human resource management practices, used indicator of activity which is owned employees in the company, job training received by the employee, the employee welfare support facilities, health facilities for work received by the employee, and work safety facilities received by the employee. The object of research in this study is a public company listed on the Indonesia Stock Exchange period 2014 to 2016 which has PROPER reports and annual reports. The data source in this research idea uses secondary data, company annual report and company PROPER report published by the Ministry of Environment. Data analysis in this study used regression analysis through SPSS. The results of this study indicate that only ownership concentration that has an influence on corporate social performance, while female directors and human resource management practices have no influence on corpoate social performance. The contribution of this research is that companies need to reconsider the composition of share ownership owned by majority shareholders.

### **KEY WORDS**

Corporate social performance, female directors, ownership concentration, human resource management.

Previous studies have tested the many factors thought to influence corporate social performance. Factors thought to have an influence on the corporate social performance include corporate governance, instututional investors, alliance network centrality, firm risk, financial performance, female directors, ownership concentration, human resource management practices and others. We are interested to examine further on the influence of female directors, ownership concentration, and human resource management practices on corporate social performance.

Research by Macaulay, Richard, Peng, and Hasenhuttl (2017) showed that the presence of women on the boards of a positive influence on the social performance of companies. Research conducted by Rothenberg, Hull, & Tang (2017) showed that human resources practices contribute to the strength of corporate social performance of the company is strong in innovation, and among the companies that enjoy the financial leway. The practice of human resource management is a set of human resource practices to improve employee skills, enhance participation in decision-making, and motivating independent business workers, resulting in the achievement of sustainable competitive advantage of companies (Rothenberg, Hull, & Tang, 2017). Results of research conducted by Ducassy & Montandrau (2015) showed that the concentrated ownership has a negative effect on the performance of social, major shareholders are reluctant to spend money on CSR which will benefit all stakeholders. Conversely, holdings scattered improve social performance, which implies a strong CSR commitment by managers, allowing them resolve conflicts with shareholders and other stakeholders.

We are interested in studying corporate social performance for company as a business organization can not simply aim to maximize profits alone, the company must also pay attention to other aspects such as environmental/social. Indirectly, environmental/social impact of the company's going concern. A company can be shut down by the government because it is considered damaging the environment. Therefore, profit maximization alone can not guarantee the survival of a company.

Corporate social performance (CSP) is defined as the organization's business configuration which is the principle of social responsibility, social responsiveness processes, policy programs, and the results can be observed as it relates to the company's relationship with the community (Hart, David, Shao, Fox, & Westermann-Behaylo, 2015). CSP generally implies that the company is responsible to stakeholders at large, such as employees, customers, and society (Maas, 2016). Companies with a high CSP will have a higher moral capital which translates into a more favorable evaluation for various groups of stakeholders (eg, consumers, employees and investors). In particular, the high moral capital provide such protection for the insurance company's shareholder value by creating goodwill and reduce the negative assessments of their current stakeholder negatively affected in the event of a crisis (Bouslah, Kryzanowski, & M'Zali, 2016). Corporate social performance is a major aspect of enterprise performance management are poorly researched empirically in the literature to date (Short, McKenny, Ketchen, Snow, & Hult, 2016).

The object of research in this study is a public company listed on the Indonesia Stock Exchange period 2014 to 2016 which has PROPER reports and annual reports. The sample size is 99 companies. The data source in this research idea uses secondary data, company annual report and company PROPER report published by the Ministry of Environment. Data analysis in this study used regression analysis through SPSS.

The results showed that only ownership concentration which has an influence on corporate social performance, while female directors and human resource management practice has no influence on social corporate performance. This research contributions is that companies need to reconsider the composition of stock ownership shareholders. Holders of shares is too large (the majority shareholder) has a negative effect to corporate social performance. When the concentration of share ownership by shareholders is too great, this will undermine corporate social performance, and this will impact on the survival of the company. If the Ministry of Environment considers that the management of a company's corporate social performance is too poor and there is no improvement, the Ministry of Environment can make decision to dismiss the company's operating activities, because the operating activities of the company concerned is very damaging to the environment around.

We will discuss the literature review and hypotheses, then the discussion about design research, discussion of the results of research, and then conclusion.

## LITERATURE REVIEW

The role of the board of directors of women who more participatory, more concern on ethics, and more attention to other things, can lead to social performance of companies as a whole is higher in companies with more women on the board of directors (Macaulay, Richard Peng, & Hasenhuttl, 2017). This means that the more the number of female directors in the board of directors the better the social performance of the company. Results of research conducted by Macaulay, Richard, Peng, and Hasenhuttl (2017) showed that the presence of women on the boards of a positive influence on the social performance of companies. Results of research conducted by Adams & Funk (2012); Landry *et. al* (2016); Rao & Tilt (2016), shows the flood female directors tend to be more sensitive to the social performance of companies. On the basis of this argument, here is the hypothesis constructed:

H<sub>1</sub>: The percentage of women directors on the board of directors of the company positively influence on corporate social performance.

Performance corporate social investment has a positive impact on the reputation and prestige, corporate social performance provides psychological satisfaction for shareholders and top manager, so that shareholders and top manager tends to make a huge investment in

corporate social performance. This behavior becomes a source of intermediate conflict majority and minority shareholders, as the majority shareholder of the pursuit of personal goals by investing beyond optimal limits and the minority shareholders do not approve this investment if it reduces the value of the company. Search social prestige may harm, published corporate social performance, the majority shareholder increasingly right to pursue an image, not a true altruism (Ducassy & Montandrau, 2015). This means that the greater the concentration of ownership of the declining social performance of companies. Results of research conducted by Ducassy & Montandrau (2015) showed that the concentrated ownership has a negative influence on social performance, the majority shareholders are reluctant to spend money on corporate social performance that will benefit all stakeholders. Conversely, holdings scattered improve social performance, which implies a commitment to strong corporate social performance by managers, which allows managers resolve conflicts with shareholders and other stakeholders. The results are consistent with research conducted by Dam & Scholtens (2013), where the company's social performance decreased with increasing presentation of the largest stock holdings, the sample is a company in Europe. On the basis this argument, here is the hypothesis constructed:

H<sub>2</sub>: The concentration of ownership negatively influence on corporate social performance.

Human resource management practices that tend to make social performance into a potentially powerful element of our corporate strategy, while the absence of human resource management practices can reduce or even eliminate social performance quality that makes social performance of companies seen as something weak and unlikely to happen (Rothenberg, Hull, & Tang, 2017). This means that the higher the human resource management practices are implemented the better the company's corporate social performance. Research result conducted by Rothenberg, Hull, & Tang (2017) showed that human resources practices contribute to the strength of corporate social performance of the company is strong in innovation, and among the companies that enjoy the financial leeway. The practice of human resource management is a set of human resource practices to improve employee skills, enhance participation in decision-making, and motivating independent business workers, resulting in the achievement of sustainable competitive advantage of companies (Rothenberg, Hull, & Tang, 2017). Research conducted by Ramus (2001, 2002) and Ramus and Steger (2000) shows that the training focuses on the environment, awards and recognition (human resource management practices) will have a positive effect on the environmental activities such as environmental innovations. On the basis this argument, here is the hypothesis constructed:

H<sub>3</sub>: Human resource management practices positively influence on corporate social performance.

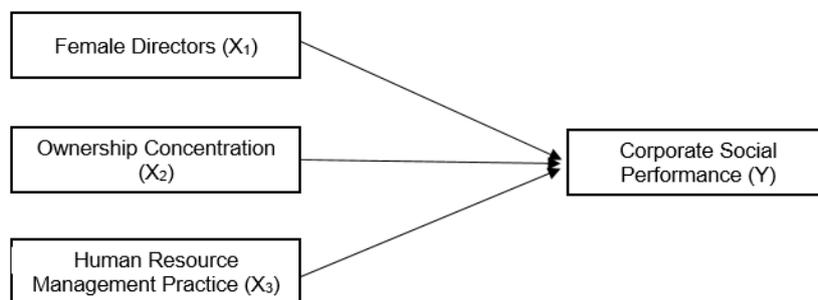


Figure 1 – Conceptual Research Framework

## METHODS OF RESEARCH

This study uses regression analysis to examine the effect of the influence of female directors, ownership concentration, and human resource management practices on corporate social performance. Corporate social performance is the performance of a

corporate who care about the environment. Corporate social performance proxied by Program Penilaian Peningkatan Kinerja Perusahaan (PROPER), based on research Triwacananingrum & Hidayat (2014). Extended circles performance rating company is divided into four color ratings: gold, green, blue, and red. The use of color ratings is a form of communication delivery performance to the public to be more easily understood and remembered. Simply put, all four colors will be scored in a row with the highest value, 4 for gold, 3 for green, 2 for blue, and 1 for red.

The concentration of ownership is the largest shareholder ownership. For the measurement of the concentration of ownership, use the percentage of shares held by the largest shareholder, according to a study Ducassy & Montandrau (2015).

Female directors are women who have positions in the board of directors. Measurement percentage of women directors, used the percentage of women directors to total directors on the board of directors, based on research (Francoeur, Labelle, Balti, and Bouzaidi).

The practice of human resource management is a set of human resource practices implemented by improving employee skills, enhance participation in decision-making, and motivate the self-employed businesses, resulting in the achievement of sustainable and competitive advantage of the company. For the measurement of human resource management practices, used indicator of activity which is owned employees in the company, job training received by the employee, the employee welfare support facilities, health facilities for work received by the employee, and work safety facilities received by the employee. Each indicator gain value of 1 if the company do that and 0 otherwise, based on research Rothenberg, Hull, & Tang (2017).

The object of research in this study is a public company listed on the Indonesia Stock Exchange period 2014 to 2016 which has PROPER reports and annual reports. The sample size is 99 companies. The data source in this research idea uses secondary data, company annual report and company PROPER report published by the Ministry of Environment. Data analysis in this study used regression analysis through SPSS Test Tools 17.

## RESULTS AND DISCUSSION

Based on the results of the t-test note that the Sig, female directors amounted to 0.231, this value is greater than 0.05 ( $0.231 > 0.05$ ). This suggests that  $H_1$  is rejected, meaning that percentase female directors on the company's board not to positively influence corporate social performance. The results of this study are not consistent with the results of research conducted by Macaulay, Richard, Peng, and Hasenhuttl (2017) which showed that the presence of women on the boards of a positive influence on the social performance of companies. Female Directors on the company's board not to positively influence corporate social performance for composition or presentation of women in boardrooms at companies go public in Indonesia are also willing PROPER program if slightly. Of the 99 samples of the company, there are still many companies that have no female directors on the board of directors and the percentage of women directors in companies with female directors on the board of directors also ranks relatively small percentage compared to male directors. In addition, during the period 2014-2016 in the company sampled, directors' turnover on the board of directors is very little happened, there are only a few companies that experienced a change of directors during the 3-year period. This is what causes women directors does not affect corporate social performance in this study.

Sig value. ownership concentration of 0.003, this value is less than 0.05 ( $0.003 < 0.05$ ). This suggests that  $H_2$  is accepted, it means ownership concentration can negatively affect corporate social performance. The results are consistent with the results of research conducted by Ducassy & Montandrau (2015) which shows that concentrated ownership has a negative effect on social performance. The greater share ownership by the major shareholders, the lower the corporate social performance. Ownership concentration can negatively affect corporate social performance for the majority shareholder does not want to spend some costs in terms of supporting corporate social performance. The majority

shareholder to think that if they put out a number of costs to support corporate social performance, benefits or rewards gained from expenditure is not profitable for them to the maximum, but instead benefits all stakeholders. Due to feedback received deemed not provide benefits to the Holders of a majority stake, the majority shareholder beinvestasi with a small amount of the corporate social performance. This has led to the growing concentration of ownership will further lower the corporate social performance.

Table 1 – Results of the T-Test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Note
	B	Std. Error	Beta			
1 (Constant)	1,984	0,404		4,906	0,000	
Female Directors	0,620	0,514	0,118	1,206	0,231	not significant
Ownership Concentration	0,829	0,277	0,298	2,998	0,003	significant
Human Resource Management Practice	-0,469	0,504	-0,092	-0,930	0,355	not significant

*Dependent Variable: Corporate Social Performance.*

Sig value human resource management practice of 0.355, this value is greater than 0.05 ( $0.355 > 0.05$ ). This shows that  $H_3$  is rejected; meaning the practice of human resource management does not positively affect corporate social performance. The results of this study are not in line with the results of research conducted by Rothenberg, Hull, & Tang (2017) which show that human resource practices contribute to the strength of corporate social performance among companies that are strong in innovation and among companies that enjoy financial slack. Human resource management practices do not positively affect corporate social performance in companies that are sampled because existing human resource management practices are more inclined to improve employee welfare and to improve employee performance in supporting and improving the company's operations. Existing human resource management practices are not specifically implemented to support corporate social performance. In addition, during the period 2014-2016 in the sample companies, the change in human resource management practices held by the company very little happened, there are only a few companies that have changed the practice of human resource management held during the period of 3 years, or can said the practice of human resource management held by companies held by the company tends to be constant during the period 2014-2016. This is why human resource management practices do not affect corporate social performance in this research.

## CONCLUSION

This study was conducted to examine the effect of female directors, ownership concentration, and human resource management practices on corporate social performance. The test results showed that female directors and human resource management practice has no influence on corporate social performance, while ownership concentration has a negative effect on corporate social performance. Female directors have no influence on corporate social performance because the percentage of female directors in the company sampled relatively little. Human resource management practices have no influence on corporate social performance because existing human resource management practices are not specifically conducted to support corporate social performance. While ownership concentration has a negative effect on corporate social performance for beinvestasi majority shareholder with a small amount of the corporate social performance, feedback received is not deemed to provide maximum benefit to the majority shareholder.

The contribution of this research is that companies need to reconsider the composition of share ownership owned by shareholders. Shareholders who have too large shares (majority shareholders) have an adverse influence on corporate social performance. When the concentration of share ownership by shareholders is too great, this will undermine corporate social performance, and this will impact on the survival of the company. If the

Ministry of Environment believes that corporate social performance management is too bad and there is no improvement, the Ministry of Environment may issue a decision to dismiss the company's operating activities, because the company's operations are very damaging to the surrounding environment.

For future research, to further deepen the ownership composition of concentration, such as seeing family shareholding composition or the composition of foreign shareholdings or the government. Researchers then can further deepen the human resource management practices that encouraged companies that are specifically made for the purpose of supporting corporate social performance.

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## **THE DESIGNATION AUTHORITY OF ACTIVE POLRI OFFICER AS ACTING GOVERNOR OF INDONESIA**

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### **ABSTRACT**

The objectives of this research: to analyze and explain the validity of the actions of the President of the Republic of Indonesia in appointing an Senior National Police Officer as Acting Official Governor; to analyze and explain the legal consequences of appointing an Senior National Police Officer as Acting Official Governor. The result of the research concludes that Presidential Decree on Appointment of Senior National Police Officer as Acting Official Governor based on Praesumptio iustae causa principle is valid as long as there is no cancellation; the legal consequences of the Presidential Decree shall be in accordance with the expiration of the term of office as stated in the Presidential Decree. Legal consequences related to the right of officers appointed as Acting Official Governor in accordance with applicable laws and regulations.

### **KEY WORDS**

Acting Official Governor, legal consequences, normative legal research, Presidential Decree.

According to the law article 1 of President Regulation number 11 of 2015 about Home Affairs Ministry (Later on will be referred as Perpres Kemendagri), it is stated that Ministry of Home Affairs is under control and responsible to Indonesian President, the ministry is now led by Tjahjo Kumolo. The duties of the ministry is stated on article 2 of Perpres Kemendagri which is implementing the internal affairs of the nation to help the president to run the country.

As the date of head regional election (Later on will be referred as Pilkada) is about near in 2019, there are will be some leaderless regions. Eventually, the president has a right to appoint a state officer to be an acting governor which has no leader on it. But, there are some systems of procedures that must be proceeded before by giving a mandate to the minister.

Moreover, this study would not only try to examine the designation procedure and legal consequence by appointing Polri (Indonesian Police Officer), it does also need to examine the policies regulation of Polri Designation as an acting governor. In the end, the decision of president to choose police officer as acting governor must not suffer both the society and Polri itself.

This study aims to to analyze and explain the validity of the actions of the President of the Republic of Indonesia in appointing senior police officer as acting governor. Then, the study will analyze the legal consequence of appointing senior police officer as acting governor.

### **METHODS OF RESEARCH**

The normative type is applied in this research. According to Peter Mahmud Marzuki, Research on Law is a process of law regulation finding, or finding the law doctrine to reveal the current law issue faced by societies. Based on the background of study, there are some regulations that clash each other. The study is conducted to minimise the blur vision of police officer as an acting governor regulation towards the law. That is why, the research uses normative method to analyse the issue.

The primary source of data used in normative research consists of law materials which has normative regulation and related to the issue of study, they are as follow:

*The Primary Law Material.* The primary law material which is in concerned with senior police officer as an acting governor appointment consists of, as follow:

- The Constitution of Republic of Indonesia 1945.
- Law number 23/Prp/1959 about emergency situation.
- Law number 28 of 1999 about The Implementation of Nation without corruption, collusion, and nepotism.
- Law number 2 of 2002 about Indonesian Police of Republic of Indonesia.
- Law number 12 of 2011 about the regulation of Constitution Establishment.
- Law number 39 of 2008 about State Ministry.
- Law number 5 of 2014 about Civil State Apparatus.
- Law number 17 of 2014 about People's Consultative Assembly, House of Representative, Regional Representative Board, Regional House of Representative.
- Law number 23 of 2014 about Regional Governance.
- Law number 9 of 2015 about amendment of Law number 23 of 2014 about Regional Governance.
- Law number 10 of 2016 about second amendment of Law number 1 of 2015 about Establishment of Government Regulation Replacement of Law number 1 of 2014 about Governor, Mayor, Regent Election.
- Law number 23 of 2011 about amendment of Law number 19 of 2010 about Governor's Duty Implementation, Authorities, and The Economic Status as Representation of Government in Regional Level.
- Presidential Regulation number 165 of 2014 about Kerja Cabinet.
- Presidential Regulation number 11 of 2015 about Ministry of Home Affairs.
- Presidential Regulation number 143/P/2016 about The Establishment of Respected Dismissal of West Sulawesi Governor and the Vice Governor 2011-2016 and Assignment of New Governor of West Sulawesi.
- Presidential Decision number 143/P/2016 about Validation of of Respected Dismissal of West Sulawesi Governor and the Vice Governor 2011-2016 and Assignment of New Governor of West Sulawesi.
- Ministry of Home Affair Decision number 121/430/SJ about Application of Acting Governor Candidates.

*Secondary Law Material.* It consists of law materials which support the explanation of primary Law material, it could be in a form of literature of journal and books which are related to the issue.

*Tertiary Law Material.* It consists of Law that gives clue and explanation of Primary and Secondary law material, for examples The Law Dictionary.

## **RESULTS AND DISCUSSION**

*The Legitimate Action of Indonesian President towards Polri Personnel Appointment as Acting Governor.* According to law number 39 of 2008 about state ministry, The president of Indonesia, Ir. Joko Widodo, could establish the Kerja Cabinet. From the cabinet, another institutions are then established to help the government to run the country which is then referred as State Ministry. There is also President Decision number 165 of 2014 that become primary principles for the ministers to execute their duties and authorities.

Stated in President Decision article 1 point 1 number 165 of 2014, it states that the amounts of Kerja Ministers are 34 Ministries. In another law, article 15 of Ministry law states that the maximum amount of ministries, as previously stated in article 12, 13, and 14, are 34 people.

The purpose of Kerja cabinet establishment is ,stated in article 14 of Ministry Law, the synchronisation and coordination between ministries and president will be hold by Coordination Ministry. The duty of the ministries, as stated in article 7 of Ministry Law, are different within their unique business to help the president and government. Moreover, stated in article 12 of Ministry Law, it says:

*“The President shall establish the foreign, domestic and defence ministries, as defined in the 1945 Constitution of the State of the Republic of Indonesia”.*

It was explained in article 13 of Ministry Law that:

1. The presidents form the cabinet as stated in article 5 point (2) and (3);
2. The characteristics of Ministry establishment, as stated in point (1), must hold:
  - Efficiency and Effectiveness;
  - The Duties coverage and Proportion Burden;
  - Continuity, Synchronisation, and Consolidate duties implementation and/or;
  - The Global Social Development.

One of the ministry who responsible and has function to implement internal affairs is Home Affairs Ministry. In accordance with the law issue conducted in this study, the related ministry in Acting Governor appointment is The ministry of Home Affairs. The position of Home Affairs ministry, as stated in Kemendagri Law article 1, is as follow:

- The Ministry of Home Affairs is under control and responsible to the president;
- The ministry of Home Affairs is led by Minister.

Eventually, the ministers of home affairs which are the extension order of president possessed a right to appoint active police officer to act as an acting governor. Right now, the ministry of home affair is led by Tjahjo Kumolo. The duties of minister, as stated in article 2 of president decision, is implementing the internal national affairs to elp president and government to run the country.

As the legitimate action of president in appointing active personnel as acting governor, it is done by publishing the president decision letter. The letter has legal status and possessed law strength. It is then proceeded to instruct the chosen candidate to run the position after he or she have been inaugurated by the president.

As stated previously in background of study, the appointment of personnel to be acting governor must follow several procedures. According to Ida Nuraida, Procedures is series of phase or implementation whereas the job is done through what to do, how to do, why to do, where to do, and who to do. From the definition, we can conclude that the purpose of procedure is to make the job become easier.

*The Legal Consequence of Polri Personnel Appointment as an Acting Governor.* After discussing the legitimate actions of the President of the Republic of Indonesia in the appointment of POLRI's active officers and their legal consequences, then, the next discussion will be discussed on the position and role of acting Governor. In Indonesia, the Governor is domiciled as the regional head of a province. While the acting Governor himself has a role as an executor of regular duties of definitive officials, they are unable to remain as described in Article 83 of the Regional Government Law. The President of the Republic of Indonesia is represented by the Minister of Home Affairs entitled to appoint the Governor's Coordinator if there is a leadership vacuum in the position of the provincial head of the Province, namely the Governor. This is stipulated in Article 86 paragraph (2) of the Regional Government Law stating that if the governor is temporarily suspended and there is no deputy governor, the President of the Republic of Indonesia shall stipulate the Acting Governor upon the proposal of the Minister.

The condition of leaderless position of a province is caused by varies of events. Based on article 83 of regional governance law, there are several events that may result in leaderless condition of a region, as follow:

- The head or vice of a region is temporally dismissed without consideration from regional house of representative as a result of civil law violation that turns them into defendant must face minimum five years in jail. The action may consist of corruption, terrorism, treason, threaten national defence, and/or other action that may be a threat of country union.
- The head or vice head that become a defendant, as stated in article 1, is temporally dismissed based on register of the court.

- The dismissal of head or vice head of a region, as stated in article 1 and 2, are done by president for governor or the vice governor. The minister of home affairs may dismiss the mayor or vice mayor and regent or vice regent.
- The head or vice of a region is temporally dismissed without consideration from regional house of representative as a result of civil law violation that turns them into defendant, as stated in article 1, is according to firm decision of the court yard.
- The dismissal, as stated in article 4, is done by president for governor or the vice governor. The minister of home affairs may dismiss the mayor or vice mayor and regent or vice regent.

The publishing of president decision is already accordance with specialist principles and also municipalities of good governance. There was no errors found nor law violation during the implementation of president decision number 143-P/2016. But, as an act of law, there must be law consequence as result of law event. As the act of law causes law event, instead, the act of law may result in law relation. Thus, the law consequence may be defined as a result of impact that come from action of law or relationship of law.

Pipin SYarif states his opinion about Law consequence, as follow

*The consequences of law are all the consequences that occur from all legal acts committed by legal subjects to the object of law or other consequences caused by certain events by the law concerned has been determined or considered as a result of law.*

Based on two definitions above, the consequence of law is an act that comes from law subject that may result in any condition that is caused by law event. In accordance with the background of this study, the consequence of law is the responsible of The president as the subject of law in this issue by publishing President Decision number 143/P/2016.

By following the legal presumption principles, it means that every decision of government is considered as legal and does not against the precious law, until there is a cancel on the corresponding decision, the presidents decision is considered as a legal letter. The law expert Sukardi argues about the cancellation of law as he says:

*"In the legal system of Indonesia, there is no recognition of a null and void or van rechtswege nietig decision. The prevailing concept is irreversible (vernietigbaar). The underlying principle is the principle of presumption of legitimacy where in the library known as the principle of praesumptio iustae causa whose meaning is that every act of government is legal as long as has not been proven otherwise. With the use of praesumptio iustae causa principle, then the legal effect that occurs is ex nunc or since the cancellation. In practice (based on research) this has not been regulated".*

Whereas, the concept of law cancellation form, according to Philipus M. Hadjon, he states:

- The illegal decision may cause "*nietigheid van rechtswege*" (Cancelled for the sake of Law), "*nietig*" (Cancel) atau "*vernietigbaar*" (cancellable).
- *Niegtig* means that action of law is considered as null or never occurred. The consequences may result in the deletion of the significant law.
- *Vernietigbaar* means that the consequence and the action of law is considered as exist until the cnacllation of law itself by the judge or other competent state institution.
- *Nietigheid van Rechtswege* means that the existence of certain law is deleted without any further legal decision to cancel the action.

## CONCLUSION

Based on the result of study about designation authority of active polri officer as acting governor by president of republic of Indonesia, the study found some conclusions as stated below:

According to the first discussion, it concludes that the presidential decision number 143/P/2016 by the president of republic of Indonesia, it includes as authority discursion within action of law that may result in legal consequence. The publish of this decision is an action of legitimate law in appointing police officers to be an acting governor. Even though,

there is a clash with the norms. But, from principles of *praesumptio iustae causa*, the decision is considered as legal until the cancellation of the law. The purpose of decision implementation is already in accordance with Nation of Law principle, it is proved that the decision is done without any cancellation appeal as result of authorities, procedures, or materials violation. Moreover, the establishment of the decision follows the general municipalities of good governance.

The law consequence of designation authority of active Polri officer as acting governor by president of republic of Indonesia follows legal presumption principles. it means that every decision of government is considered as legal and does not against the precious law, until there is a cancel on the corresponding decision. Moreover, another principle says that there must not be disadvantage for the chosen personnel in his future career. By choosing the active senior officer, it is expected to implement the clear and safe election party. The appointment of Polri personnel as acting governor is a gift and award from the government.

### **SUGGESTIONS**

According to the conclusions above, there are several suggestions stated below:

In the implementation of law in a nation, every regulation must allow the government to do discursion. Because, the role and function of government that must actively serve society. The government is mandatory to provide the service to them. It is accordance with the constitution administration of government who already give the limitation through good governance principles.

For the enforcement of law, both Polri and president who became an acting governor, is suggested the Polri Law, about the right of personnel must be changed and follow the current situation of the state. Even though the constitution demands the president in serving his duty, but, the same condition must not be repeated in future within conventional law reason.

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## **EFFECT OF PERCEIVED EASE TO USE AND PERCEIVED USEFULNESS TO THE USE OF E-BUDGETING SYSTEM IN THE REGIONAL GOVERNMENT**

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### **ABSTRACT**

Budget is basic needs in the administration of government activity. Implementation of E-Budgeting supports transparency in the preparation of planning, discussion, managerial and supervision of the local budget through the facilities of information technology. The purpose of this research is to see behavioral aspects Apparatus Civil State in the implementation of E-Budgeting in the Regional Government of East Java Provincial Government to use models Acceptance Model, which will assess the level of influence of Perceived Ease to Use and Perceived usefulness to the use of E-Budgeting. Questionnaires were distributed to 40 State Civil Apparatus which has duties and functions related to the use of E-Budgeting. The results of this study indicate that the Perceived Ease to Use no effect on the use of E-Budgeting, Perceived usefulness effect on the use of E-Budgeting.

### **KEY WORDS**

Budgeting, acceptance model, government, civil apparatus.

Budget is basic needs in the administration of government activity. Budget in public sector is an instrument of accountability in the management public funds and the implementation of programs financed from the budget. According Mardiasmo (2007) some of the reasons for the importance of public sector budgets are: a. Budgeting is a tool for the government to direct the socio-economic development, ensure sustainability, and improving quality of life. b. Budget necessary because of the problem of limited resources and options. c. Budget is required to assure that the government was accountable to the people. Therefore, local governments are expected to make efforts to repair the budget process and encourage the involvement of civil society more broadly, so that more enclosed spaces began to open to the public.

Until now, budgeting was considered as the process is quite complicated in the body of public sector organizations that are caused among which schedules budget preparation time, the unit price shopping items are not standard, recaps budgets per account shopping is not real time, the difficulty in controlling the process of follow-up and evaluation of budget by local Government Budget team, included within the scope of local government (<https://ebudgeting.surabaya.go.id>). On the other hand the budget system in the public sector on the public sector budget should be informed to the public as a form of accountability and transparency of government and provide space for people to actively assess the government's performance in public budgeting.

It is this factor that encourages the transparency of local budgets to the community, one way to budget transparency through the application of electronic data better known as E-Budgeting. Application of E-Budgeting supports transparency in the preparation of planning, discussion, management and control of the budget through information technology facilities. The importance of local government transparency and accountability of the budget in the era of regional autonomy can be viewed in two ways, namely as one form of government accountable to the people related to the allocation of funds from the taxes of the people and efforts to improve the management and good governance and reduce the chance of collusion, corruption and nepotism.

The purpose of research is to see the behavioral aspects of civil apparatus of the state in the implementation of *E-Budgeting* Local Government within the Government of East Java

Province using the Acceptance Model (TAM), which will assess the level of influence of Perceived Ease to Use and Perceived usefulness to the use of E-Budgeting.

Practical benefits of this research can be input and a recommendation to the *stakeholders* especially the East Java provincial government in refining and improving the E-Budgeting in connection with an embodiment of accountability and transparency as public disclosure so as to provide ease of public services in the realization of good governance.

## LITERATURE REVIEW

*E-government* is System Information and Communication Technology (ICT) is owned or operated by the government that change the relationship with the community, the private sector or government agencies another way to increase community empowerment, improve service, strengthen accountability, improve transparency, or improve government efficiency (World Bank, 2001).

*E-Budgeting* is one form of e-government applications in the areas of the budget. E-budgeting can be interpreted as financial data information through technology to help improve government openness (<https://ebudgeting.surabaya.go.id>). Where this system involves the management of public money (public money) are conducted in a transparent, efficient, rational and equitable included in this sense is a fair gender in order to create public accountability (public accountability). While the budget reform (budgeting reform) itself includes the process of preparation, approval, implementation and accountability of the budget.

Technology Acceptance Model (TAM) Some models are built to analyze and understand the factors that affect the acceptance of the use of computer technology, which were recorded in the literature and reference research results in the field of information technology is like the Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), and the Technology Acceptance Model (TAM) TAM Model developed by Davis FD (1989) is one of the most widely used models in IT research. Information technology (IT) will affect its position in the acceptance of these technologies. One of the factors that can influence is the user's perception of the usefulness and ease of use of IT as an act that is reasonable in the context of technology.

TAM model developed from psychological theory, explains the behavior of computer users that is based on trust (belief), attitude (attitude), desire (intention) and the relationship of user behavior (user behavior relationship). The purpose of this model to explain the major factors of user behavior on user acceptance of the technology. TAM consists of two constructions, namely the perceived ease of use (perceived ease of use) and perceived benefits (perceived usefulness), which determines the intention of behavior (behavioral intention) a person to use a technology. Behavior intention is a measure of how much a person's desire to perform a certain action (D F. Davis, 1989). This model is more clearly illustrates that the acceptance of the use of IT is influenced by the usefulness and ease of use. Both have a high determinants and validity have been tested empirically. TAM model developed by Davis. F. D (1989) also got an extension of researchers like Iqbaria (1994).

Several previous studies about the factors that influence public transparency include information on budgeting, especially in developing countries where the level of public confidence in the management of the budget is still low, an analysis of the impact of the use of information technology in budgeting also gives good results and increase public confidence

The perception of the ease of use of a technology is defined as a measure in which a person believes that the computer can be easily understood and used (Davis, F. D, 1989). According to the intensity of use and interaction between user and the system can also show the ease of use. The system is used more often indicate that the system is better known, is easier to operate and easier to use by users. Based on the above definition can be concluded that the ease of use will reduce the effort (both time and energy) someone in studying computer. The ease of comparison indicate that the people who use IT to work

more easily than those who worked without the use of IT (manually). IT users believed that IT is more flexible,

According to Venkatesh and Morris (2003), perceived ease can be defined as the level of trust people that use a technology would be free of effort. This illustrates that individuals would prefer to interact with new technologies if they perceive that their cognitive effort relatively small. Perceived ease the process of hope (*expectancy*) and the perception of the benefit is the result of expectancy. So the perception of benefit is expected to be influenced by perceived ease because the easier a technology is used, the more useful the technology.

Perception of expediency is defined as a measure of where the use of a trustworthy technology will bring benefits to those who use it (Davis, 1989). Usefulness as a level where a person believes that the use of a particular subject will be able to improve the work performance of the person. Based on these definitions mean that the expediency of the use of computers can improve performance, work performance of people who use it. According to Thompson, et. al (1992) IT benefit is a benefit expected by IT users in performing their duties. It also says that people will use IT if you know the positive benefits of its use.

The use of information technology is strongly influenced by the ease of use and the benefits of information technology, if someone is already getting the benefits and convenience of information technology, which is in line with the perception about the ease of use of a technology is defined as a measure in which a person believes that the computer can be easily understood and used (Davis, 1989) and empirical studies demonstrate the positive impact the perceived ease of using technology on the intention to use these technologies (Palupi & Tjahjono, 2008). Similarly, the research conducted by Venkatesh and Morris (2003) with a focus on the use of new technologies in the workplace, found that perceived ease significantly influence the perception variable expediency and *behavior intention to use*, Based on these studies it can be concluded that the use of a technology can be easily understood and used by such person, in order to get the first hypothesis, namely:

H1 = Perceived ease of positive and significant impact on the use of E-Budgeting.

The use of IT is based on the benefit obtained can predispose a person to accept or refuse to use the TI. Perception of expediency is defined as a measure of where the use of a trustworthy technology will bring benefits to those who use it (Davis, 1989). Usefulness as a level where a person believes that the use of a specific subject will increase the person's work performance). Those who perceive beneficial technology will encourage behavior using these technologies. In some of the above definition can be concluded that the use of a technology can bring benefits to the people who use them and the positive effect on the people who use them in carrying out his work in order to get the second hypothesis, namely:

H2 = Perceived benefits of positive and significant impact on the use of E-Budgeting.

Based on previous research and the formulation of hypotheses above, the obtained relationship variables in the image below:

## METHODS OF RESEARCH

Data in this study are primary data through data collection techniques by spreading questionnaires to the respondents, the state civil officials in the Provincial Government of East Java in this case as the E-Budgeting as many as 40 people. The questionnaire in this study consisted of three parts: Perceived Ease to Use, Perceived Usefulness and Use E-Budgeting System questionnaire on research using Likert scale of 1 s / d 5.

The dependent variable in this study is the use of E-Budgeting System (Y) and not the dependent variable that is Perceived Ease to use (x1) and the Perceived usefulness (x2). These variables will be presented as follows:

1. Perceived Ease to use. Perception ease of use (Perceived Ease to use) is used to measure the level of ease of use E-Budgeting according to its users. This variable is measured with 9 questions with 5 Likert scale from strongly disagree to strongly agree. Measurement for this variable is the higher value indicates more easily perceived by the user.

2. Perceived usefulness. Perception uses intended in this research is the user perception of the usefulness of the system E-Budgeting. This variable was measured with 6 questions with 5 Likert scale from strongly disagree to strongly agree. Measurement for this variable is the higher value shows the benefits generated by the system E-Budgeting higher as perceived by user.

3. The use of E-Budgeting System. Use of System in this study is the level of user interest to E-Budgeting in the implementation of the budgeting process in the preparation of the Regional Budget (APBD). Indicators for variable use of this system consists of 10 items of questions with 5 Likert scale ranging from strongly disagree to strongly agree with the measurements for this variable is the higher value showed interest in the system being used increasingly high as perceived by the wearer.

Measurement variable quality system and quality of information in this study were adopted from the questionnaire used by Davis (1989), but not all items are taken as an instrument to question the reason these items are not in accordance with the object of research,

This research is a quantitative research model analysis techniques multiple linear regression using SPSS (Statistical Product and Service Solutions). Analysis of the data in this study begins first with test validation and reliability. Test validation and reliability testing to test instrument that uses a Likert scale of 1-5.

### RESULTS OF STUDY

*Validity and Reliability Test Results Questionnaire.* Testing research instruments in terms of both its validity and reliability of the 40respondents found that the results of the research instruments used are valid where the probability for the correlation value is less than 0.5 and a coefficient of reliability (Cronbach Alpha) greater than 0.6. More details can be seen in the following table:

Table 1 – Validity and Reliability Variables *Perceived Ease to Use (X1)*

Group	Item number	validity		Coefficient Alpha
		Correlation (r)	Probability (p)	
X1	X1.1	0880	0000	0951
	X1.2	0832	0000	
	X1.3	0888	0000	
	X1.4	0922	0000	
	x1.5	0938	0000	
	X1.6	0586	0000	
	X1.7	0753	0000	
	X1.8	0812	0000	
	X1.9	0946	0000	

Based on data from the above table shows all the items of questions for variables Perceived Ease has a probability value less than 0.05 and has a coefficient alpha 0951greater than 0.6. Thus meaning that the question items for variable Perceived Ease (X1) is valid and reliable for further testing.

Table 2 – Validity and Reliability Variables *Perceived usefulness (X2)*

Group	Item number	validity		Coefficient Alpha
		Correlation (r)	Probability (p)	
X2	X2.1	0698	0000	0733
	X2.2	0493	0001	
	X2.3	0664	0000	
	X2.4	0824	0000	
	X2.5	0689	0000	
	X2.6	0655	0000	

Based on data from the above table shows all the items of questions for the variable has a value perception of the usefulness of the probability of less than 0.05 and has a

coefficient alpha 0.733 greater than 0.6. Thus, it means that the item Perceived Usefulness questions to variable (X2) valid and reliable for further testing.

Table 3 – Validity and Reliability Variable Uses E-Budgeting System (Y)

Group	Item number	validity		Coefficient Alpha
		Correlation (r)	Probability (p)	
Y	Y1	0887	0000	0918
	Y2	0546	0000	
	Y3	0866	0000	
	Y4	0832	0000	
	Y5	0664	0000	
	Y6	0811	0000	
	Y7	0831	0000	
	Y8	0413	0000	
	Y9	0853	0000	
	Y10	0622	0000	

Based on data from the above table shows all the items of questions for variable use in the use of E-Budgeting has a probability value less than 0.05 and has a coefficient alpha 0.918 greater than 0.6. Thus meaning that the question items for variable E-Budgeting (X3) valid and reliable for further testing.

Based on the median, modes, and median, descriptively indicate that respondents gave a good response to the importance of the quality system, and the quality of information is a predictor of user satisfaction. Respondents also gave a good response to the usability and feeling satisfied with the information systems was implemented. It is seen from the respondents' answers -rata average response indicators agree on the question that has been given by researchers.

*Regression Model Analysis Calculation Results.* The results of the regression tests performed in this study, the results are as follows:

Table 4 – Results of Multiple Linear Regression

Variables	Coefficients unstandardized	
	B	Std. Error
(Constant)	6718	4802
<i>Perceived Ease to Use</i>	0139	0077
<i>Perceived usefulness</i>	1,188	0177

Whereas, for the regression equation which has been built in this study are as follows:

$$PS = \alpha + b_1.PEU + b_2.PU + \epsilon$$

Based on the results of the regression test with values that have been presented in the table above and refer to the equation that has been built in this study, the regression equation becomes:

$$PS = 6.718 + .139.PEU + 1.188.PU + \epsilon$$

Based on the above formulation, it can be seen that the constant value of variable E-Budgeting System Usage amounted 6718, In this study the interpretation on the use of E-Budgeting System at the time of x1 (Perceived Ease to Use E-Budgeting) = 0 and x2 (Perceived usefulness E-Budgeting) = 0, then the usage of E-Budgeting System will also tend to rise by 6718, When there is an increase in the variable perceived ease to use of one unit and variable Perceived usefulness is constant, then the variable will be increased by 0.139. When variable *perceived usefulness* an increase of one unit and variable Perceived Ease to Use E-Budgeting is constant, then the variable will be increased by 1,188.

The results presented above also show that the direction of the relationship that both the independent variable on the dependent variable is known to have a direct relationship. It

is clear that if the Perceived Ease to Use and Perceived usefulness produced by E-Budgeting ride the use of E-Budgeting System will also rise.

*Proving hypothesis:*

*Test F or simultaneous test.* Based on the results of the F test (simultaneous) which has been conducted by researchers, the results are as follows:

Table 5 – F Test Results

ANOVAa					
Model	Sum of Squares	df	mean Square	F	Sig.
Regression	252 304	2	126 152	24 606	0000 *
residual	189 696	37	5,127		
1 Total	442,000	39			
R Square				.571	
Adjusted R Square				0,548	
Std. Error of the Estimate				226 427	
* 0.01					
** 0.05					
*** 0.10					

Based on the above table, it can be seen that the value of F obtained in this study was 24 606 with significance level was 0.000. As for the value of F table obtained amounted 4.0982, So it can be seen that in this study  $F_{hitung} > F_{tabel}$  and sig smaller than the probability value of 0.05, or a value  $0.000 < 0.05$ , which means that the independent variable in this study consisted of perceived ease to use and perceived usefulness proven effect simultaneous to the dependent variable in this case the use of E-Budgeting. From the table above magnitude adjusted R<sup>2</sup> is .571, This means 57.1% Variation of the use of e-Budgeting can be explained by the variation of the two independent variables. While the rest (100% - 57.1% = 42,9%) is explained by other causes outside the model.

*T test or partial test.* Based on the results of the t test (partial) which has been conducted by researchers, the results are as follows:

Table 6 – T Test Results

variables	t	Sig.	t table	Information
(Constant)	1,399	0170		
Perceived Ease to Use	1,808	0079	202 439	H1 is rejected
perceived usefulness	6,691	0000	202 439	H2 received

Based on the presentation of data in the table above, it is known that there is one variable that has a value of t greater than t table and sig smaller than the probability value of 0.05, or a value  $0.000 < 0.05$ , which means that the variable Perceived usefulness otherwise affect the user satisfaction.

## RESULTS AND DISCUSSION

In an effort to optimize the implementation of accountability and transparency in government budgeting technological developments as an instrument of public disclosure of the budget, namely e-budgeting, which is one component in e-government. The use of information technology to promote accountability and public transparency, the better. In addition to the electronic transparency of the budget, the public is expected to be more active to participate in the area of financial supervision.

The indicators can be used as a tool to measure the implementation of accountability according to the State Administration Institute (2007: 57) is: a). Issued accountable budget management; b). Accountability for performance; c). The intensity of divergence; d). follow-up of irregularities. Budget transparency refers to the extent to which the public can obtain information on the financial activities of the government and its implications (Andrianto, 2007: 21). Budget transparency can be measured by several aspects, in addition to ease of

access to information, mechanisms and public access in the delivery of the opinion should also be considered. Openness referring to the opening of opportunities for citizens to submit comments and criticism of the government is judged not transparent (Widodo, 2001: 28).

Accountability and transparency in financial management through the desired e-budgeting will go smoothly, budget accountability and local government activities can also be known by the public and interested parties. Perception of individual users of e-budgeting indeed affects successful application. According to testing for perceived usefulness This concurs with the model Davis (1989), but the results are different from the results for the variable of perceived ease to use, based on the results of the comparison between t arithmetic with t table that has been presented above, it can be seen that in partial perceived ease to use proved to have no effect on the utilization of E-Budgeting, it can be analyzed that the implementation of e-budgeting in East Java Governmental is mandatory (compulsory) so that the user's perception of the system may not work .

*Perceived ease to use* no positive effect on the use of E-Budgeting can be caused by E-Budgeting system this is mandatory or compulsory. Perception is easy or difficult the operation of this app in the end users still has to use it in the budgeting process. For others the lack of knowledge of the users in applying E-Budgeting, this can be an input for the authorities on the implementation of the E-Budgeting is to continue to conduct evaluations of the system and continue to provide the missing technical training related to E-Budgeting.

*Perceived usefulness* positive effect on the use of E-Budgeting accordance Davis study (1989) showed that perceived usefulness significant effect on the use of E-Budgeting. The positive effects are caused because most users E-Budgeting can facilitate local government / Budget Team Local Government in the budgeting process, the budgeting process transparent budgeting process is fast, effective and efficient, the budget in accordance with the needs of the activities, chronological clear budgets and reports according to the needs can be met easily thus improving the quality of the budget in terms of compliance with document planning, accuracy and accountability value and account spending allocations. Thus the importance of the perceived benefits of the users e-Budgeting, then it is certain that this system should continue to be used and improved in terms of both content and reports generated in terms of ease of use. Simultaneously perception of convenience and perceived benefits of e-Budgeting by the user to the application of e-budgeting is something that is very important for the transparency of budget management, with a good perception will lead to a commitment for its users to continue to make improvements in order to realize the implementation of public service excellence.

## **CONCLUSION**

This study aimed to carry out partial testing of the TAM model in the use of E-Budgeting in terms of perceived ease to use and perceived its usefulness in East Java Provincial Government is expected to summarize the process of budgeting.. This study data analysis using multiple linear regression. This study has met the classical assumption, covering multicollinearity test, autocorrelation test, heteroscedasticity test, and test for normality,

The conclusion from this study is that H1: Perceived ease to use has a positive effect on the use of E-Budgeting is not proven / rejected. Results of statistical analysis showed that perceived ease to use does not affect the utilization of E-Budgeting System. These results do not support the results Davis (1989) that the higher the perceived ease to use, the higher is also the utilization of the system. For H2 is perceived usefulness positive effect on the utilization of the system E-Budgeting proven / accepted. These results support the results Davis (1989) which states that the higher the perceived usefulness positively related to the utilization of E-Budgeting System. But simultaneously perceived ease to use and perceived usefulness of proven effect on the utilization of the system E-Budgeting. With the results of these hypotheses can be underlined that the perception of ease in the use of e-budgeting is still lacking, it is caused by a lack of the ability of individuals and therefore important to

improve the user's knowledge as to the benefits of the system is excellent in supporting government transparency.

### LIMITATIONS OF RESEARCH

Implementation of E-Budgeting in East Java Province Government just done a study of variables *perceived ease to use* and perceived usefulness. For further research in order to discuss about the research with menambahkan theory UTAUT and the addition of other variables can produce research that will provide scientific information is more complete, in-depth and tested that will ultimately be able to contribute in the creation of bureaucratic reforms for good governance that promotes excellent service for the welfare of the community.

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## **THE STRATEGY OF IMPROVING POLRI HUMAN RESOURCE ACCOUNTABILITY THROUGH RECRUITMENT SYSTEM**

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### **ABSTRACT**

In order to achieve these goals Police must try to change the image and its prestige in the midst of society, for that Police must evaluate the situation honestly and objectively. This study aims to know and analyze the strategies used by East Java Police to increase the accountability of police human resources through recruitment system. The results showed that the level of acceptance of prospective members of police in East Java Regional Police decreased from the previous year. However, only one field of registration path is actually much in demand by applicants who increased from the previous year is the registration path Brigadier. Meanwhile, the readiness of the committee in preparing the acceptance of Police members in East Java Police is by the formation of committees in the acceptance of Police members in East Java Police, the implementation of acceptance tests of Police officers in East Java Police, and implementation of target programs in the reception of Police members. Strategy used by East Java Police to improve accountability of Police Human Resource through recruitment system Recruitment of clean and transparent accountable and humane, clean pattern of recruiting and improving education system / academy of police.

### **KEYWORDS**

Strategy, recruitment, police, public service, human resources.

There are many challenges for Polri (Police of Indonesia Republic) to retrieve their image as peace and order keeper of society, it also become as a front line of civil judgement system in national, regional, and global scale. According to Bimantoro, in national scale, Polri faces many aspects of nation such as politics, social culture, and social economics. Globalisation, especially in transportation and communication, already provide an impact towards the information development system, it pushed the world to have no boundaries to get information and arise some global issues of Human Right. Thus, it demands every social communities and political strength to adapt and bring some changes on political policies that against vision of society.

The conflict between communities that lead to SARA (Tribes, Race, Religion) insult, politics security, mass destruction potency violence. Meanwhile, from social culture point of view, the growing issues both before and after reformation era is the decreasing image of law enforcers as a result of injustice actions and the certainty of law as well. The demands of united freedom by society, the upcoming SARA friction, the increasing of drop out value, workers mass discharge, and violence among students, communities and societies, and the rising separatism ideology. The social economic aspect is started with long monetary crisis that lead economic stray to the lowest point which will soon affect another aspects.

To overcome and revive the image of Polri about its role in the middle of society and reformation era, it must re-evaluate their inventory of their duties and responsibilities such as base duties, organisation structure, personnel, system of procedure both intern and extern, infrastructure condition, financial status, evaluation and etc. The implementation must be accurately finished s it is a starting point to be independent, perfection, maintenance, and revive that could not be done with short cut, it must be systematic, well planned, and clear prior target.

Ideal basis and constitutional Polri is connected to Pancasila and UUD 45. Meanwhile, the ethic code principles that must be followed is Tribrata within Catur Prasetya as a working procedure. Polri must be able to improve their professionalism as quick as possible to achieve their vision and mission. The vision of Polri is: Polri must be able to be a protector, guardian and public servant who is always close and together with the community, as well as

professional law enforcement officers who always uphold the supremacy of law and Human Rights, maintaining security and public order and realize security in a national life a democracy and a prosperous society

Nowadays, eventhough there are many reformation attempts by the police, those attempts are futile to illuminate people to change Polri image. Polri, as well as other government apparatus had been seen as bad people they got during New Order era. The politics power, during that days, is so dark that the leaders tend to keep their powers that will result in people resistance. The resistance communities were increasing, the peak hit within reformation movement and colliding collaboration between Polri and ABRI whose function against each other. It overthrows Polri who last their identity and being replaced its function which is similar to military.

Police became resistible to society and do not provide protection anymore for them who expect democratic ways of life. For society, there are many structural movement event from Polri to Mabes ABRI towards independent Polri. It does not, unfortunately, concern the society as they only expect the behaviour and culture change from military action into professionalism Polri. Thus, in its development process, to make better personnel of Polri, the revitalisation of system must be top priority.

According to recruitment committee of east java, the desire of youth to be Polri personnel is strictly decreasing. In 2014, there are 29.534 applicants. But, in 2015, the number decreased into 10.500 applicants.

From the data above, it shows that the number of applicant is firmly decreasing, even though there is some small insignificant increasing numbers in 2015. In accordance with ideal human resource of Polri, the fundamental system that need to be re evaluated is the education and recruitment system of Polri. There is no doubt that the current police education is very similar to military system which Polri become one of the military part, but their characteristics, function, and the duties of police do not always similar to military system. Polri must upgrade their education system through education institutions. Polri must re evaluate their subject of leaning in their education system, they can omit unnecessary subject by replacing it with subject that focus on democratic social order. Social order, who does not possess clear characteristics structure, will not be provided in education such as criminal procedure law.

In order to achieve the idea, Polri must change their image and authority in the middle of society. Thus, polri must evaluate their condition honestly and objectively. One of it by changing their recruitment system. From this new strategy, the freshmen are expected to omit their militaristic behaviour as prior principle but a police become a guidance, protector of people and what belong to them, responsive in providing service to society.

## **METHODS OF RESEARCH**

The study uses descriptive qualitative style in this paper. The setting of study takes place in Regional Police of East Java (Polda Jatim).

## **RESULTS AND DISCUSSION**

*The Level of Polri Candidates Recruitment of Polda Jatim.* Regional recruitment in East Java experienced a decline among applicants. The number of each department also decreased significantly. In 2013, the number of Police Academic applicants (Akpj) reached 1874 applicants, while the applicant Brigadier in the same year reached 12,237 registrants. By 2014, that number is increasing. Where the applicants of Akpj reached 2,092 people and Brigadier reached 27,530 applicants. However, in 2015 the Akpj applicants experienced a significant decrease of 967 people, and the brigadier was only 7,502 registrants. However, by 2015, the Police open a new enrolment line, namely the Special Police Investigation Police Officer which has reached 727 applicants. This number decreases in 2016, where the applicants of Akpj ranged from number 894, then in 2017 only 808 applicants of Akpj. Meanwhile, there is the opening of a new line of Bintara Informatics Technology which directly filled as many as 1452 applicants. Even though the number is decreased, but there

are some parts of registration that have increased which is the number of applicants of brigadier.

*The Committee Preparation of Freshmen Recruit in East Java Regional Police.* The formation of committee participated in brigadier recruit consist of the regional committee. This each regional committee has different duties and functions in implementing the brigadier recruitment. The members of committee consist of the highest rank of the Polda Jatim to the supporting members according to their own specialist. We could assume that the formation of committee must be in complete formation for each department from administration to documentation aspects. The committee must possess secretariat, verification/registration, administration surveyor, physical health check up level 1, physical health check up level 2, Mental Health Investigation Team, Intern Supervisor, Accommodation and documentation team. Thus, all recruitment elements will be comprehensive.

The test process is used to choose the best candidates from thousands of applicants to enter the police department. In this process, the police institution provides openly socialisation through mass media, banners, pamphlets, and direct socialisation to senior/vocational high schools. The process of announcement distribution shows transparency to wide societies, sometimes, there is a delay of the announcement. But, the candidates must face several tests such as early check, psychology check up, level 1 medical check up, physical and academic test, level 2 medical check up, mental health investigation, and late Administration check.

The targets of the Polri recruitment process are as follow:

- The number of Polri Human Resource consolidation must be based on Polri Ration of current ideal population;
- The decreasing number of personnel who breaks and violates the regulation in public service.

*The Strategy of Improving Polri Human Resource Accountability through Recruitment System.* As the commitment of Polri reformation, always try to do their duties as stated on procedures within good quality and professionalism. The principalities of BETAH in recruitment process are an attempt of Polri to implement the tough, leading, and humanistic Polri. In implementing the regulation of chief police of Indonesia republic number 10 of 2016 about the recruitment of Indonesia police republic candidates stated that, in order to earn the excellence candidates, there are several aspects that need to be considered by police of Indonesia republic which are clean, transparent, accountable, and humanistic. In implementing the regulation of chief police of Indonesia republic number 10 of 2016 about the recruitment of Indonesia police republic candidates stated that, in order to earn the excellence candidates, there are several aspects that need to be considered by police of Indonesia republic which are clean, transparent, accountable, and humanistic.

Indicated by the regional authorities earned by Polri, decentralisation is the sytem that used by the police officers in recruitment process. Stated in law article 4 no 2 of 2002 about Polri, it takes tough, clever, and professional personalities of the candidates who, in future, are expected to be able to implement Polri solidity in arranging the job description of its personnel. The recruitment process must be transparent and objective, thus it will create healthy competition environment to avoid any authority misuse through BETAH principalities (Clean, Transparent, Accountable, and Humanistic).

There are several aspects that need to be fixed in reviving good education system of Police Academic, which are; improving 8 standards ideal education system, Improving the capability and capacity of Diklat Polri (SPN Polda Jatim); improving the technical function in certain jurisdiction, improving the curricula, training and educating system of Polri personnel.

## **CONCLUSION AND SUGGESTIONS**

As the discussions above stated, there are some conclusions that could be taken which are, as follow:

- The number of Polri applicants in eastern java Police Office is decreasing compared with the previous year. In other hand, there is one department that become favourite among applicants which is Brigader registration. Moreover, the preparation of recruitment committee in east java police office is by arranging the formation of

recruitment event in east java police office, implementation of recruitment test in east java police office, and the implementation of target program in Polri recruitment process.

- The strategy invented by Polri to improve the accountability of Polri human resource is by implementing the Clean, Transparent, Accountable, and Humanistic known as BETAH. Other attempts are implementing the Transparent Recruitment Pattern and fixing the education system of police academic.

Based on the conclusions above, it is suggested that the Police of Indonesian Republic could:

- Cooperating with radio station or television to commence socialisation. In order to get good quality of candidates, the recruitment process of the personnel must be done continuously and consistently.
- In order to achieve the objective and transparent recruitment, the committee participated in the process must be clean, honest, high integrity, well moral, and firmly hold the ethic profession within responsible manner (accountability).

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## **THE OPTIMIZATION OF TAX EXTENSION THROUGH PT. POS INDONESIA IN EAST JAVA SAMSAT OFFICE JURISDICTION**

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### **ABSTRACT**

Tax is a very important source of State income, then the tax is levied from Indonesian citizens and becomes one of the obligations that can be imposed billing. This study aims to determine and analyze the behaviour of taxpayers in the area of East Java and do the analyze efforts to optimize service extension of the Tax through Post Office in region of East Java Province. The results showed that the behaviour of taxpayers in East Java Province is divided into two namely the active taxpayers and non-effective taxpayers. The factors that influence the non-effective taxpayers are taxpayer knowledge factors, behavioural factors of illegal levies, taxpayer income factors, and crowded queuing factors. Efforts to optimize tax extension services through Post Office in East Java Province is to cooperate with Post Office through Post Office counter, Mypos delivery program and Halopos 161.

### **KEY WORDS**

Taxes, post, services, public service.

Tax is very important for development process of a country especially Indonesia, as the development will result in welfare and prosperous life of a nation. In this case, the tax has a role as state income to develop a country. Thus, without any optimum income from taxes, the development of a country would not run well. In order to optimise the income, the role from both government and taxpayer should be synched. The taxpayer must possess enough knowledge about the importance of tax that they one willing to pay. Thus, by knowing the importance of tax, they will obey the regulation of it.

As tax is very important for a nation, the tax is taken from Indonesian citizens and it become mandatory for them as they are forced to do so. Government had invented many ways to make the payment become easier, more intense, and more effective for the service of taxpayer.

One of the companies to help the development of taxes is pt. Pos Indonesia. Pos Indonesia is one of state owned enterprise of Indonesia that runs its business in post service. Now, the form business of pos Indonesia is limited liability Company (known as PT acronym in Indonesia). It is stated in government regulation of Indonesian republic number 5 of 1995. It is about the transformation of pos Indonesia business form from general company to ltd. It aims to provide flexibility and dynamic movement for the company. That is why it will be able to adapt in recent globalisation business and to provide better service for the citizens. Pt pos Indonesia is company who devote its duty in post service and gyro based on the current law.

By using this system, the taxpayer will be easier to finish their payment without taking longer line to get Yearly Tax Collection Letter in tax office. There are 1.027 offices of pos Indonesia across eastern java, the tax payer will have more option to choose the nearest office rather than go into the same place. Moreover, the embosser machine in the offices will help to fasten the process.

In the implementation of services, the Joint Office of Samsat East Java (One-Stop Administration Office) has standard operational procedures and time standard of service which refers to the prevailing laws and regulations. The service process includes registration, assignment, payment, validation, and submission. Improvement of services at Samsat Joint Office is done through the fulfilment of quality which includes ease, speed, mechanism and service procedure, cost transparency and supported by modern technology device that is by developing integrated service system.

Even though, the cooperation with pos Indonesia is way more efficient and effective. Because, the number of offices are spread across the nation and also in vast area of East Java. It is supported by the experiments done by Hardiningsih & Yulianawati, it stated that the importance of perception quality towards the willingness to pay the tax as connected with the efficiency and effectiveness of the service itself. The motor vehicle tax is also included in this research.

The veicle taxes are the accumulation of payment that need to be paid by the taxpayer to get the license and other important documents. This become mandatory as the driver must possessed enough documents to be allowed to drive their vehicle on the road and obey the traffics rule. There are two types of vehicle taxes, yearly tax, and five yearly tax. The number of vehicles and the the state received is increasing through years. But, it does not followed by the awareness of taxpayer importance to fulfill their duty. This is accordance with paper conducted by Susilawati & Budiarta who stated that the awareness of tax, knowledge, the sanction of tax disobedience, and public accountability have positive impact towards the obidience of taxpayer to pay their responsibility.

### **METHODS OF RESEARCH**

The study is descriptive qualitative research. The setting of study takes place in PT. Pos Besar Surabaya dan Samsat Jatim, because of taxpaying circulation is very high.

### **RESULTS AND DISCUSSION**

*The Taxpayer Behaviour in Samsat East Java Jurisdiction.* The registered taxpayer in taxpayers office consist of two types, they are active and non-effective taxpayers. Active taxpayer is people who run business and registered in the office who still actively report and pay their responsibility both yearly and significant time. in general, the active taxpayer will report their tax status to the office orderly. In the other hand, the non-effective taxpayers report their economic status to unauthorised institutions. According to circular letter of directorat general of taxation number SE-89/PJ/2009 about the instruction for non-effective taxpayers, it is stated that the non-effective taxpayers will be referred as WP NE, they are the taxpayer who do not fulfil their responsibility of both payment and tax collection letter known as SPT in Indonesia and yearly notification letters based on the current taxation law.

Based on in-depth interview, the obedience factors of east java societies in taxation payment are, as follow:

1) Knowledge factor. One of the factors that affect the obedience tax payment is the society knowledge about the procedures and the law of taxpaying in Indonesia. There are many people who are not willing to pay the tax because they had no knowledge of how to fill the tax collection letter because of their lack of knowledge. Moreover, it is caused by the lack of socialisation and tax education by the government.

2) The illegal charges factor. There are many politicians who lack of discipline in taxation reports; it causes many negative impacts to the taxpayer, especially to the middle low social class. The regrets of people are affected by the news of corrupted politicians who steal the public money as it is intended for national development. The amount of illegal charges among civil servants is very high, they are supposed to deliver the tax to the state but they had not. Moreover, there is much collusion found during the investigation of tax payment. The civil servants tend to extorts people who violates the taxation law that will result in illegal charges to cover the truth.

3) The Income Factor. The amount of monthly income from the society also affects the obedience of taxpaying. The more money people get, the more obedience of them to pay and report the tax. Meanwhile, the low class societies tend not to report and pay their tax because of the lack of documents of their current occupation.

4) The long queue factor. In public service implementation, the government, stated in law about public service number 25 of 2009 and according to the Ministry of Administrative and Bureaucratic Reform decision number 63/KEP/M.PAN/7/2003, is stated that the

foundation, principle, and public service standard to improve the public service quality. The public service standardising must be followed by the synchronised strategies and the success indicators. But, there are still some lacks of vehicle tax transaction found in Samsat office of east java. There are still long queue, thus it will intercept the taxation process. The fixed time schedule of tax payment process will attract more people to pay their responsibility.

*The attempt to optimise tax extension service through pt. Pos Indonesia in Samsat east java office jurisdiction:*

1. The optimisation of tax extension service through pt. Pos Indonesia in Samsat east java office jurisdiction. To anticipate the taxpayer intercept the payment, there are several options of payment method that are provided by the state. One of them is by paying through post office. Because of the numbers of post offices which are spread across the nation, people will be easier to find the nearest office to accommodate their tax. The Samsat office of east java commences an idea to propose corporation with Pos Indonesia in administrating the vehicle taxes in order to increase the taxpayer willingness. It is supported by signed memorandum of understanding between ministry of central tax, east java Samsat, and Pos Indonesia itself. This cooperation tend to make society will be more willing to administrate their taxes responsibility. The efficiency of payment means more offices and less administrating time, the office could use the advanced technology to help cut time. in accordance with the issue, Provincial Police of East Java add another innovation called Samsat Delivery Post which provide people with three payment method, they are locknet, delivery Mypos program and Halopos161.

2. The obstacles of tax extension service through pt. Pos Indonesia in Samsat east java office jurisdiction. Even though, the cooperation with pos Indonesia is marvellous idea, the socialisation to society is still need to be maximised. Because, people who use post office to pay taxes are still low. By the help of Bhabinkamtibmas, government could tell every people by using the latest technology such as by phone for socialisation, especially in east java. In fact, the socialisation by using Bhabinkamtibmas help is very effective, it could tell people about the new programs of government even in remote are. The society also appreciate this way of socialisation. Because, most people only do administration in their nearest place such as village or its sub. There are several factors that intercept the people's participation which is divided into internal and external factors, as follow:

Internal factor. The internal factors come from the inner problem of the society which come from its individuals and the communities inside them. The society's behaviour, about their participation rate, is determined by sociologies characteristics such age, education level, occupation type, reside time, amount of income, and its participation in development.

External factor. The external factors are caused by the stakeholders, the stakeholders, in this case, is the local/regional government, village governance, RT/RW (neighbourhood/hamlet), consultant, public figure. The stakeholder key is the one who possessed most significant effect to society and had importance position to supervise the program.

## **CONCLUSION AND SUGGESTIONS**

According to the discussion above, there are some conclusions, as follow:

The tax behaviour in east java province is divided into two which are active and non-effective taxpayer. Then, the factors that influenced non-effective taxpayers are the knowledge, illegal charges, the taxpayer income, and the long queue factors.

The attempt to optimise the tax extension service is by cooperating with pos Indonesia and by developing the payment method through post office locknet, delivery Mypos, and Halopos 161 program.

Based on the conclusions above, the researcher would suggest two points as follow:

There must be continuous analysis and evaluation by participation of all committees to hold better program in future life.

Government should add more people to provide wider socialisation about Online Samsat service and the new payment method in post office. This could be implemented by the help of resort police, sector police, and its elements.

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## THE EFFECT OF TAXPAYER UNDERSTANDING ON MSMEs TAXPAYER COMPLIANCE

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### ABSTRACT

The problem concerning the level of taxpayer compliance is one that continues to occur in the field of taxation. In Indonesia itself, the level of taxpayer compliance is still low. Low level of tax compliance in meeting tax obligations is very ironic when compared with the growth of business in Indonesia. MSMEs taxpayers who use simple accounting calculations still not able to compile the accountancy in details. Based on the background of the problems above, the problem of the research can be formulated as follows: "What is the effect of taxpayer understanding on MSMEs taxpayer compliance"? It can be concluded that there is a significant effect of taxpayer understandings on MSMEs tax compliance. This shows that the better the understanding, the better the compliance. If the taxpayers understand the taxation better, their compliance to carry out the obligations will increase. The existence of this significant influence indicates that better understanding of taxpayers will affect the improvement of taxpayer compliance.

### KEY WORDS

Taxpayers, tax compliance, MSMEs, Indonesia.

A country uses tax revenue to sustain its development financing. Tax revenue is expected to continue to increase so that the development of the country can run well. Increased tax revenue can be achieved if there is an increase in the number of taxpayers. The efforts to maximize tax revenue cannot only rely on the role of the Directorate General of Taxes or tax officers but also the active role of the taxpayers themselves (Huda, 2015).

Given the importance of the role of taxes, the government which in this case is the Directorate General of Taxes has made various efforts to maximize tax revenues. Recognizing the role of taxes to drive the government and state development, since 1983, there have been some efforts carried out in the form of continuous national tax system reform (Ekawati, 2008). One of the efforts is made through the reform of the legislation in the field of taxation with the enactment of *Self-Assessment System*. *The Self-Assessment System* requires taxpayers to register, calculate, pay, and report on their own amount of tax owing to their obligations (Utami *et al.*, 2012).

However, the growth of tax revenue has not achieved the expected results. This is evidenced by the low tax ratio in Indonesia. The factors that cause this low tax ratio are low income per capita, low level of taxpayer compliance, as well as the non-transparent report of business circulation and income did by taxpayers. The low public awareness of tax obligations is often caused by public ignorance of the taxation rules (Yadnyana and Sudiksa, 2011).

One effort made by the government to increase tax revenue is the provision of extensification activities. What is meant by extensification activity related to revenue target (extra effort) is the increase in the number of taxpayers. With the expansion of the number of taxpayers, it is expected to increase tax revenue. The National Tax Census (*Sensus Pajak Nasional* or SPN) is an activity from the Directorate General of Taxes (DGT) intended to expand the number of taxpayers to achieve and secure tax revenue targets (Yusro and Kiswanto, 2014).

The problem with the level of taxpayer compliance is a problem that continues to occur in the field of taxation. In Indonesia itself, the level of taxpayer compliance is still low. The level of taxpayer compliance to fulfill its tax obligations is still very ironic when compared to the level of business growth in Indonesia (Yusro and Kiswanto, 2014).

The growth in the number of Micro, Small, and Medium Enterprises (MSMEs) has increased from year to year. However, the increase in this field was not balanced by the

awareness of MSMEs owners to perform their tax obligations. In Indonesia, the number of MSMEs has increased from year to year in which is evidenced by the number of units of MSMEs (Yusro and Kiswanto, 2014).

According to the data from the Ministry of Cooperatives and SMEs, the total number of MSMEs from 2011 to 2012 reached 1,328,147 units and contributed 99.9% to the business structure in Indonesia. Nevertheless, these improvements and contributions were not matched by an increase in compliance and contribution of MSMEs owners in fulfilling their tax obligations.

This is what encourages the Government to issue the latest regulation that is Government Regulation Number 46 of 2013 concerning the treatment of income tax for Micro, Small, and Medium Enterprises where individual taxpayers (*Wajib Pajak Orang Pribadi* or WP OP) or corporate taxpayers (*Wajib Pajak Badan* or WP Badan) not including Permanent Business (*Bentuk Usaha Tetap* or BUT) and taxpayers who do free work, are subject to Final Income Tax and required to pay taxes at a rate of 1% of the gross circulation each month on income from its business (Marista and Fajriana, 2014).

Seen from the compliance of MSMEs taxpayer, according to Resyniar (2013), there are still many shortcomings in every aspect. Many MSMEs taxpayers do not report and pay taxes deliberately due to a number of things such as the regulations that are difficult to understand. MSMEs taxpayers who still use simple accounting calculations have not been able to compile their accountancy in detail. This is also a factor that weakens the level of taxpayer compliance, especially for MSMEs owners.

Wibowo (2004) added that MSMEs also has some weaknesses such as market uncertainty, the uncertainty of survival in the first year of business, unclear bookkeeping (accountancy), and lack of tax regulations understanding. These weaknesses usually affect the understanding and obligations of each MSMEs owner to fulfill its tax obligations.

According to Burton (2009: 17), the lack of awareness of taxpayers in paying taxes occurs due to the public's thought that tax is basically a government robbery. This kind of pressure continues to infiltrate their mind. It also happens because the results of paying taxes are not visible and the rules are assumed difficult.

Many entrepreneurs of MSMEs do not have a Tax ID Number (*Nomor Pokok Wajib Pajak* or NPWP). This is because taxes are still considered frightening and can endanger their business. Most MSMEs also do not have irregular accountancy which makes tax audits become difficult (Thoriq, 2015). Based on the background of the problems above, the problem of the research can be formulated as follows: "What is the effect of taxpayer understanding on MSMEs taxpayer compliance"? In accordance with the background and previous problems, this research is expected to answer and uncover the problems through discussion that is easy to understand and well directed. To realize all of that, there is a goal in this research that is "To analyze the effect of taxpayer understanding on MSME taxpayer compliance".

**Taxpayer Compliance.** In Indonesian Dictionary, compliance means conforming or obeying the teachings or rules. Compliance is the motivation of a person, group, or organization to act according to the rules. Tax compliance is a person's obedience which in this case is a taxpayer to the tax regulations or laws (Tiraada, 2013). Compliance is the motivation of a group or organization to do or not act according to the rules that have been established (Saraswati, 2012). Compliance that is formed in the environment is formed from interactions between individuals, groups, and organizations.

Utami *et al.*, (2012) explained that taxpayer compliance is a taxpayer stipulated by the Directorate General of Taxes as a taxpayer who meets certain criteria that can be given a preliminary return on tax overpayment. According to Rustianingsih (2011), tax compliance is defined as a condition in which taxpayers obey and have awareness of fulfilling their awareness. On the other hand, Supadmi (2006) in Rustianingsih (2011) said that obeying tax obligations with awareness and fulfillment is reflected in the following situations: Taxpayers understand and try to comprehend all taxation legislation; Taxpayers fill out the tax form completely and clearly; Taxpayers calculate the amount of tax owed correctly; Taxpayers pay the taxes on time.

Taxpayer compliance can be measured by using indicators that are in line with the criteria of obedient taxpayers including understanding the tax law, filling out the tax return

correctly, calculating the taxes correctly, paying the taxes on time, and do not have tax arrears (Arum, 2012). Taxpayer compliance according to Rahayu (2012: 138) is defined as “a condition where taxpayers fulfill all tax obligations in terms of carrying out their taxation rights”.

Muliari and Setiawan (2011) described tax compliance as a condition in which taxpayers fulfill all tax obligations and carry out their taxation rights so that the context of compliance in this study means that taxpayers try to comply the applicable tax laws, whether fulfilling the obligations or exercising the taxation rights. Obedient taxpayers are those who fulfill and implement tax obligations in accordance with the provisions of tax laws and regulations (Rahayu, 2012: 138).

Nasucha (2004: 111) believed that the notion of taxpayer compliance is guilt and shame and the perception of taxpayers on the fairness and equity of the tax burden they bear as well as the influence of satisfaction on government services. Meanwhile, Nurmantu (2003) proposed that tax compliance is a condition where taxpayers fulfill all tax obligations and carry out their taxation rights.

In general, compliance is divided into two, namely: formal compliance and material compliance. Formal compliance reflects the fulfillment of deposit and tax reporting obligations in accordance with the prescribed schedule while material compliance emphasizes the substantive aspects of the number of tax payments in accordance with the provisions or regulations (Hutagaol, 2007: 307).

Zain (2008: 31) asserted that taxpayer compliance is a climate of compliance and awareness of tax obligations fulfillment reflected in situations where taxpayers understand or seek to understand all the provisions of tax legislation, fill out tax forms completely and clearly, calculate the taxes correctly, and pay and report the tax owed on time.

According to the Regulation of Minister of Finance number 192/PMK.03/2007, the criteria for obedient taxpayers are: First, on time on the submission of Letter of Notification (*Surat Pemberitahuan* or SPT) including: the submission of annual notification within the last 3 (three) years on time, the submission of late SPT for the last period from January to November that is not consecutive and not more than 3 tax periods for each type of tax, late SPT as referred to in letter b has been submitted without passing the deadline for submitting the SPT for the next tax period. Second, do not have tax arrears for all types of taxes unless they have obtained a license to pay in installments or postpone payment of taxes including the circumstances on December 31 before determined as a compliant taxpayer which does not include tax debt before passing the deadline. Third, financial statements are audited by public accountants or government financial supervision institutions with unqualified opinions for three consecutive years with a long-form report. There is also a reconciliation of commercial and fiscal profit and loss for taxpayers who submit Annual SPT as well as the accountant's opinion on the audited financial statements that is signed by a public accountant who is not in the team of government financial supervision institutions. Fourth, never been sentenced for committing a criminal act in the field of taxation based on a court decision that has permanent legal force within the last 5 years.

*Taxpayer Understanding.* Understanding is something we know and comprehend correctly. It is how a person maintains, differentiates, suspects, explains, expands, concludes, generalizes, gives examples, rewrites, and warns something (Arikunto, 2009: 118). Taxpayer understanding can also be interpreted as the view of taxpayers on the tax knowledge they have.

According to Riko (2006: 75), the level of understanding is an intensive process of increasing knowledge by an individual and to what extent he will be able to properly understand the material of the problem he wants to know. Whereas, Muslims (2007: 11) argued that the higher the level of taxpayers' knowledge and understanding of taxation regulations, the less likely the taxpayer is to violate these regulations thereby increasing the level of taxpayer compliance.

Mardiasmo (2011: 23) asserted that taxpayers are individuals or entities including tax payments, tax deductions, and tax collection that have tax rights and obligations in accordance with the provisions of the taxation legislation. The understanding of taxpayer on taxation regulations is a taxpayer's way of knowing and understanding tax regulations.

Taxpayers will tend not to be obedient when they do not understand tax regulations (Julianti, 2014: 30).

Taxation understanding consists of filling out the SPT well and smoothly. In this case, there must be an understanding related to SPT fulfillment, the amount of owed taxes which can be calculated in accordance with the provisions of taxation, payment, and timely submission. Also, there must be a report on the amount of taxes to the registered taxpayers (Ekawati, 2008: 2). The level of understanding of taxpayers on taxation can be measured based on their understanding of the obligation to calculate, pay and report the payable taxes (Lestari, 2010). The higher the level of knowledge and understanding of taxpayers on taxation regulations, the less likely the taxpayer to violate the regulations so as to increase taxpayer compliance.

Taxpayer understanding is all things about taxation that are well understood and considered true by taxpayers. Taxpayers should have an understanding of taxation, especially in regard to the importance of taxes for state financing because the behavior of the taxpayer is based on their views on taxes. Furthermore, related to the fulfillment of tax rights and obligations, the understanding of taxation is expected to encourage taxpayer awareness to fulfill their tax obligations (Putri, 2014).

### **METHODS OF RESEARCH**

This study uses quantitative research emphasizing the testing of theories through the measurement of research variables with numbers and data analysis with statistical procedures (Indriantoro and Supomo, 2002: 12).

The population in this study is all MSMEs taxpayers. The number of furniture MSMEs is 356 units approximately. The instrument used in this study is questionnaires. Questionnaires are an efficient data collection technique that is suitable to be used if the number of respondents is large and spread over a wide area. The questionnaires can be in the form of closed and open questions or statements. It can be given to respondents directly or sent by post or by the internet (Sugiyono, 2012: 199).

After the researcher obtains the data, it will be brought to be processed or analyzed to re-examine the validity of the data and, at the same time, to make a source criticism with a comparative method to compare the two legal systems of granting property to adopted children. Then, the interpretation of the meaning of the words and sentences will be concluded deductively and then reported descriptively.

### **RESULTS AND DISCUSSION**

Based on the results of the research, the variable of taxpayer understanding (X1) obtained the value of t-count by 2.209 and p-value by 0.031. Therefore, the comparison of t-count to t-table is  $2.209 > 2.0003$  and the comparison of p-value to alpha is  $0.031 < 0.05$ . The results of the comparison show that the t-count is greater than t-table and the p-value is smaller than  $\alpha$  thereby H1 is accepted. By that, there is a significant effect between the understanding of taxpayers on the compliance of MSMEs taxpayers. This shows that the better understanding of taxpayers, the better the taxpayer compliance. Taxpayers understanding is an important factor that needs to be considered by taxpayers. The more they understand taxation, they will have a better compliance in carrying out their obligations. The existence of this significant influence indicates that better understanding of taxpayers will have an effect on increasing taxpayer compliance. Empirically, the level of MSMEs taxpayer understanding in the field is quite good. Respondents understand well taxation regulations and tax concepts so that they understand the advantages and disadvantages of not having an obedient behavior in taxation. Therefore, by increasing the taxation understanding, taxpayer compliance will also increase. The results of this study support the research results from Putri (2013) showing that the understanding of taxpayers influences MSMEs taxpayer compliance. Marista, Betri, and Fajriana (2014) also pointed out that taxpayer understanding has a significant effect on MSMEs taxpayer compliance. Besides that, Pravitasari, Radianto, and Upa (2012) wrote that there is a significant influence of taxpayer understanding on taxpayer compliance.

## CONCLUSION

Based on the description of the results and discussion above, it can be concluded that: The first hypothesis testing shows that the variable of taxpayer understanding generated a t-count by 2.209. Due to the value of t-count that is greater than t-table ( $2.209 > 2.0003$ ) with a probability of  $0.031 < 0.05$ , it can be said that H1 is accepted. This means that the understanding of taxpayers has a significant positive effect on MSMEs taxpayer compliance. Therefore, it is suggested that MSMEs taxpayers can be more sensitive and active towards the existing tax regulations and able to have a role for the next tax regulations.

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## **THE SOCIETY POLICE AND PILLARS PROGRAM TOWARD TRAFFIC OBEDIENCE IMPLEMENTATION IN TANJUNGPERAK RESORT POLICE JURISDICTION**

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### **ABSTRACT**

The purpose of this research is to know the Community Police Program in the field then with three pillars in realizing the community orderly traffic. The research method used is descriptive qualitative. The result of the research shows that the description of the orderly behavior of traffic by the people in the Tanjung Perak Port Police Law area is now the society perceives the culture of traffic as a phenomenon not as self-identity to be applied in daily life, the level of public knowledge about the traffic and causes of accidents traffic is still minimal, There are still trucks carrying goods that are not paying attention to the goodness of the vehicle, still the permissive attitude of the community and the public is limited to having knowledge of traffic has not been up to the level of understanding.

### **KEYWORD**

Community, police, three pillars, traffic.

One of idea of Indonesia is stated in fundamental law of 1945 article 30 act 2, it stated that the national defense and safety is implemented through safety and defense of society's universe by National Military of Indonesia and Police of Republic of Indonesia, as main core, and society, as supporting core. Meanwhile, the article 4 of law 1945 stated that police of republic of Indonesia is as the state instrument to maintain the safeness and order of society by protecting, guiding, serving society, and enforcing the law. Another law has enforced this law in article 4 and 13 of law number 2 of 2012 about Indonesian police. Polri (police of republic of Indonesia) try to build its new paradigm to minimize its bad reputation. Thus, the society will always expect in good role model as it is in line with Polri vision and mission, it is the implementation of professional Polri posture, accountable, and transparent. That is why, the society's police (Polmas) is trying to be implemented in the corresponding situation.

Traffic is the movement of vehicles and people on the traffic highway space. Meanwhile, the traffic highway space is the infrastructure which meant to be used for the movement of vehicles, people, and commodities in the form of road or other supporting facilities. The society follows the current rule and law and the conditions of traffics, every people who ride their motorcycle must possess its components which are the technical requirements and the acceptable condition for the vehicle to be used on the road.

From the accidents data of 2015 in Tanjung Perak jurisdiction, there are 171 cases of traffic accidents in total, the number of people who died are 52 people, the heavy injured victim is 1 person, the light injured victims are 189 people, within material lost about Rp. 462.330.000 meanwhile, from 2016 data of traffic accidents, there are 168 cases which includes the dead victims cover 65 people, heavy injured is 1 person, 183 people suffered from light injury within Rp. 184.860.000 material lost.

The very high traffic accidents require comprehensive countermeasures to include coaching, prevention, regulation and law enforcement in addition to adequate infrastructure. Therefore, the Police as a tool of law enforcement, servant, guidance and community protector is expected to be more optimal in carry out the duties of the police. In article 13 of Law no. 2 of 2002 on the Police of the Republic of Indonesia (UU Polri) stated that "The main task of the Police of the Republic of Indonesia is to maintain public order and security; enforce the law; and provide protection, shelter and service to the community".

## METHODS OF RESEARCH

*Type of Research.* To answer the problems and reach the objectives of the study, this study uses descriptive-qualitative research as its model of research. Descriptive-qualitative research is a method refers to identify the characteristic divergent or the characteristic of certain people, things, or events. Basically, descriptive-qualitative involves conceptual process and produces the shape of classification scheme (Silalahi, 2009).

The approach of this study is case studies, which includes explaining the decisions about the chosen study, the implementation and the results. The case studies in a research means; a) summon the theory which has been existed; b) the events is rare and unique; c) in relation with the objectives of the study (Yin, 1996).

### *Data Collection:*

- Observation. Observation can be referred as a direct observation which is done by the researcher, if the researcher wants, results data from seeing or watching the activities of the informants and / or listening to what they say. While Burhan Bungin (2010) says observation or surveillances a human's daily activity using eyes as the main organ as the other organs such as ears, nose, mouth, and skin will help. Observation is the ability to observe something using human's five senses, with the proportion of eyes as the main organ to observe and the other organs as the supporter.
- Interview. Interview is a direct conversation between informant and the interviewer. The process of interview in a research is done in a deep observation with the informant. Based on Hamidi (2010), interview is an attempt to find deep information through detailed story and construction language of informant, for example about knowledge, experience, opinion, or views of life.
- Documentation. Documentation is a method which is used to gain data from notes (data) which has been available or made by other party. This data can be a personal document, such as notes or personal essay about action, experience, direct observation, and legal document.

### *Type of Data:*

- Primary data. Primary data is a data which is directly collected from the interviewees that has a connection with the research. The informant has to know the situation on the field. Besides that, in this research interview also categorized as primary data.
- Secondary Data. Secondary data is the supporting data of primary data. Usually, secondary data is a writings or notes (document) which support the research such as, files, document, report, and data from the interviewees or internet.

### *Data Analysis.* Based on Burhan Bungin (2010):

- Data collection. The analysis process started by gaining data. It is corresponding to the technique of data collection, as the result the data collection can be done through observation, interview, and documentation.
- Data reduction. Data reduction can be translated as the data selections; the main focus is on the simplification and rough data that appears from notes writings on the field. Reduction of the data happens continuously as long as the research runs. The anticipation about reduction of the data has been imagined by the researcher, such as, the researcher decides the outline of regional research, research company, and the chosen approach.
- Data display. The data display collected is confined as a group of information which arranged that can lead into a conclusion and taking an action. The display covers various graphics, schemes, and the others shape. All of them are designed to combine any information which has been arranged in a solid form and easy to get.

From the data collected by the writer, the writer has drawn a conclusion. In this research, the data collected from the interview and observation leads to a hypothesis. To make this hypothesis more accurate, the researcher extends its time to do observation. From

the additional data, the researcher finds new facts and changes the hypothesis to draw a new conclusion.

## RESULTS OF STUDY

*The Cultures of Traffic as Phenomenon not Self-Identity.* The existence of nation identity cannot be separated from the existence of local cultures, where the culture is the important essence of nation identity. In the case of culture, people places culture as an idiom or symbol. If cultures represent as a symbol, it has a certain meaning for society who says it, such as in traffic culture. Based on one of informant, "Community, especially in big city, rarely thinks that orderly the traffic is part of culture that need to be reserved, it has to be done to create security and order in community. This need to be highlighted." (AKP Wayan, Binmas Police Resort Office of Pelabuhan Tanjung Perak, interviewed in 25 October 2017)

From that statement, it can be concluded that in fact, community in big city still cannot use to have traffic order culture as part of rules or themselves. This is caused by the lack of awareness of the importance of traffic order, including the community surrounding the Pelabuhan Tanjung Perak Police Resort Office. Even though, traffic order culture can be explained as the identity of nation who obeys the law. About this culture, the other informant also explains: "It supposes to have awareness in traffic, if it is disappear the security and in order will be hard to be realized." (AKBP Didik Sugiarto, *Kasat Lantas* of Police Resort Office of Pelabuhan Tanjung Perak, Interviewed in 25 October 2017).

Therefore, the awareness and making the traffic order as a culture in community is needed. If the culture is defined as a symbol, then culture is a real phenomenon. To make community understand about this phenomenon, people gives a symbol for that phenomenon. It means everyone who states the symbol of culture, anyone who understands the meaning, even can point out that phenomenon.

*The Level of Community's Understanding about Traffic and The cause of Traffic Accident still Minimal.* Based on AKBP Didik Sugiarto, the culture of traffic order is still minimal. It is caused by the educational background of community. Education level has influence in direct and indirect knowledge development program to behavior. In the following, AKBP Didik Sugiarto explains, "in general, the education level of someone influences the behavior. It is proven that low education level people tends to have bigger chance to do violation and caused traffic accident." (AKBP Didik Sugiharto, *Kasat Lantas* of Police Resort Office of Pelabuhan Tanjung Perak, interviewed on October 25, 2017).

From the statement above, it can be seen that education level of someone can influence behavior while driving on the street. The higher someone's education level tends to have a good mindset in receiving information which underlines its behavior. Even level of education is not the only factors which support this mindset, however with higher education level people tend to be easily adapt to a good changes, while people who do not has high level of education tends to close minded and hard to accept changing.

Therefore, education is not only for transferring knowledge but it has a wider function such as to convey values and cultures. In relation with community' understanding in Legal Unit of Police Resort Office of Pelabuhan Tanjung Perak about traffic order, it uses to minimize the number of traffic accident. Similar to the statement above, some informant also believes that the community understanding about traffic order in the legal area of Police Resort Office of Pelabuhan Tanjung Perak still minimal.

*There is a Freight Truck which Less Concerned about the Feasibility of Vehicle.* In the process of transportation of goods, the feasibility of the vehicle is the most important condition to be concerned and done by the goods carrier organizer. This point is delivered by the informant, "There are a lot of truck which do not concerned much on the transportation feasibility, even though it has been arranged in the Traffic Law that every vehicle which operate on the street have to fulfill technical conditions and feasible." (AKBP Didik Sugiarto, *Kasat Lantas* of Police Resort Office of Pelabuhan Tanjung Perak, Interview 25 October 2017).

From the statement above, it can be said that it is one of the example about traffic order phenomenon happens in the area of Police Resort Office of Pelabuhan Tanjung Perak, which related to the feasibility of vehicle test that is not fulfilled by the truck.

*There is Permissiveness from Community.* Permissive means attitudes, vision, and stance which all of the way of life, attitude, and action, also anything disobey principle, norm, and ethical rules is fine to be done. People living as a good person and bad person both are allowed. People who want to be ethical and non-ethical also allowed. Therefore, in the eye of permissiveness, good and bad is not exist. This statement is supported by the informant through saying, "In Indonesia, there are too many people are too tolerance. Sometimes, it looks like indifferent. Doing good things is allowed, doing bad thing is your business. This becomes a dilemma for the development of Indonesian behavior, including in the legal area of Police Resort Office of Pelabuhan Tanjung Perak." (AKBP Didik Sugiarto, Kasat Lantas of Police Resort Office of Pelabuhan Tanjung Perak, Interview 25 October 2017).

In daily life, this behavior is often applied on the traffic behavior, as the example a lot of older people let their children under age to drive, for a practical reason. However, the physical, mental and knowledge condition of the children is not enough for them to drive. The use of religious activity makes the community do not use helmet for their safety while driving, and in daily life, there many permissiveness in community left.

*Community Have Had the Knowledge but Have Not Understood.* Every road users must understand the legal regulation of Law, Government Regulation, and the other law, so that there is one perception in action and the way of thinking in every interaction in highway. This is stated by the interviewees, "The law has been existed, thus every action, even in highway have to obey the rules. This is used to create discipline in Surabaya, including Police Resort Office of Tanjung Perak." (AKP Wayan, Binmas of Police Resort Office of Pelabuhan Tanjung Perak, Interview on October 25, 2017).

The differences on level of knowledge and or understanding the law resulting gap which potentially resulting problem in traffic, it can be between the road users or between the road user and police in charge. The knowledge has to be supported by understanding, because knowing something cannot maximize someone's attitude.

About the understanding of traffic, delivered by one of the informants, "The understanding about traffic has become serious problem if it is not realized as part of daily needs. If the communities surrounding Tanjung Perak who use big vehicle do not understand the traffic order, who are difficult is them. Thus, understanding is in higher level compared to the knowledge because it is not the matter of knowing only, because understanding can shape someone's attitude." (AKP Wayan, Binmas of Police Resort Office of Pelabuhan Tanjung Perak, Interview 25 October 2017).

From the explanation above, it can be concluded that understanding is one of someone's abilities in creating meaning, interpreting, translating, or stating in different way about a received knowledge. This means understanding is an attitude which comes from herself and can influence someone's action.

## DISCUSSION OF RESULTS

*Socialization on the Importance of Traffic Ethic through Informal Education by the Three Pillars (Babinsa, Polmas, and Village government).* The meaning of traffic and road transportation based on the Article 1 Act 1 Law Number 22 Year 2009 is a united system which contains of traffic, road transportation, driver, road user, and the organizer. While Article 1 Act 2, traffic is defined as a moving vehicle and human in a Space of Traffic. The meaning of Space of Traffic is an infrastructure for a moving vehicle, human and/or goods in the shape of road and the other supporting facilitation.

In terms of traffic order education pattern, it can be done through informal way or in family or environmental education. This is stated by the informant, "if formal education, it has to be in school, besides formal, this education can be done in informal way which is helped by NGOs or in collaboration workshop with *Dikyasa*." (AKP Wayan, Binmas Of Police Resort Office of Pelabuhan Tanjung Perak, Interview on October 25, 2017).

*Dikyasa* of Police Resort Office of Pelabuhan Tanjung Perakis done through informal way to the citizens in the area of Police Resort Office of Pelabuhan Tanjung Perak by cooperating between *Polmas*, local public figure, *Babinsa*. This statement agreed by the informant, "Yes, we ask for a cooperation with *Polmas* and *Babinsa* to do socialization, like traffic education. This event held to make people intelligent in knowing the traffic order." (Drs. Ec. Harry Sistriyono, The Head of Village Perak utara, interview on October 30, 2017).

From the statement above, it is clear they explain that informal education also done by Three Pillars cooperating with *Polmas*, *Babinsa*, and village governance. This is done to make the community feels noticed and does not feel intimidated by Police uniform.

*Dikyasa* of Police Resort Office of Pelabuhan Tanjung Perak does the informal education to the businessman by making a workshop. This workshop organizer is also done with Three Pillars. This workshop is design to educate businessman. The other traffic order education is also done in school such as for Senior high school or Vocational High school students. This held to realize the attitude of traffic order. One of the informants states, "Traffic education has become a long term police strategy until 2035. This means the implementation has to be delivered for all society. But, the main target is for young age community." (AKP Wayan, Binmas of Police Resort Office of Pelabuhan Tanjung Perak, Interviewed on October 25, 2017).

In a research which is done by RestuDyah Siam Pratiwi, Achsanul Fahrudin, Irvani, Wahyu Kurnia Dewi Nastiti, Itsna Amanatur Rohmah (2011), titled "Gerakan TertibLalu Lintas "Getas": Upaya Pencegahan Kecelakaan Sejak Dini," understand the effort to avoid traffic accident since young age. The result shows that a) GETAS Program increase the understanding of Junior High School students of Yapita Surabaya about the traffic regulation. B) Increasing the awareness of Junior High School Students of Yapita Surabaya in educating the friends about traffic order. C) Formed GETAS Community in Junior High School students of Yapita Surabaya as a place for sharing, networking, and campaign.

*Socialization through Routine Activities together with Three Pillars, which are Babinsa, Polmas, and Pemerintahan Desa through Superlantas Activities.* Synergy Three Pillars is teamwork between police, community, and government to help and support each other in terms of keeping the order in community, including in traffic. In this research, the three pillars mean a) *Babhinkamtibmas*; b) *bhabinsa*; c) *aparatedesa*.

*Superlantas'* activity is revealed by holding a big event to promote traffic order in community. Inside the event, there is cooperation between the three pillars. This topic is stated by the informant, "there is superlantas which contains of traffic order socialization, and there is prize and games as well as cultural performances to attract community. This event is designed not to be bored." (AKP Wayan, *Binmas* of Police Resort Office of Pelabuhan Tanjung Perak, Interviewed on October 25, 2017).

From the statement above, it can be interpreted that to attract community, it need an innovation to hold an event named "*Superlantas*", which is not only socialization, but also a partnership between *Polri* and community. So that, the purpose of *polmas* equal with the community to ease the security and shelter for community effectively.

The cultural event in *Suprelantas* is the idea from three pillars, that this events to educate and socialize the community about traffic order runs very rousing. The agreement comes that the event is rousing, an informant states, "The event is amazing, we enjoys everything, the cultural (performance), quiz, and socialization about traffic order, so that there will be no traffic accident in this area." (Hendri, the resident of Perak Timur who comes to *Superlantas*, interviewed on October 25, 2017).

The main event of *Superlantar* is held by the three pillars, *Babinsa*, *Polmas*, and Village government, is accepted by the community as well as the message, increasing the culture of traffic order.

*Increasing the Working Transparency with the Partnership between Babinsa, Polmas, and Village government.* The implementation of the traffic order by the three pillars has to be transparent, so that the implementation become maximal. Increasing transparency is done through holding a muster together. This point is stated by an informant, "It has to have MOU, and the implementation have to be transparent, so that the synergy between *Polmas*,

babinsa, and Village government is maximized. Good communication is a must and transparent. So that, there will be no egocentric in an institution or the other party.” (AKP Wayan, *Binmas* of Police Resort Office of Pelabuhan Tanjung Perak, Interviewed on 25 October 2017).

From the question above it can be seen that partnership between the three pillars can be transparent to make the egocentricity of an institution or other party disappear in making security and discipline of traffic in the legal area of Police Resort Office of Pelabuhan Tanjung Perak.

*Arranging Campaign about Safety Riding with The Three Pillars (Babinsa, Polmas, and Village government in the Area of Police Resort Office of Tanjung Perak) by distributing brochure and pamphlets.* In relation with the campaign of safety riding, refer to the explanation of Article 203 Act 2 Point (a) Law Number 22 Year 2009 about traffic and transportation, it is mentioned that safety riding is defined as the procedure of driving safely. In Law Number 22 Year 2009 about traffic and transportation, it is mentioned, “To ensure the traffic and road transport safety, then it is settled that the national general plan of Traffic Safety and Road Transport, including arranging the program of national event about traffic safety and road transport. Inside the national program, it is explained that one of the event is campaign about Safety Riding. This point is stated by one of the interviewees, “It is a need to be aware on the safety when driving, so that there is socialization about safety riding, through distributing brochure in the village around here” (Aipda Heru, the Member of *Satgas Lantas* Unit of Police Resort Office of Pelabuhan Tanjung Perak, Interview on October 23, 2017).

Based on the statement above, it can be referred that Of Police Resort Office of Tanjung Perak, also doing a socialization about the traffic’s code of conduct for village with safety riding program by distributing brochure to residential areas or densely populated settlements. This project is done with the partnership between Babinsa, Pemdes or even TNI.

The brochure distribution to the residents together with Three Pillars, this partnership is done by the three pillars. In relation with the safety riding campaign, as a stimulant from the surrounding, the human’s ability to study from the surrounding can be gotten from someone’s attention to the stimuli/information surrounding, where the results obtained from observations that potentially have relevance to the needs and interests of a person. Human cannot be influenced easily if he is not remembering, so that the next step is to make sure to save the message and adding to the prior knowledge. Hence, by giving brochure as socialization medium, it is expected that the campaign of pioneer traffic order can be the center of attention of the other community, especially in the area of Police Resort Office of Tanjung Perak.

*The Obstacle Faced by Polmas in Traffic with the three pillars in making The Traffic order Community in Area of Police Resort Office of Pelabuhan Tanjung Perak.* Handling traffic accident is categorized as a complex case. It needs a lot of budgeted to handle a traffic accident and the partnership with the three pillars. As the result, it needs enough budgeted, so that the implementation of the synergy can be done maximal. This is approved by the informant, “That’s right, if there is cooperation; it needs more budgeted, because we are not working alone. it is for the maximum socialization.” (Briptu Danang, The member of *Unit Satgas Lantas* Of Police Resort Office of Pelabuhan Tanjung Perk, Interview on October 23, 2017).

From the statement above, it can refer that it is a must for the additional budgeted to make the program maximum. The budgeted is the most crucial need in doing the program, even though there is a program, but without enough budgeted the program cannot work fast or even do not work at all.

The other obstacle for the police is having limited personnel; they need to do a double responsible. This statement is delivered by the informant, “Babinsa in Of Police Resort Office of Pelabuhan Tanjung Perak is not a lot or very limited, it leads into having a double responsible for other socialization. Even though the MOU has been clear that the person will have a responsibility in the synergy of three pillars for traffic order” (Aipda Heru, the member

of *Unit Satgas Lantas* of Police Resort Office of Pelabuhan Tanjung Perak, Interview on October 23, 2017).

In the statement above, it can be referred that the number of member Babinsa is limited which lead into the double responsibility and focuses; it makes the socialization of traffic order do not maximum. Therefore, it needs to add more members and the development of human resources.

The community participation who does not aware about keeping safety in the surrounding, also the personnel who lives far from the Of Police Resort Office of Pelabuhan Tanjung Perak office leads into ineffective when there is sudden responsibility. This topic is said by an informant, "The community is not too active in socialization in the village if there is no event or prize or the other event. So, if there is certain socialization the community who willing to come is not a lot if the head of the village is not invited. The other factor is they are working." (Briptu Danang, the member of *Unit Satgas Lantas* of Police Resort Office of Pelabuhan Tanjung Perak, Interview 23 October 2017).

From the statement above, it can be seen the meaning that all of the community only active when there is socialization, some of them says they are busy and taking care of household. These reasons become an obstacle in terms of giving socialization by the three pillars. In fact, the partnership between the village government/Urban village is supposed to help the mobilization of the community.

## CONCLUSION

Based on the explanation on the previous chapter, it can be concluded that:

The obstacle of the synergy of three pillars program are the minimum budgeted for the partnership program, in fact it needs more budgeted in handling traffic accident and partnership between the three pillars. So, it needs more attention on the budgeted, so the program of synergy will work maximum.

There is a double responsibility for the police. This obstacle is mostly faced while doing the responsibility and function as a police who responsible for safety. The main reason is the limited number of member in *Babinsa*. It leads into the double responsible for almost everyone. That is why it needs to add more personnel to develop the human resource.

The Polmas program in the field of traffic partnership with the three pillars have a purpose to build a traffic order community, that is a program to socialize the needs of traffic ethic through informal education which is done by the three pillars (babinsa, polmas, and village government), the socialization happens by holding a routine event together with the three pillars, that are babinsa, polmas, and village government by holding *Superlantas*, increasing the transparency of working with the partnership of *babinsa*, *polmas*, and village government as well as arranging a campaign about the safety riding with the three pillars (*babinsa*, *polmas*, and local government in the legal area of Police Resort Office of Tanjung Perak). This campaign runs by distributing brochure or pamphlet. However the community is not really active if there is no event.

## SUGGESTIONS

Adding the budgeted for the synergy of three pillar programs to monitor, analyze, socialize, and evaluate the program. Adding the number of member in Babinsa and holding a workshop and educational socialization of good and effective traffic order. The need of improvement in community participation by giving informal education where there is a support from non-profit institution, so that the program of the synergy three pillars becomes maximized.

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## **THE ULTIMATE PROVISION OF BASED EROSION AND PROFIT SHIFTING ACTION PLAN FOR STEADY TAXATION IN INDONESIA**

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### **ABSTRACT**

Purpose of this study is explaining the basic form of Based Erosion and Profit Shifting (BEPS) and how to overcome it by using BEPS Action plan that is launched by OECD in Indonesia. The commonly faced challenge is the mismatch of tax regulation between countries and incorporating this factor in quantitative model can lead to its own complexity. Therefore, this study employed qualitative method aimed at explaining the unaccommodated problems by the previous method. The next limitation often considered as the obstacle is the limited availability and data access. Micro data source (including tax return and corporate tax audit data) essentially contains of important information to measure the practice of BEPS (Based Erosion and Profit Shifting) and to map the behavior of multinational company to identify the basic form of BEPS and the functions of the action plan of BEPS. The hybrid mismatch is on the implementation of different transactions by every country to avoid tax and provide special purpose entities (SPE) which gives freedom to MNCs to transfer business profit to other countries. A synergy between the government and taxpayers in understanding BEPS Action and in-depth study on the implementation in developing countries are essential. Developing Countries that have various forms of business and culture certainly cannot be accommodated with one standard of BEPS Action.

### **KEY WORDS**

BEPS, action plan, international taxation, Indonesia.

Globalization is now entering a time where everything is getting closer and giving a more comprehensive view as a result of the international integrity process occurred due to the exchange of world views that lead to different thoughts and products and other cultural aspects. Increasingly, this world integration has resulted in a sequence of consequences from economic, political, cultural and environmental aspects. This opens up many opportunities to provide new potential for good and bad development, where true integration has the noble goal of a more prosperous expectation since the increased interaction among people also has the potential to increase global solidarity. On the other hand, globalization has the fear to be able to divide the unity because of the occurred conflict of interest (Wol, 2002).

Referring to the impact of globalization for the economy, international trade is no longer a strange phenomenon since all can be done so easily and quickly. The relationships among countries can be easily carried out so that the profits' impact can be doubled and the utility of the goods and services produced can be more extensive. The potential of business competition is progressively realized from its competitive power both in terms of the product manufacturing to pricing, competing to win market loyalty including in the taxation. The use of digital and business globalization lead to increasingly complex transaction schemes that pave the way for actors who play a role in the practice of erosion and profit shifting bases in making a diversion of profits.

It has its own challenge to interpret and measure the definition of Base Erosion and Profit Shifting (BEPS). In some cases, financial decisions included in BEPS action if it is only to reduce tax liabilities without a strong economic substance, since it is still difficult to distinguish which is the real business decisions and tax avoidance motives. In addition, it is essential to review the problem of model specifications because the model is so diverse that it can affect the form of profit transfer schemes used. The next arising problem is the multi-

interpretation in understanding the scheme of the implemented measurement model. The common challenge is the mismatch of tax rules between countries, and incorporating these factors in a quantitative model can create its own complexity. Therefore, this study employed qualitative methods aimed at explaining the subject unaccommodated by the previous method. The next limitation is due to the lack of availability and data access. Micro data sources (such as tax return and corporate tax audit data) essentially contain important information used both to measure BEPS practices and to map the behavior of multinational companies. However, this process is hampered by limited access and confidentiality protected by Article 34 of the Indonesia's KUP Law (Visaro, 2017).

In the context of BEPS action plan where the allocation of tax rights should be in accordance with the value of jurisdiction created especially if it is associated with efforts to claim greater taxation rights to the profits derived by multinational corporations (Aeny, 2017). Similarly, the jurisdiction cases of BEPS in Hong Kong and Singapore are unique since both apply the lowest tax rate in order to attract other investors and influence competitive competition with other countries so that the tax system of the company correspondingly has a significant impact on the world economy especially in this era of digital economy and causes turmoil for other world communities due to the various understanding of BEPS.

Further discussion on the development of taxation issues in the international tax context has continued to increase in recent periods such as Panama Papers, Lux Leaks, Swiss Leaks to a significant amount of foreign profits from multinational companies such as Google, Microsoft, IBM and Apple and Amazon which has become a widespread discussion. The case was originated from the transfer pricing (TP) activities contained in the tax plan carried out as a preceding policy and tax administration. The multinational giant actors possibly step ahead the current tax regulations, obviously with the help of technology (Ngantung, 2016).

This BEPS discussion is closely related to the international tax principles of allocation of taxation rights that are increasingly obsolete in the era of digital economy. The challenges resulted from the increasing progress in information and communication technology (ICT) include issues of intangibles, business substance identification, calculation of tax base and so on. Basically, the challenge in formulating the right taxation policy in the digital era end up on three points. The first is nexus. Non-physical presence in business as well as commercial relationships with increasingly sophisticated networks create difficulties for defining business connections with certain jurisdictions. Second, the role of data is increasingly important in determining the success of digital business. In spite of its big role in the process of value creation, data collection activity, information management and its use to target the right consumer, however it is difficult to be measured. The last is the characterization of the income gained from the digital business model, for example, the debate over whether earnings are categorized as payments for technical services, operating profit, or royalties. In addition to redefining the Permanent Establishment (BUT), there are four options available to stakeholders. Another solution is defining a new nexus for a significant economic presence, followed by an allocation of income from an economic presence and withholding tax on digital business (DDTCNews, 2016).

Those several action plans specifically aimed at warding off the tax structure used by multinational companies in the digital economy comprising transfer pricing, hybrid mismatch, avoidance of CFC (Controlled Foreign Company) regulations, avoidance of BUT formation and utilization of preferential tax regime. Although BEPS Project has been on the right direction, in fact, the implementation of the recommendations is based on the discretion of each country. In other words, the OECD cannot issue binding regulations for all countries, but it is to the extent of providing soft law recommendations. Thus, although the BEPS Project recommendations are acknowledged to be highly relevant in addressing the taxation issues of the digital economy, as mentioned by the European Parliament's Special Committee, some recommendations of the BEPS Project are practically deemed unsuccessful in dealing with the core problem. In fact, some countries in fact issue taxation policies that are contrary to the recommendations of the BEPS Project, by creating new types of taxes specifically targeted to certain businesses of the digital economy. The

example is diverted profits tax in England and Australia which is often crowned by media as Google Tax and Equalization Levy in India.

On the other hand, developments in the US need also to be considered. In contrast to the recommendations of the BEPS Project, Barack Obama's Government proposes to apply a minimum of 19% of the global earnings of US multinationals, regardless of whether the offshore profits has been repatriated or not. Obama's proposal is aimed at limiting aggressive tax planning practices by many US multinationals by placing offshore profit in tax haven countries or known as stateless jurisdiction countries. However, unlike Obama, the elected US President Donald Trump is planning to revoke the proposal of minimum tax and, as the alternative, he proposes to provide facilities for multinational companies by lowering tax rates for repatriation of its operating profits abroad. Again, this step also does not comply with the recommendations of the BEPS Project. Dissatisfaction on BEPS project is also shown by the EU Commission with the issuance of the Anti-Avoidance Directive (ATAD) proposal containing recommendations of regulations uncovered by the BEPS Project in the form of recommendation for General Anti Avoidance Rule (GAAR), switch over clause and exit taxation.

Furthermore, the EU Commission also announced plans to review the Common Consolidated Corporate Tax Base (CCCTB) project. This CCCTB project is a form of formulary apportionment approach which is contrary to the international consensus on the implementation of arm's length principle associated with the allocation of income between taxpayers in one group. All of the above developments show the growing importance of digital economic relevance in international taxation. The risks of this growing digital tax industry will certainly be unavoidable, including to developing countries. Thus, it is essential to accommodate the issues of digital economy taxation under simple, flexible, efficient international standards since the risk of the growing issue of tax in digital economy cannot be avoided including by developing country. This is what should be noted (Deep, 2016).

Moreover, this is also emphasized by Yansheng Zu, Tax Law Professor of Xiamen University, in the context of the case of transfer pricing. He argues that value creation in the action of BEPS 8-10 seems to rule out the contribution of developing countries on the profits of multinational companies. As suggested by Yansheng, this should be offset by value realization which takes into account the market factors that in the end determine the value of the product. A product can become more valuable when facing certain characteristic market. In the end, it is the market perception that determines how successful a product can be marketed. This explanation is in line with representatives from such other countries as Brazil and Italy (Vissaro, 2017).

According to the background of the study and supported by the formulation of the Millennium Development Goals proclaimed by the United Nations on the Making of a Global Relations for Development, particularly in the case of formulating the openness of rule, prediction and trading which is non-discriminatory and trading and financial improvement system. Due to the importance of this discussion, then the two formulated research problems to be investigated are:

- What is the basic form of Based Erosion and Profit Shifting (BEPS)?
- What is the function of an Action Plan Based on Erosion and Profit Shifting (BEPS)?

Both formulation of the above problems aims at identifying the basic form of Based Erosion and Profit Shifting (BEPS) and the function of Action Plan of Based on Erosion and Profit Shifting (BEPS).

Assisting the Government particularly developing countries to improve the Action Plan in addressing Based Erosion and Profit Shifting (BEPS) and run the program proclaimed by the United Nations in the Millennium Development Goals, specifically the eighth goal in its efforts to build global relationships for collective advancement by focusing on improving the financial system and clarity of the legal basis and open access. For Academics, of course, it can enrich the understanding, especially in the theoretical basis of Based Erosion and Profit Shifting (BEPS) so that both the government and society in general help to find solutions to the impact of Based Erosion and Profit Shifting (BEPS).

## LITERATURE REVIEW

In international tax, there is an agreement governing the taxation of the two contracting countries which agree on the tax limit of inputs from trade and investment during the business. So, international tax is an international aspect of income tax law of an individual country (Burns, 2017). Fundamentally, international tax focuses on the residents of foreign taxation and taxation of domestic income for non-residents. The next discussion deals with International Tax.

BEPS may occur in multi-national companies involving the tax law of the two countries in relation to regulating the profit earned to remain optimal but still fulfill the tax obligation. Thus, transfer pricing activity can allocate the benefits gained to other places. So, BEPS focuses on developing a disconnect between the locations of the economy activity and the location where profit is gained (Burns, 2017). The complete explanation is presented in the discussion section.

## METHODS OF RESEARCH

This research employed qualitative methods aimed at identifying the basic form of BEPS in accordance with scientific procedures (Keyton, 2006: 2). Qualitative method was chosen because it can reveal how social phenomenon in depth and perform holistic observations to gain a full understanding (Babbie 2014: 304).

Research focus is an important factor related to the problems and data collected, processed and analyzed. The focus of the study limits the object being studied in order to focus specifically on the studied elements, thus the resulting description is in accordance with the problems formulated. The purpose of formulating research focus (Moelong, 2004) is to explain the basic form of BEPS and the function of BEPS Action Plan and the meaning of the BEPS Action Plan agreed in the G-20.

Secondary data of this research is the form of secondary documents comprising article, journal and book on BEPS and others.

Data collection is a determinant of research success. Data collection is one of the procedures systematically to obtain the required data (Nazir, 2005). In qualitative research, data collection techniques related to the procedure/process of data recording in the field which includes:

- Observational protocol: the protocol is used to record the observed data. This protocol can be in the form of a sheet of paper used to record, descriptive notes or reflective notes. Descriptive notes include descriptions of participants or informants, reconstruction of dialogs, descriptions of physical settings, notes on specific events and activities. Reflective notes related to the personal knowledge of the researcher such as speculation, feelings, problems, ideas, guesses, impressions, and prejudices. In addition, this protocol may also include demographic information such as hours, dates, and the current location of the researcher.
- Documentation is a technique of collecting data by studying documents and files on institutions that are useful as inputs related to the subject. According to Hasan (2002), documents used are in the form of data that provide value-added information in this study. The data were obtained by studying and using data related to the research topic. In this study, the data used in relation to the socialization patterns of taxes that exist in the Tax Office of East Java III.

Carrying out research activities required tools in the form of research instruments selected and used by the researcher in their activities to be systematic and facilitated by it (Arikunto, 2010). Research instrument is a tool used at the time of research to be directed, running smoothly, and systematic. The research instruments of this are presented as follows:

- The researcher in which the researcher's knowledge and experience is associated with the pattern of socialization of personal income tax, media, compliance, and tax revenue;

- Observation Guidance by utilizing literature related to the socialization of personal income tax and existing regulations related to the media concerned;
- Field notes by taking notes on what occur in the field as well as copies of documents and archives in order to obtain the necessary data in the research.

*Data Analysis, Validity, and Reliability.* Content analysis was used to see how the content correlates from one source to another (Lofland; Snow; Anderson; and Lofland 2006: 2). Thus, it can obtained data on self-evaluation of both tax officers and taxpayers, the environmental picture, background informants of both taxpayers and tax officials, the matrix and solutions to map the socialization patterns and information systems referring to the purpose of tax office and taxpayers in compliance with the regulations for the optimization of tax revenues. Qualitative data also need to be verified by using internal validity and its construct and reliability (Creswell, 1994: 158) by using source triangulation and technique triangulation.

Data analysis, according to Gay (2006: 480), is the effort of a qualitative research to summarize data collected accurately and reliably. This is the typical presentation of research findings. Creswell (2014) provides six stages in the process of data analysis including:

1. Processing data and preparing data for analysis. This step includes interview transcription scanning material, typing field data, selecting and organizing data based on information sources;
2. Reading the entire data by reflecting on the overall meaning and giving marginal notes about common ideas obtained;
3. Analyzing more details by coding data. Creswell (2014) quotes Bogdan and Biklen in the coding stages: Context settings and context; Subject perspectives; The subjects' tendency to think of about others; Code process; Activity code; Code of strategy; Code of relation and social structure;
4. Applying the coding process to describe these settings, people, categories and themes to be written in narrative or qualitative reports;
5. Interpreting data.

## **RESULTS AND DISCUSSION**

Base Erosion and Profit Shifting become a problem in the scope of tax globally because Base Erosion means a reduction in tax revenue that threatens the tax authorities and taxation justice in many countries by utilizing profit shifting. The BEPS issue shows that there are deficiencies in the inter-state taxation laws that rely heavily on double taxation (P3B) agreements, also known as tax treaties governing taxation rights between countries and many refer to the tax treaty model issued by the OECD. BEPS also indicates a shortage on domestic tax regulations in governing international taxation including rules on tax avoidance (anti-avoidance rule) and the transfer pricing rules.

BEPS report from the OECD reveals the key of BEPS issues:

- International Mismatches in terms of determining the character of entities and instruments;
- Implementation of the concept of tax treaty on profits from the delivery of goods and digital services;
- Treat taxes on financial transactions such as lending between companies;
- Transfer pricing is primarily of transfer of risk and intangible goods, artificial splitting of rare asset ownership or transactions on independent firms;
- The effectiveness of tax avoidance rules such as anti-avoidance rule, controlled foreign corporation, thin capitalization to prevent the abuse of tax treaty (treaty abuse);
- Availability of harmful preferential regimes (OECD 2015 Final Report).

However, the practice of BEPS can also be carried out because of the practice of hybrid Mismatches by implementing different transactions by each country to avoid tax and providing Special purpose entities (SPE) allowing the MNCs to transfer profits to other

countries (Love, P 2013). This practice ultimately leads to unfair and competitive tax and inefficient allocation of funding sources. Furthermore, BEPS practices will impact on the loss or exclusion of potential revenues accepted by Jurisdiction / Country.

Currently, there are many countries in the world either G-20 Members or European Union (EU) which impose a normal/high tax rate (non-low tax jurisdiction). It makes them become the most vulnerable countries to be affected by the practice of BEPS by MNCs, so that these countries are ultimately the most emphatic in making the Rules or Policies in the fight against BEPS.

Table 1 – Tariff of Corporate Tax Rate of G-20 Member Countries

n/n	Country	Corporate Income	Capitals Gain	Branch
		Tax Rate (%)	Tax Rate (%)	Tax Rate (%)
1	Argentina	35	35	35
2	Australia	20	30	30
3	Brazil	15	15	15
4	Canada	15	7.5	15
5	China	25	25	25
6	France	33 1/3	0/15/33 1/3	33 1/3
7	Germany	15	15	15
8	Indonesia	25	-	-
9	India	30	20	40
10	Italy	27.5	1.37/27.5	27.5
11	Japan	25.5	25.5	25.5
12	Republic of Korea	22	22	22
13	Mexico	30	30	30
14	Russia	5/20	5/20	5/20
15	Saudi Arabia	30 to 85	20	-
16	South Africa	28	18.65	28
17	Turkey	20	20	20
18	United Kingdom	24	24	24
s	United States	35	35	35
20	European Union	24	24	24

Source: <http://www.ey.com/GL/en/Services/Tax/Worldwide-Corporate-Tax-Guide-Country-list>

The increasing number and pace of transactions in the global economic era demanding the mobility of goods, capital, labor and various input factors of production and also by considering the variety of tax rates imposed by OECD member countries can actually trigger a profit shifting activity which are taxed (tax activities). This phenomena require each country/ jurisdiction to make tax externalities in which each country create interaction strategy to formulate a tax policy aimed ultimately at collecting and moving capital to the country.

The process of establishing tax rates in a jurisdiction is usually by considering the existing tax competition. Tax competition happens because the country specifies tax rates by looking at the advantages and taxation of the allocation of its resources. Wilson (1999) and Leach (2007) state that, due to tax competition, the difference of tariffs in different regions - low tax regions will receive capital flows while high tax regions will not receive capital flows.

The OECD has reviewed various BEPS-related studies and found evidence that there is an indirect link between imposing low tax rates and profit shifting by MNCs, as well as the fact that there are some countries that deliberately implement low tax rate regimes (low-tax jurisdiction) and take advantage of it. In addition, the OECD reported that OECD member countries are significantly affected by the practice of profit shifting by MNCs. When small countries imposing low tax rates obtain significant inflows of foreign direct investment (FDI) by thousands of percent of the country's total GDP, the OECD countries only obtain 36% of the country's total GDP.

Considering that phenomenon, every council in various countries has its own view in combating Base Erosion and Profit Shifting (BEPS) as reported in the article of The Russian Corporate World that the issue of the pros and cons in BEPS practice, according to the article, is due to the absence of direct impact the same for all countries on the practice of

BEPS conducted by MNC. According to the article, there are differences in the Profit Shifting Practices conducted by MNCs in developed countries such as the United States and Western Europe with Russia and the Soviet Union and Eastern Europe. The realization is that MNCs in Russia mostly practice the transfer of assets and property they have to other countries in order to protect their property and assets, not their profits. Furthermore, in Russia, they usually place the holding company in another country, not a subsidiary as the MNCs do in Western countries.

Table 2 – Tax Review Related 15 Action issued by the OECD in combating the Base Erosion and Profit Shifting (BEPS)

Action	Theme	Conclusion	Form of Recommendation applied in Indonesia
1	2	3	4
1	Addressing the challenge of taxation on digital transactions (digital economy)	How to help collecting VAT effectively and efficiently (maximizing VAT eroded by digital transactions) based on a country in which the consumer is a cross-border business-to-consume transaction. OECD and G-20 countries have agreed to monitor the development and analysis of data to be available from time to time. The international tax must be observed whether it is ready to accept the challenge of taxation because of the digital economy.	Indonesia itself has prepared Tax on E-commerce transactions and Start-Ups that was legalized in 2017.
2	Overcoming or neutralizing the effects of hybrid schemes of mismatch arrangements	The implementation of action 2 will facilitate the convergence of national practice through domestic treaty provisions to neutralize such arrangements. Which will impact: <ul style="list-style-type: none"> <li>• Avoid double non taxation (by eliminating tax benefits from incompatibility)</li> <li>• To end multiple expensive deductions into a single expense</li> <li>• This regulation shall preclude the use of such agreements as a tool for BEPS without the adverse effects of Cross Border Trade and investment.</li> </ul>	-
3	Strengthening Controlled Foreign Company (CFC) rules	Strengthening the Controlled Foreign Companies' (CFC) rules to prevent taxpayers from shifting its revenues to subsidiaries abroad (foreign subsidiaries).	In terms of strengthening the CFC rules in 2017, Indonesia renewed its Rule as stipulated in FMD Number. 107 of 2017
4	Preventing the erosion of taxes made through the imposition of interest charges and the imposition of other financial costs	The general approach aims to ensure that the net interest deductions on the entity will be directly linked to the taxable income generated by its economic activities and encourage improved coordination of national regulations in this area.	-
5	Resolving more costly tax practices more effectively and paying attention to the transparency and substance of the transaction	The adverse taxation of the examples of preferential regimes and the absence of transparency makes this action 5 finally creating a minimum standard of whether there is a substantial activity in preferential regimes.	-
6	Preventing the misuse of P3B (treaty abuse)	There are minimal standards to prevent treaty abuse including treaty shopping and new regulations that provide security to prevent misuse of P3B and offer a certain degree of flexibility on how to do so.	This is also reinforced by the new P3B Regulations set in PER 10/PJ/2017 to emphasize the Beneficial Owner (BO).

1	2	3	4
7	Preventing tax evasion through the use of rules on BUT	The taxation agreement generally regulates the business profits of a foreign company to be taxed in the circumstances only if the company has a permanent establishment (BUT) in the country included in the tax treaty. It is important to determine whether a Non Resident company must pay income tax in another country.	Indonesia's decisive step is proven by the issuance of the Over The Top (OTT) Regulations, the Regulation requires all foreign companies providing OTT content to establish a Permanent Business entity in Indonesia.
8-10	Ensuring that the transfer pricing results are in line with Value Creation	Transfer Pricing Rules on the OECD and UN Tax Conventions are used to determine the base of the arm's length principle, including the transaction price in the MNE group. <ul style="list-style-type: none"> <li>Action 8 is more of an issue of transfer pricing associated with transaction control involving intangible assets, since intangible property has been defined as hard-to-value. The misallocation of profits generated by intangible goods has contributed greatly to the BEPS practice,</li> <li>Action 9, the allocation of contract risk will be enforced only if supported by the actual decision maker and thereby controlling their risk,</li> <li>Action 10 will focus on other high-risk areas.</li> </ul>	-
11	Creating methods for collecting and analyzing BEPS related data and steps to follow-up	The new OECD analysis estimates, and recognizes the complexity of BEPS as well as the limitations of methodology and data, that the scale of global corporate tax revenue losses ranges from 100 to 240 billion USD per year. And for the future, it is expected to improve economic analysis and BEPS monitoring by requiring countries to improve their data collection, compilation and system of analysis.	Indonesia has issued e-billing, AKASIA system, and simplification of HS code on the numbering of goods related to Export-Import.
12	Requiring disclosure of tax planning aggressively to the Taxpayer	The report of action 12 provides a modular framework, that is the best practice used by countries without mandatory disclosure rules that seek to design an understanding that suits the needs of those countries to obtain information early on an aggressive or abusive tax planning scheme and for its users. The recommendations in this report are not representative of minimum standards and countries are free to choose if they do not want to choose whether to introduce the notion of taxpayer disclosure. This framework is also intended for reference to countries that already have their own understanding, in order to improve the effectiveness of the understanding.	-
13	Fixing the rules regarding Transfer Pricing documentation	The Action Report 13 contains a "three-tiered" standard approach for transferring pricing, including the country-by-country reporting minimum standards. These minimum standards reflect a commitment to establish a Common Temple for country by country which reports consistently.	Indonesia itself has exposed Regulatory Reform related Documentation on Transfer Pricing as stipulated in PMK 213 / PMK.03 / 2016
1	2	3	4
14	Making tax dispute resolution mechanisms more effective	Making the tax dispute resolution mechanism becomes more effective and ensuring that minimum standards are met and countries make further progress to resolve their tax disputes. In addition, large groups of countries have committed to rapidly adopt binding provisions and arbitrations within their tax treaties.	-

15	Developing Multilateral Instrument (MLI) to BEPS Project can be implemented	The Action Report 15 discusses MLI's technical feasibility of applying steps related to the BEPS treaty and amending the bilateral tax treaty. This proves that MLI is needed and feasible, and that negotiations for such Instruments should be immediately made and met.	This year 2017 MLI has been approved and signed by 68 Countries in OECD Head Office Paris, France. MLI is a simultaneous modification of tax treaty arrangements, synchronous and efficient, without going through a bilateral negotiation process.
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Source: <http://www.oecd.org/ctp/beps-actions.htm>

Globalization requires global solutions and dialogue that can be drafted and transcended by the OECD and G-20 countries. The high level of interest of developing countries for their participation in the BEPS project should be addressed by the preparation of a more inclusive framework, which will continue to include international organizations and other regional tax organizations. Taking experience from the success of the Global Forum on Transparency and the Exchange of Information for Tax Purposes, in early 2016, the OECD and the G20 countries continued to collaborate to design and propose a more inclusive framework to support and monitor/supervise the implementation of the BEPS program, in which the country and its jurisdiction participated on the same mission.

This work will cover consideration of the manner in which the non-OECD and non-G20 countries and their jurisdiction can commit in agreement on standards and their implementation. This will withdraw the mandate of G20 Finance Ministers and Bank Central Governors as in the "Communique" published in Ankara on 5 September 2015: "... The effectiveness of the project will be determined by its wide spread and consistent implementation. We will continue to monitor the implementation of the BEPS project outcomes at global level, in particular, the exchange of information on cross-border tax rulings. We call on the OECD to prepare a framework by early 2016 with the involvement of interested non-G20 countries and Jurisdictions, particularly developing economies, on an equal footing..."

Furthermore, this research discusses about the 8<sup>th</sup> and 10<sup>th</sup> BEPS Action Plan on Transfer Pricing. Indonesia has implemented latest rules or policies in connection with the Recommendation of BEPS Action Plan, namely the Transfer Pricing, Transfer pricing Documentation, Advance Pricing Agreement (APA), the Mutual Agreement Procedure (MAP), and Automatic Exchange of Information where the effect of the BEPS practice carried out continuously will disrupt the country's fiscal continuity in order to finance the construction of the country. The common way or scheme carried out in BEPS practice is through transfer pricing and using the treaty shopping. Transfer Pricing in general is a company policy in determining the price of a transaction between the parties having a special relationship. Although the term transfer pricing is actually a neutral term, but in practice the term transfer pricing is often interpreted as an attempt to reduce taxes by shifting profits (profit shifting) or profit between companies in one group. By tax authorities, transfer pricing is considered an attempt to avoid taxes (tax avoidance) if the determination of the price in the inter-party transactions that are affected by a special relationship is performed not in accordance with the provisions of taxation (mispricing). In Indonesia, transfer pricing practices are actually allowed if the company does it in accordance with its regulations and also makes Transfer pricing Documentation in accordance with Indonesian tax laws.

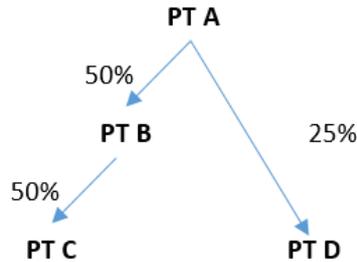


Figure 1 – Transfer Pricing Scheme according to Income Tax Law processed in 2017  
(Source: data)

For example, Company A has 50% shares of Company B. The ownership of Company A is a direct investment. If Company B has 50% of Company C shares, then Company A as a shareholder of Company B indirectly has an investment in Company C of 25%. Therefore, Company A, Company B and Company C are considered as related parties. If Company A also has 25% of Company D shares, then Company B, Company C and Company D are considered to be related. Such ownership relationships may also occur between individuals and entities. PT means Perseroan Terbatas (PT) refers to Company.

The OECD recommends each country to complements domestic laws of each country with rules on transfer pricing. The OECD specifically publishes the OECD Transfer pricing Guidelines for Multinational Enterprises and Tax Administrations often called as the OECD Guidelines. The OECD Guidelines are intended to guide multinationals and tax authorities in resolving transfer pricing issues. Similarly, the United Nations (UN) has issued Practical Manual on Transfer pricing for Developing Countries which can be used as a guide for developing countries in handling transfer pricing.

The tax law in Indonesia, both the Income Tax Law and the VAT Law, contain instruments for the issue of transfer pricing (in the Income Tax Act, this provision is contained in Article 18 paragraph (3), while in the VAT Act, it is stipulated in Article 2 paragraph (1)). The taxation laws in Indonesia have included provisions on transfer pricing. In principle, both laws regulate that if the transaction is affected by a special relationship, then the fair price is used. Furthermore, the provision has also been supplemented by implementing regulations on the application of the principle of fairness and custom (arm's length principle) of business in the transactions between taxpayers with related parties.

In Indonesia, the practice of transfer pricing is considered legal or allowed if it is in accordance with the legislation on transfer pricing. In Indonesia, it is contained in PMK 213/PMK.03/2016 regarding transfer price documents. This regulation principally introduces three-level approach to the provision of documentation which is in line with the provisions of BEPS Action 13, the use of a threshold for document management, and to require documents to be made in Indonesian. This regulation also provides guidance on the party that is obliged to organize the documents, the information that should be included in the document, and when the documents should be available.

Under the current regulation, the taxpayer is only required to carry out a local transfer pricing document as the basis for applying the fairness principle and business practice on the transaction with the related party. PMK 213 requires taxpayers to organize and store three levels of documents consisting of: Master Document; Local Documents; Report per Country.

With the adoption of BEPS, OECD and other G20 countries as well as developing countries following these developments will be pioneers in modern International Taxation where profit will be taxed by economic activity and value creation. But, now is the time to pay attention to the challenges ahead of supporting the implementation of consistent and clear change recommendations, monitoring the impact of double non-taxation and double taxation, and designing a more inclusive framework to support the implementation and performing further monitoring activities (observation).

Table 3 – Summary of Provisions in the Scope of Master Documents and Local Documents

Terms	Main Point								
Master Documents and Local Documents	("Document of transfer price")								
<p>Coverage A Taxpayer conducting transactions with a related party affecting any of the following thresholds/conditions that is required to prepare a transfer price document</p> <table border="1"> <thead> <tr> <th>ITEM</th> <th>Threshold</th> </tr> </thead> <tbody> <tr> <td>Gross circulation in the previous tax year</td> <td>More than IDR 50,000,000,000 (fifty billion rupiahs)</td> </tr> <tr> <td>Transaction of tangible goods in the previous tax year  OR Services, royalties, interest or other transactions in the previous tax year</td> <td>More than IDR 20,000,000,000 (twenty billion rupiahs)  More than IDR 5,000,000,000 (five billion Rupiah)</td> </tr> <tr> <td>Transactions with related parties located in jurisdictions with tax rates lower than in Indonesia (currently 25%)</td> <td>There is no threshold</td> </tr> </tbody> </table> <p>In addition, a Taxpayer who qualifies as a Holding Entity of a Business Group that records consolidated gross turnover of IDR 11,000,000,000,000 (one trillion Rupiah) is also required to prepare a Transfer Price Document. Under the terms of the tax year prior to covering a period of less than 12 months, gross circulation or transactions with related parties shall be calculated by annually. For bookkeeping in currencies other than Rupiah, the monetary value of the threshold shall be calculated using the rate set by the Minister of finance for tax calculation at the end of the tax year. This Regulation clearly states that although the Taxpayer does not meet the threshold of preparing the transfer price document, the taxpayer shall still comply with the principle of fairness and custom, the business of transactions with related parties.</p>	ITEM	Threshold	Gross circulation in the previous tax year	More than IDR 50,000,000,000 (fifty billion rupiahs)	Transaction of tangible goods in the previous tax year  OR Services, royalties, interest or other transactions in the previous tax year	More than IDR 20,000,000,000 (twenty billion rupiahs)  More than IDR 5,000,000,000 (five billion Rupiah)	Transactions with related parties located in jurisdictions with tax rates lower than in Indonesia (currently 25%)	There is no threshold	<p>This regulation has superseded the determination of existing thresholds based on "each transaction opponent for each year" with thresholds perceived by gross circulation or the type of transaction or jurisdiction of the counterparty.</p> <p>This Regulation does not specifically mention exceptions to domestic transactions excluded from the obligation to apply the principle of fairness and business custom (depending on certain circumstances) governed by current regulations.</p> <p>Thresholds must be calculated based on the previous tax year. For example, the threshold for fiscal year 2016 will be based on the values of the 2015 tax year.</p> <p>The taxpayer should review the applicable corporate income tax rate from the jurisdiction in which the related party (which is the opposite of the transaction) is located to assess the obligation to prepare the transfer pricing document.</p> <p>The presence of gross circulation, PMK 213 in general, provides an exception to small and medium taxpayers in connection with free administration of documentation preparation. However, the threshold aims to include more transactions need to be documented.</p>
ITEM	Threshold								
Gross circulation in the previous tax year	More than IDR 50,000,000,000 (fifty billion rupiahs)								
Transaction of tangible goods in the previous tax year  OR Services, royalties, interest or other transactions in the previous tax year	More than IDR 20,000,000,000 (twenty billion rupiahs)  More than IDR 5,000,000,000 (five billion Rupiah)								
Transactions with related parties located in jurisdictions with tax rates lower than in Indonesia (currently 25%)	There is no threshold								

Source: <https://www2.deloitte.com/content/dam/Deloitte/id/Documents/tax/id-tax-alert-ba-jan2017.pdf>

The practice of Base Erosion and Profit Shifting is a problem for developing countries and countries that apply High Tax Rate (Non Tax Jurisdiction). There is a great deal of evidence that multinational corporations deliberately avoid their tax obligations by transferring or making shell companies to other countries with a lower or even zero tariff. One example of endemic tax avoidance is a Google case. The Indonesian government in 2015 tried to uncover and hold accountable for losses incurred by the company. For the year of 2015, only Internet giant in initiated by the United States must pay taxes more than US \$ 400 Million or equivalent to IDR 5.2 Trillion if proven to avoid taxes in the country (Source: [www.beritasatu.com](http://www.beritasatu.com), <https://finance.detik.com>). Whether like it or not, good or bad, but in fact BEPS can erode a country leak and cause the government to lose the potential of tax revenues, especially those originated from corporate taxes. Considering the impact of tax planning carried out by Google that has led to aggressive tax planning and tax avoidance since Google does not only avoid tax in a country but also in other countries. Alphabet Inc,

the holding company of Google also performed tax evasion efforts because similar cases also occurred in the UK, France, Italy and Spain.

However, the problem of BEPS cannot be merely seen from the negative side, because the complexity of the problem sometimes makes the opposite side to be not criticized maximally. If red flags are drawn, usually BEPS Practices are mostly carried out on Corporate Income Tax (especially in developing countries), in an interview conducted by DDTCNews to TP Ostwal, a cum practitioner of Indian tax academics recently appointed by the United Nations as one of the expert on development method of Transfer pricing for developing countries expresses different opinions. He said that when it is reviewed carefully the BEPS Practice has nothing to do with the income tax of a county agency but more to the culture and corporate behavior.

Companies that have bad behavior and management tend to do aggressive tax planning that can lead to tax evasion. Because before BEPS issues have been lifted and criticized and studied by various developing countries, many companies are doing tax evasion by finding the gaps in other countries where tax law is weak or the rate is low. As commonly known that BEPS is not a simple matter, the complexity of the problem is not only due to friction or non-diversity of taxation laws among different countries but also because of the different interests of the inter-countries and the business objectives.

### CONCLUSION

Companies that have bad behavior and management tend to do aggressive tax planning that can lead to tax evasion. Because before BEPS issues appeared, criticized and studied by various developing countries, many companies are performing tax evasion by finding the gaps in other countries where the tax law is weak or the rate is low. As commonly known that BEPS is not a simple matter, the complexity of the problem is not only due to friction or non-diversity of taxation laws among different countries but also because of the different interests of the inter-countries and the business objectives.

There needs to be a synergy between government and taxpayers in understanding BEPS Action and in-depth study on the implementation in developing countries. Developing Countries with various forms of business and culture certainly cannot be accommodated with one standard of BEPS Action.

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## **STRUCTURE OF OWNERSHIP AND DISCLOSURE OF INTERNET FINANCIAL REPORTING**

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### **ABSTRACT**

This study aims to examine the ownership structure on the internet financial reporting disclosure level. The ownership structure used is managerial ownership and ownership concentration. In this study used control variables ie firm size and frequency of audit committee meetings. This research is conducted on the Bank listing on the Indonesia Stock Exchange. Research data obtained from BEI and website of each company. The results of this study indicate that management ownership negatively affects the disclosure of internet financial reporting, while the concentration of ownership is positively related. This study has limitations in website observation time that is only done in one month.

### **KEY WORDS**

Managerial ownership, ownership concentration, internet financial, reporting disclosure.

Technology continues to experience the development and renewal continuously covering all aspects of life, especially in the world of communication and informatics. The amount of benefits offered make the demand for the development of information technology continues to increase. The Internet is one form of technological advancement, where the number of users continues to increase. Indonesia is a developing country experiencing rapid growth in the field of technology.

The development of this technology makes companies use technology in reporting and disclosure of financial information that exist on the company through the website of each company, or called the internet financial reporting (IFR). The company began to change from previously reporting traditionally to reporting paper less reporting, through internet financial reporting (Andrikopoulos et al., 2013; Ojah & Mokoaleli-Mokoteli, 2012). In the research of Kelton and Yang (2008), Khan & Ismail (2012) mentioned that the disclosure over the internet makes it easier for companies, in addition to the cost of disclosing financial information via the internet is much cheaper than the traditional disclosure with the use of paper.

Financial reporting and disclosure is a means of improving information asymmetry between managers and contracting parties with companies, including shareholders, creditors, suppliers, customers, and others (Ball, 2001).

Financial reporting through the internet is currently regulated by the government. The Government issues regulations requiring issuers or companies listing on the Indonesia Stock Exchange to have a website containing reports on financial statement information and disclosure. However, this government regulation only requires companies to have a website, this rule does not set the details or any items that must exist in the company website. Therefore, in this study used the level of IFR disclosure to assess how much the level of corporate financial internet reporting disclosure.

Research on internet financial reporting has been done a lot. Kelton and Yang (2008) examine the effect of corporate governance and internet financial reporting. Debreceny, Gray, and Rahman (2003) examine the size of the firm, technology, and market value of the disclosure of internet financial reporting. Lai, Lin, Lee, and Wu (2007) examine how IFR's disclosure of stock prices. This research reveals that the stock price of companies that implement IFR is changing faster than companies that do not implement IFR. (Bozcuk, Aslan, & Burak Arzova, 2011) examines how internet financial reporting in Turkey. Miniaoui

and Oyelere (2013) examined that firm size measures of leverage, industrial sector and profitability are important factors in the disclosure of internet financial reporting. Dolinšek, Tominc, and Lutar Skerbinjek (2014) stated that the concentration of ownership, legal form and operation sector influenced the internet financial reporting disclosure, while profitability and age of the firm had no effect.

This study aims to examine the effect of ownership structure on internet financial reporting disclosure. The ownership structure used in this research is managerial ownership and ownership concentration. Managerial ownership is used to see whether the presence of management that owns shares in the company will make the level of disclosure voluntarily reduced, including the disclosure of internet financial reporting (Kelton & Yang, 2008; Mazzotta & Bronzetti, 2013; Puspitaningrum & Atmini, 2012).

The next variable is the concentration of ownership. The concentration of ownership is a company whose shares are concentrated or in other words, most of the shares of the company are owned by individuals or groups so that the owners of such capital have a considerable share in the disclosure of information (Lakhal, 2005; Nurunnabi & Alam Hossain, 2012).

This research also use control variable that is company size and frequency of audit committee meeting. Research on firm size on internet financial reporting has been widely used (Laswad, Fisher, & Oyelere, 2005; Pull, Zaimovic, & Fazlic, 2015; Yu, 2010). The size of the company is related to internet financial reporting. Large companies generally have a good reputation among the public, which is why big companies will give their information openly, especially if it is a positive information, the company will voluntarily disclose information, as well as the disclosure of internet financial reporting. The frequency of meetings of audit committees on financial information disclosure has been widely investigated. Kelton and Yang (2008) revealed that the purpose of the holding of the meeting is to deliberate the preparation of the drafting of financial statements and the application of internal control and good corporate governance. The frequency of meetings held by the audit committee positively affects the level of internal control and the effectiveness of management controls and affects the level of good corporate governance implementation.

This research uses agency theory as the basic theory of research. Agency theory is used because agency theory explains the gap between principal and agent, in this case between the company (agent) and the shareholder (principal) (Scott, 1997).

This research is conducted on the Bank listing on the Indonesia Stock Exchange. The research data can be obtained from the annual report on the Indonesia Stock Exchange and on each company website.

## LITERATUR REVIEW AND HYPOTHESIS

*Agency Theory.* The relationship between management and the owner of a company is a paradigm of principal-agent relationship, and the owner of the company as principal gives trust (formally in the form of a contract of employment relationship) to the management that provides managerial services. In agency theory there are two parties who do the contract namely agent and principal. Each individual is assumed to be solely motivated by his or her own self-interest, thus creating a conflict of interest between principal and agent (Scott, 1997).

The difference of interest between principal and agent is called agency problem which one of them is caused by the existence of information asymmetry, that is unequal information caused by the unequal distribution of information between principal and agent (Nurunnabi & Alam Hossain, 2012; Laswad, Fisher, & Oyelere, 2005).

*Managerial Ownership.* Managerial ownership serves to align the interests of shareholders and managers, as this can reduce the controls exercised by shareholders (Kelton & Yang, 2008). According to Puspitaningrum and Atmini (2012) Managerial ownership, where management ranks also contribute in the interest of earning profit for themselves, can reduce information asymmetry between management and shareholders.

In firms with high managerial ownership, managerial manager costs are low because managers, also doubles as shareholders, imply low levels of monitoring. Therefore, managerial ownership reduces voluntary disclosure, including the disclosure of internet financial reporting (Mazzotta & Bronzetti, 2013). The more managerial ownership in a company the smaller the internet financial reporting disclosure. Based on the description, the first hypothesis in this study are:

H1: managerial ownership deals negatively with the disclosure of internet financial reporting.

*Ownership Concentration.* Stock ownership is said to be concentrated if the stocks in the company are owned by individuals or groups, making them the largest and dominant shareholder in the company compared to others (Dallas, 2004).

In a dispersed structure, there is a separation between ownership and control, this can increase the costs associated with agency relationships requiring greater information to increase transparency. In a concentrated structure, concentrated shareholders have access to the creation of relevant information to reduce information disclosure. In other words, concentration of ownership, aligning managers' interests and controls, reducing agency costs and reducing increased voluntary disclosure or in other words high concentration of ownership can lead to reduced voluntary disclosure, including the disclosure of internet financial reporting (Mazzotta & Bronzetti, 2013). Lakhali (2005) in his research reveals that the concentrated ownership that exists in the company, leads to a voluntary disclosure decline, this happens because as a controlling shareholder, concentration ownership has easier access to information than small shareholders. Firms with broadly owned holdings tend to disclose more information in internet financial statements than companies that have tight or concentrated ownership (Nurunnabi & Alam Hossain, 2012). Based on the description, the second hypothesis in this study are:

H2: the concentration of ownership is negatively related to the disclosure of internet financial reporting.

## METHODS OF RESEARCH

This research is a quantitative research, which is done by multiple regression test to test the effect of managerial ownership and ownership concentration on internet financial reporting disclosure. This research data can be from each company's website as well as financial statements at Banks listing in Indonesia Stock Exchange in 2016. The research model in this study as follows:

$$IFR = \alpha + b_1MO + b_2OC + b_3FZ + b_4FR$$

Where:

IFR: Disclosure of internet financial reporting;

MO: Managerial ownership;

OC: Ownership concentration;

FZ: Firm size;

FR: Frequency of Audit Committee Meetings.

Internet financial reporting is measured using the IDI (Internet Disclosure Index) which refers to Kelton and Yang (2008) research using 36 items, with details of 12 item formats, 7 items of content and 17 items of presentation.

Information of items in the table above is accessed on the website of each company. If the company revealed then given a score of 1, if not then given a score of 0. After that in total each company revealed how many items. The total of the items is divided by the total indicator, which is 36 indicators, or with the formula as below:

$$IDI = \sum \text{score} / \sum \text{item}$$

Managerial ownership is owned by the management of the company, the board of directors and the board of commissioners. Managerial ownership is projected with the percentage of shares held by management within the company (Kelton & Yang, 2008; Mazzotta & Bronzetti, 2013; Puspitaningrum & Atmini, 2012).

The concentration of ownership is the largest share ownership in the company. The concentration of ownership in this study is measured by using the largest percentage of shares owned by the company (Lakhal, 2005; Mazzotta & Bronzetti, 2013).

Table 1 – Disclosure of Internet Financial Reporting

	Number	Disclosure Item
FORMAT	1	Annual report in multiple file formats
	2	Financial data in processable format
	3	Hyperlinked table of contents
	4	Drop-down navigational menu
	5	Hyperlinks inside the annual report
	6	Hyperlinks to data on a third-party's website
	7	Audio files
	8	Video files
	9	Email alerts
	10	Direct e-mail to investor relations
	11	Dynamic graphic images
	12	Internal search engines
ISI	1	Current year's annual report
	2	Last year's annual report
	3	Recent quarterly report
	4	Other filings
	5	Link to EDGAR or 10-K Wizard
	6	Charters for the audit committee
	7	Code of conduct and ethics for directors, officers and employees
PENYAJIAN	1	Members of the Board of Directors
	2	Recent monthly financial data
	3	Performance overview (e.g., highlights, fact-sheet, 'FAQ')
	4	Earnings estimates
	5	Calendar of events of interests to investors
	6	Recent financial news releases
	7	Listing of analysts following the firm
	8	Analyst ratings
	9	Text of speeches and presentations
	10	Same-day stock prices
	11	Historical stock prices
	12	Information about the firm's stock transfer agent
	13	The advantages of holding the firm's stock
	14	Information regarding a dividend reinvestment plan
	15	Dividend history
	16	Corporate governance principles/guidelines
	17	Charters for other committees

Source: Kelton and Yang (2008).

This research uses control variables that are company size and audit committee meeting frequency. Research on the size of the company to the disclosure of internet financial reporting has been done. Big companies in general have a good reputation among the public, that's what makes big companies will give their information openly, especially if it is a positive information, the company will voluntarily disclose the information, as well as the disclosure of internet financial reporting ( Ojah & Mokoaleli-Mokoteli, 2012; Omran & Ramdhony, 2016; Pull et al., 2015). The size of the firm in this study is measured by the natural logarithm of the total assets of the company.

Research on the frequency of meetings of the audit committee on the disclosure of internet financial reporting has also been widely practiced. Kelton and Yang (2008) revealed that the purpose of the holding of the meeting is to deliberate the preparation of the drafting of financial statements and the application of internal control and good corporate governance. The frequency of meetings held by the audit committee positively affects the

level of internal control and the effectiveness of management controls and affects the level of implementation of good corporate governance (Puspitaningrum & Atmini, 2012). The frequency of the audit committee meetings is measured by the number of audit committee meetings in a year of management.

## RESULTS AND DISCUSSION

Table 2 – Hypothesis Test Results

	Variable	Coefficient	Sig	Support
1	Managerial Ownership	-0,213	0,093	Yes
2	Ownership Concentration	0,002	0,975	No
3	Firm Size	0,027	0,009	No
4	Number of Audit Comitte Meeting	0,004	0,097	Yes

Source: data processed, (2018).

The purpose of this study is to examine the relationship between ownership structure and IFR disclosure by considering control variables. Based on the table of regression test results in the above table, it can be seen that significant managerial ownership of IFR disclosure, as seen from the significant value 0.093 greater than 0.05 ( $0.093 > 0.05$ ). Coefficient value beta managerial ownership is -0.213 which means there is a negative relationship between managerial ownership with the disclosure of internet financial reporting. Thus the first hypothesis in this study that managerial ownership negatively affect the disclosure of internet financial reporting received. This is in line with Mazzotta and Bronzetti (2013) research which also states that managerial ownership is negatively related to the disclosure of internet financial reporting. With managerial ownership aligning interests between the principal and the agent, in this case between the manager and the shareholders, will have an impact on the low level of IFR disclosure.

The significant value at ownership concentration is 0.093 greater than 0.05 ( $0.093 > 0.05$ ) this shows that there is a relationship between ownership concentration on internet financial reporting disclosure but beta coefficient value of ownership concentration is positive, so the second hypothesis is rejected, because in the second hypothesis mentioned that the concentration of ownership has a negative relationship with the disclosure of internet financial reporting, while the regression results show a positive relationship. This result is not in line with previous research. The ownership concentration is positively related to the disclosure of internet financial reporting because although the company's concentrated shareholdings the company will still disclose the company's IFR well, as it relates to the corporate good corporate governance.

In the control variables are firm size and frequency of meetings of the audit committee, only the frequency of meetings of the audit committee shows significant. This can be seen from the significant value of company size smaller than 0.05 that is 0.009 ( $0.009 < 0.05$ ) indicating that the size of the company in this study has no effect in the disclosure of internet financial reporting. This is not in line with previous research that states that firm size affects the disclosure of internet financial reporting (Bozcuk, 2012; Mohamed & Basuony, 2014). The size of the company does not affect IFR's disclosure because either large or small companies will disclose the company's IFR as it relates to GCG as well as the company's reputation in the community. In the frequency control variables of the audit committee meeting affect the IFR disclosure, which appears from the significant value greater than 0.05 i.e. 0.097 ( $0.097 > 0.05$ ).

## CONCLUSION

This study aims to examine the effect of ownership structure on the disclosure of internet financial reporting. The ownership structure used in this research is managerial ownership and ownership concentration. From the results of hypothesis testing found that managerial ownership is negatively related to the disclosure of internet financial reporting.

The greater the amount of ownership of shares owned by management, it will reduce the level of IFR disclosure on the company website. Because management as share owners already know the information so that feel no need to do more voluntary disclosure. Furthermore, the concentration of ownership has no effect on IFR disclosure. This is because even if the company's share ownership is concentrated, the company will continue to disclose IFR's disclosure on the company's website, this is related to corporate governance as well as company reputation among the public.

This study contributes that companies should still consider IFR disclosure on the website especially in this era of technology. Limitations of this panelitian that is at the time of observation. Observations on the website is done only for 1 month. Future research is expected to observe the website in a longer period of time, as it may within a few months, the company's website undergoes several updates that will certainly produce different observation results.

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## **ANALYSIS OF POTENTIAL DIVERSITY OF STAPLE FOOD FOR LOCAL BUSINESS AND FOOD SECURITY IN KAIRATU BARAT SUB-DISTRICT MALUKU**

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### **ABSTRACT**

Kairatu Barat is one of the sub-districts in Maluku that produce diversity of local staple foods. In this area, the local food has multiple functions as both staple food and potential business development. This study aims to analyze the potential of food development, food consumption patterns related to the food security, and the factors that influence food security in the Kairatu Barat. The methods that the writer uses in this analysis are Location Quotient (LQ), energy contribution on Desirable Dietary Pattern (DDP), and multiple regression analysis method. The results of this study indicate that sago and sweet potato are the most superior commodities. The LQ value shows that sago is equal to 1,13. Meanwhile the value of sweet potato is 2,04. Moreover, the basic commodities in Kairatu Barat are also become a great business opportunities. The average energy contribution of the respondent households in the grain food group is 1,145 kcal whereas the tuber group is 146 kcal. The energy contribution of staple food in Kairatu Barat is higher than the ideal contribution. In addition, the culture of eating, the division of feeding in the family, nutrition and work knowledge is the factors that have a significant effect on food security.

### **KEY WORDS**

Business, food diversity, food security, production.

Agriculture cannot be separated from food problems because the main task of agriculture is to provide food for its population. Every country must fulfill their food requirements properly. In Indonesia, Law No.18 of 2012 on Food Security shows that the country must fulfill the food consumption for both country and individual. The fulfilment is not only reflecting the availability of both quantity and quality for food, but also secure, diverse, nutritious, equitable, and affordable. Besides of that it is also require not contrary to religion, and community culture.

The total population of Indonesia in 2015 is 247.57 million. If this number is multiplied with the average requirement of the Indonesian people for rice, which is 124.89 kg / capita / year or about 0.34 kg / person / day, then the consumption of rice reaches tens of thousands of tons per day. Nevertheless, the domestic rice production is only 79 million tons per year (Pusdatin, 2016). It means that domestic rice production is unable to fulfill the needs of its people. That is why the rice import must be done for the sake of food sufficiency.

The food consumption pattern in Indonesia needs to be increased of its diversity, including both staple food and other food types. Furthermore, food diversification is also one of the main pillars to establish food security (Ariani, 2010). The solution for the food security problems is switching the rice consumption with local food. According to Nainggolan (2004), one of the most appropriate policies for the implementation of food security is utilizing the local food as much as possible. It is because the local food is available in sufficient quantities throughout the region and easy developed as it is in accordance with local agro-climates. For instance, the agroecosystem condition in Papua supports the development of local food commodities as an alternative and staple food for the people who live in either urban or

suburb areas. The potential use of local food such as sago, tubers and barley as the main food for the people of Papua is still common. It is because the participation in local food consumption, especially tubers is quite high (Rauf and Martina, 2009).

Besides of that, the people of Semin Kudung Kidul sub-district also make the similar efforts to establish the food security and reduce the dependence of rice, they utilize the local resources by exploring the non-rice based local potential to fulfill the food requirements of the community. This is indicated by the variation of the food staple consumption based on the local potency (Suyatiri, 2008).

Maluku is one of the provinces in Indonesia that known for its local food diversity, such as Sago, Cassava, Sweet Potato, Banana, and Maize. However, the role of sago and tubers in the urban and suburb areas is different. As urban income increases, the consumption of staple food tends to change to rice. Even though the role of rice in suburb area is also increase, the consumption of staple food is still varies until the highest income level (Martianto, 1993). The role of sago and tubers in suburb area of Maluku is still real. It can be seen on the consumption percentage of staple foods in Maluku which are sago (15%), rice (15%), sago, tubers and bananas (50%) and rice, tubers, banana and sago (20%) (Louhenapessy, 2012).

West Seram regency is one of the regency that produce various staple food for its society. According to data from BPS (2016), the production number of rice is 6,423 tons, sago 101 tons, and cassava 176,916 tons. Moreover, the production of sweet potato is 5,136 tons while banana is 39,103 tons. Nevertheless, the production numbers in Kairatu Barat are 37.6 tons of staple food, 6 tons of sago, 9.068 tons of cassava, 550 tons of sweet potato and 3,167 tons of banana. Production of tubers in this region indicates that Kairatu Barat is able to provide tubers as staple food for its inhabitants. The abundant production of tubers is also utilized by the community as a source of income in the household. According to Rachman and Ariani (2008), the development of the household's staple food diversity is meant to increase producer's income, especially farmers.

As the time goes by, the society still consumes their main staple food. It is related to the adequacy of food that will affect the food security community. This study aims to analyze the diversity of staple foods in relation to the food development, food consumption patterns and the impact of social culture and economic factor on food security in Kairatu Barat sub district, West Seram Regency, Maluku.

## METHODS OF RESEARCH

This research was conducted in the sub-districts of Kairatu Barat, West Seram Regency, Maluku. This location was chosen purposively due to the reason that the Kairatu Barat produces a great deal of local staple foods. The primary data was obtained from the household in Kairatu Barat. However, this study will only focus on three potential villages which are Waisamu Village, Nurue Village and Kamal Village. Sugiyono (2007) claim that the most appropriate number of research sample was between 30 and 500. The minimum sample size for survey research is 100. In this study, each village consisted of 35 samples. The technique of data collection was done by observing and interviewing the samples. This study employed two testing instrument approaches, which are validity and reliability approaches. The testing of research data was a classic assumption test in the form of normality, autocorrelation, multicollinearity and linearity test. In analyzing the data, there were several methods that the writer applied. The first method was LQ method. It functioned to measure the level of the potential staple food production. Operationally, the LQ formulation can be formulated as follows (Hendayana, 2003):

$$LQ = \frac{p_i/p_t}{P_i/P_t} (1)$$

Where:

LQ: Location Quotient;

Pi: production value of the i-agricultural commodities produced in the sub-district;  
 Pt: total production value of all agricultural commodities produced in the district;  
 Pi: production value of the i-agricultural commodities produced in the district;  
 Pt: total production value of all agricultural commodities produced in the district.

The second was food recall method in which it used energy contribution on Desirable Dietary Pattern (DDP) or percentage of actual energy of staple food. The percentage of the actual energy of each group was obtained by comparing the energy of each food group with the total energy consumption of all food groups and then multiplied it with 100. Moreover, the percentage of AKE was obtained by comparing the actual energy consumption of each food group with the average number of AKE, which is 2150, then multiplied it with 100 (Badan Ketahanan Pangan, 2015).

The third method that used was multiple linear regression analysis with the following formula (Siregar, 2013):

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 \quad (2)$$

Where:

- Y = Food Security (Percentage of Actual Energy);
- X1 = Culture of eating (Score);
- X2 = Division of feeding in the family (Score);
- X3 = Nutrition knowledge (Score);
- X4 = Preferences (Score);
- X5 = Income (Score);
- X6 = Number of family members (Person);
- X7 = Education (Score);
- X8 = Work (Score);
- a = Constant;
- $b_1$ - $b_8$  = Regression Coefficients.

## RESULTS AND DISCUSSION

The diversity of the local staple food is a traditional food which produced and consumed by the local community in accordance with the potential and local wisdom. It consists of a variety of processed staple foods both to improve quality, nutrition, and compete with modern food.

Kairatu Barat is the one of sub districts which is rich in food diversity. Its society does not only rely on one staple food that is rice. The staple foods still consumed by the people are Sago, Cassava, Sweet Potato, and Banana. The diversity of local staple foods consumed by people in Kairatu Barat can be seen in Table 1 below.

Table 1 – Diversity of Respondents' Local Staple Food Consumption

No	Local Staple Food Type	Number of Household (n)	Percentage (%)
1.	Sago	98	98%
2.	Cassava	93	93%
3	Sweet Potato	85	85%
4.	Banana	59	59%

Source: *Primary Data (2018)*.

Based on the table of local staple food diversity by respondents, it is seen that almost 98% of household respondents still consume sago, 93% consume cassava, 85% consume sweet potato, and 59% consume banana. The diversity of local staple food that is owned is reinforced by the opinions of some respondents encountered for the interview. According to respondents, the local staple food in Moluccas is various, such as sago, cassava, patatas, taro, etc. The Moluccas themselves still continue to consume sago that has been known since the first as a staple food. Indeed, the existence of sago has started a little.

Nevertheless, for those who live in rural area, sago and tubers are still consumed. Local staple foods which are processed including sago into papeda, whereas tubers are boiled to be eaten with any side dishes desired.

People's interest to consume local food has been exist since the past and until present days still remains a priority for the community. This is also related to the work occupied by some people, namely farmers, and one of the commodities grown are cassava and sweet potato. Cassava and sweet potato can be found anywhere and can grow at the house yard. Thus, the accessibility of the community on local food is very convenient; in the sense that to consume it they do not have to spend money.

Local food of Kairatu Barat community describes the social value of local communities. If there are neighbors who have more local food, the other neighbors do not hesitate to ask those neighbors who have excessive local food if they want to consume it. Moreover, they often process it together, after that they eat it together without any tradition or event celebrated. For non-farm families, the local staple food which is consumed must be purchased. This is the advantage of community in this village because local staple food is still preserved in order to survive.

The observations have shown that the people have made efforts to conserve biodiversity, especially local food. Kairatu Barat community is the one of societies which is found. Perhaps, there are still many other villagers who have sought to preserve undiscovered local food. Hopefully, it can be a step that inspires many people in preserving and utilizing our biodiversity of local food.

Local staple food production in West Seram Regency is still very abundant. The contribution of production from 11 sub-districts that exist provides a good contribution for the agricultural conditions of SBB. The production of local staple food of West Seram community can be seen in the following table.

Table 2 – Harvest Area and Local Staple Food Production in West Seram Regency

No	District	Local Staple Food							
		Sago		Cassava		Sweet Potato		Banana	
		Harvest Area (Ha)	Production (Ton)						
1	Huamual Belakang	12	3	1.594	28.692	100	1.100	194	1.940
2	Kepulauan Manipa	23	2	1.796	32.328	75	825	121	1.209
3	West Seram	230	42	1.364	25.916	68	748	395	3.947
4	Huamual	53	12	1.375	24.705	123	1.476	385	3.847
5	Kairatu	8	12	549	10.431	105	1.260	366	3.659
6	Kairatu Barat	10	6	427	7.686	100	1.200	317	3.167
7	Inamosol	12	8	560	10.080	97	1.067	312	3.119
8	Amalatu	5	3	425	7.225	100	1.100	421	4.208
9	Elpaputih	5	2	507	9.126	75	900	399	3.990
10	Taniwel	68	8	915	16.470	100	1.100	650	6.500
11	Taniwel Barat	65	3	697	12.564	100	1.100	352	3.517
	Total	491	101	10.209	185.250	1.652	11.876	3.912	39.103

Source: BPS (2016).

Based on the data of harvest area and production in West Seram Regency above, it can determine the potential base (LQ) of superior commodity in that area. A well-developed commodity will have a significant effect on economic growth which will ultimately increase the regional income optimally.

Table 3 – Classification of LQ Value of Local Staple Food Production in Kairatu Barat

No	Local Staple Food	LQ	Classification
1	Sago	1,31	Basis
2	Cassava	0,91	Non-Basis
3	Sweet Potato	2,25	Basis
4	Banana	1,00	Equal

Source: Secondary Data, Processed (2018).

Based on Table 3 above, the basis of local staple food commodity are Sago, Sweet Potato, and Banana, whereas for non-basis is Cassava. The number of commodities that are the basis in Kairatu Barat is very likely to be increased and created as a business opportunity. This is certainly a way to pioneer the local food business by utilizing those local food productions.

Local staple food, which is still consumed by the people, is very potential to be developed as a food business center, especially for tubers. If the production of these tubers is developed and marketed, it will greatly prosper the community to increase their income. It can be seen in Table 4 below.

Table 4 – Revenue Projection Based on the Average of Local Staple Food Production of Kairatu Barat Community

No	Local Staple Food	Average Number of Production/Year		Price (Rp)	Average Revenue/Year (Rp)
		Kg	Ton		
1	Sago	1.270	1,270	1.000	200.526
2	Cassava	1.925	1,925	10.000	15.918.269
3	Sweet Potato	517	0,517	10.000	4.126.923
4	Banana	390	0,390	12.000	3.148.846

Source: Data Primary (2018).

Based on the data in Table 4 above, it is seen that the production and revenue of the local staple food of each respondents, the highest is Cassava as much as 1.925 kg or 1,9 tons with an annual average income of Rp 15.918.269,-. This revenue is a calculation between production and price. The staple food is not marketed through intermediaries, people market their production results directly to the market so that they will get more profits. The lowest food revenue is sago, because people have rarely produced it. Besides, the availability of water is also a problem in producing sago.

Food is a primary need for human life. Food is the one of primary needs that is needed every day by the body in a certain amount as a source of energy and nutrients (Saputri et al, 2016). Food is a source of energy in performing life activities. To support these activities must be supported by good patterns of consumption as well. A good pattern of consumption can be seen from the diversity of food consumed. The patterns of local staple food consumption of Kairatu Barat community can be seen in Table 5 below.

Table 5 – Household Distribution Based on the Pattern of Staple Food Consumption

No	Pattern of Staple Food Consumption	n=105 (Household)	F (%)
1.	Rice	6	5.7
2.	Rice and Sago	15	11.4
3.	Rice and Tubers	4	3.8
4.	Rice, Sago, and Tubers	33	34.3
5.	Rice, Sago, Tubers, and Banana	47	44.8
	Total	105	100

Source: Primary Data (2018).

The pattern of consumption of rice-sago-tubers-banana is more popular (44.8%), rice-sago-tubers (34,3%), rice and sago (11.4%), rice (5.7%) and the most unpopular were rice-tubers (3.8%).

The effort of realizing food security and reducing the dependence of the community on rice is also demonstrated by the people of West Insana Sub district. It is seen from the staple food consumption pattern of the community. According to the community, the pattern of consumption of rice-corn-cassava is more popular (52%), followed by the consumption pattern of corn-cassava (30%), corn-rice (14%) and rice pattern favored only by 4% (Satmalawati and Marsianus, 2016).

The diversity of food consumption is a combination of foods that are eaten by human as a source of energy that provides strengths. Kairatu Barat people do not only consume one type of food as the main food, but still use local food as the main food. Local food ingredients

have already been consumed by people now has even become part of a philosophy of living Maluku person i.e. sago and other local food like kasbi (cassava), patatas (sweet potato), and bananas. Although the current position of the local foodstuffs still regarded inferior.

There are some people who think that their life will be not completed if they do not eat *papeda*. This thinking applies for some parents. In case of children, there are also some children who are taught to eat *papeda*, yet, in other hand, there is also a habit of eating rice from the childhood. It is interesting to know what factors that becomes consideration of the respondents in choosing staple foodstuffs. The ease factor for obtaining staple food is the main thing that becomes the consideration of society. For example, in getting staple food i.e. rice is a very easy. People can buy this staple food at the nearest kiosks. In addition, there are government programs related to *raskin* that keep people from consuming rice as the main staple food. Meanwhile, there are some people that have rarely cultivate other foodstuffs i.e. sago, cassava, and sweet potatoes due to several factors. One of them is the availability of water. But this does not inhibit public in consuming sago. Sago can be bought in the market or from traders who sell in their area. For cassava and sweet potatoes, there are some people who consume them from cultivation, and also get it from buying. It means that in choosing staple food, people still won't forget the local food that will be used as their staple food.

The diversity of the basic food consumption pattern also arises because almost all rural households have an available land for gardening. This allows people to plant their land with the main source of food crops such as sweet potato, cassava, banana, corn. They can start from planting stage to harvest stage easily. Field observations found that people generally made gardens around their houses.

One of the parameters that can be used to assess the level of food diversity is the contribution of energy to the Desirable Dietary Pattern (DDP) or the percentage of the actual energy of the staple food. The contribution of the community's basic food energy can be seen in the table below:

Table 6 – Average Energy Contribution of Individuals per Household

No.	Staple Food Groups	Average Energy Individual/Household (kcal)	Contribution (%)
1.	Grains	1.145	57.25
2.	Tubers	94	4.70
3.	Sago	52	2.60
	Total	1.291	63.95

Source: Primary Data, Processed (2018).

The average energy contribution of individual households in the grain food group is 1,145 kcal, the tuber group of food is 146 kcal. The amount of contribution of staple food energy of Kairatu Barat is above ideal contribution. Based on *Harmonisasi Pola Pangan Harapan Badan Ketahanan Pangan* in 2015, recommended dietary allowances (RDA) in consumption level of grain group is 1075 kcal and tubers are 129 kcal. This shows that the consumption pattern of society is very good. It is seen from contribution of energy of each individual per household.

Based on the table, it can be seen that the people of Kairatu Barat have achieved food security that is seen in staple food consumption or energy donation food. Food security is achieved if the basic staple of the community is sufficient in both quantity and quality, distributed at affordable prices, and safe for every citizen to support their daily activities. The community is not dependent on a single food commodity, but more on the food they have in their household such as sago, cassava, sweet potato. Environmental conditions that support the diversity of people's food are used to produce diverse commodities.

In line with UU No. 18 of 2012 on Food, the sub district of Kairatu Barat has reached a condition where the basic staple of society has been fulfilled. This is reflected in the availability of adequate basic foods both quantity and quality that are safe, diverse, nutritious, equitable, and affordable for the community, and not contrary to the religion and culture of local communities.

Factors that allegedly affect the food security (variable Y) is done by multiple regression test. In this study, the contribution of energy to the Food Pattern of Hope (FPH) is used as the dependent variable (Y). The independent factors (X) in the study used several variables that were suspected to be influential and included in multiple regression tests including eating culture, household food distribution, nutrition knowledge, preference, income, number of family members, education and employment.

The analysis is conducted on the factors that affect local food stability. These factors are socio-cultural factors and economic factors. The validity of multiple regression equations is used two ways that are using the F test (simultaneously) and Test t (partially). In the following table, we can see:

Table 7 – Anova Table

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1678.329	9	209.791	27.733	0.000
Residual	726.204	96	7.565		
Total	2404.533	104			

Source: Primary Data, Processed (2018).

In the table above, we can see that the 95% confidence level up to 99% of all variables simultaneously have real effect. The estimation results show that the variables of eating culture, the division of family meal, nutritional knowledge, preference, income, the number of family members, education and occupation affect the local staple food security. This is shown by the result of F test obtained F count (27,733), bigger than F table (1, 98). Thus there is a significant influence simultaneously (together) between the eating culture, the division of family meal, nutritional knowledge, preference, food diversity, income, the number of family members, education and occupation on the pattern of food consumption.

Partially, these variables have a real effect and there is no significant effect. Based on the t test there are 4 out of 8 variables included in the estimation, assuming other variables, *ceteris paribus* shows the real effect of eating culture, division of family meal, nutritional knowledge, and occupation. While the preference, income, the number of family members and occupation did not significantly affect the level of error 10%. This can be seen in the following table:

Table 8 – Regression Analysis Results Factors Affecting Patterns

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	$\beta$	Std. Error	Beta		
(Constant)	30.477	2.290		13.311	.000
Eating Culture	.357	.112	.289	3.178	.002
Division of Family Meal	.582	.181	.297	3.214	.002
Nutritional Knowledge	.539	.103	.306	5.247	.000
Preference	.258	.167	.253	1.544	.126
Income	.081	.223	.021	.362	.718
The Number of Family Member	1.599	.851	.310	1.880	.063
Education	.105	.122	.049	.866	.389
Occupation	.539	.210	.154	2.567	.012

Dependent Variables: Food Consumption Pattern (FCP Score)

$R^2$ : 0.835

$F_{count}$ : 27.733

$F_{table}$  = 1.98

Significance to the degree of trust 5% ( $\alpha$  = 5%)

Source: Primary Data, Processed (2018).

The results of regression indicate that the value of determination coefficient or  $R^2$  is 0.835. This means that the estimation of the independent variable (X) contained in the regression model is able to explain the dependent variable (Y) of 83.5%, while the rest is explained by other independent variables which are not contained in the model.

The regression results value of  $F_{\text{calculate}}$  (27,733) is obtained greater than the  $F_{\text{table}}$  (1.98) at the level of  $\alpha$  5%, then  $H_0$  rejected and received  $H_1$ . That is, all independent variables (X) together have a significant effect on the dependent variable (Y) so that the model can be accepted as a good and feasible estimator.

The model used in this research is as follows:

$$Y = 30.477 + 0.357X_1 + 0.582X_2 + 0.539X_3 + 0.258X_4 + 0.081X_5 + 1.599X_6 + 0.105X_7 + 0.539X_8$$

Where:

- Y: Contribution of DDP for Energy (%);
- $X_1$ : Culture of eating (Score);
- $X_2$ : Food Division in Household (Score);
- $X_3$ : Nutritional knowledge (Score);
- $X_4$ : Preferences (Score);
- $X_5$ : Income (Score);
- $X_6$ : Amount of family members (Person);
- $X_7$ : Education (Score);
- $X_8$ : Job (Score).

*The Influence of Eating Culture on Food Security.* According to Mapadin (2006), cultural factors play a major role in the consumption of staple food of various households. The result of regression analysis shows significant influence (Sig 0.002 <0.05) between eating culture and local food staple. The eating culture is a major factor in the pattern of local staple food consumption. Eating habit, which is a hereditary custom, is a habit that causes people to still consume local staple food.

*The Influence of Food Division Household on Food Security.* The result of regression analysis shows that there is a significant influence (Sig 0.002 <0.05) between the division of food in the family with the diversity of the local staple food of society.

*The Influence of Nutritional Knowledge on Food Security.* The result of regression analysis shows that there is significant influence (Sig 0.000 <0.05) between nutritional knowledge with the diversity of local food staple.

*The Influence of Preferences on Food Security.* The result of regression analysis shows that there is no significant effect (Sig 0.126 > 0.05) between preference with the diversity of local staple food of society.

*The Influence of Income on Food Security.* The result of regression analysis shows that there is no significant effect (Sig 0.718 > 0.05) between income with the diversity of local staple food. This is because the local staple food of the society is available every day in their gardens, thus the income earned from their work does not significantly affect the contribution of Desirable Dietary Pattern (DDP) to the food energy of the community.

*The Influence of Amount of Family Members on Food Security.* The result of regression analysis shows that there is no significant effect (Sig 0.063 > 0.05) between the amount family members and the diversity of local staple foods. This is because the local staple food consumption depends on the tastes and portions of each family member. So many or few members in the household have no significant effect on the contribution of DDP to energy.

*The Influence of Education on Food Security.* The result of regression analysis of household-head education variable shows the significance value is equal to 0.389 > 0.05. Thus, there is no influence of the education of the head of family to household food security level of the society in Kairatu Barat. It shows that the higher level of household-head is not followed by good food security condition. The result of this study same with the result of research conducted by (Tanziha and Eka, 2009) which states there is no significant relationship between the education of household heads with household food security.

*The Influence of Job on Food Security.* The result of regression analysis work variable is 0,012. The significance value of job variables is 0.018 < 0.05. This means that the work variable partially affect on food security. The most dominant occupation in Kairatu Barat is agriculture sector, which is farming, thus, it will affect the availability of abundant staple food.

The result of this study agrees with the result of research conducted by (Lahagu et al, 2018) which states that there is significant relationship between job variables with household food security.

Partially, the socio-cultural factors that influence food security are eating culture, division of family meal, nutrition knowledge, while the economic factor that affect local food staple food is only the job of household head. The result of multiple regression tests, as attached, is there are four variables that have significant effect on food security. Meanwhile, the other four variables did not significantly affect the local staple food security of the society.

## CONCLUSION

As seen from the LQ value, local staple food commodity which can be categorized as base are Sago, Sweet Potato and Banana, while Cassava commodity is categorized as non-base. The number of commodities that are the base in Kairatu Barat is very likely to be increased and created more as a business opportunity. This is certainly a way to pioneer the local food business by utilizing the local food production. Local staple food, which is still consumed by the community, is very potential to be developed as a food business center, especially for tubers. If the production of these tubers is developed and marketed more, it will give a great benefit to the community for the increase in their income.

The contribution of the average energy of individual households in each group of grains, tubers and sago is 1,145 kcal, 94 kcal and 29 kcal. The amount of contribution of staple food energy in Kairatu Barat is above ideal contribution. This shows that the consumption pattern of society is very good, which can be seen from the contribution of energy of each individual per household. Based on the contribution of staple food energy of Kairatu Barat community, it can be said that people in Kairatu Barat have achieved food security. Food security is achieved if adequate community food in sufficient quantity and quality are distributed at affordable and safe prices for every citizen to support their daily activities. The community is not dependent on a single food commodity, but more on the food they have in their household such as sago, cassava, sweet potato. Environmental conditions that support the diversity of people's food are used to produce diverse commodities.

Partially, the socio-cultural factors that influence food security are eating culture, division of family meal, nutrition knowledge, while the economic factor that influences food security of staple food is only the job of household head.

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## **FACTORS AFFECTING BRAND LOYALTY: A CONSUMER SURVEY AT STARBUCKS COFFEE CAFE IN SETIABUDI BUILDING, SOUTH JAKARTA**

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### **ABSTRACT**

This research aims to analyze the influence of Brand Image and Brand on Brand Loyalty at Starbucks Coffee Cafe (Setiabudi Building, South Jakarta). The method used is the Survey method with the use of the questionnaire/questionnaires. Analysis Tool that is used Multiple Linear Regression. Research results show that Brand Loyalty at Starbucks Coffee Cafe influenced by Brand Image with negative results and Brand with positive results.

### **KEY WORDS**

Brand image, brand, brand loyalty, cafe.

In the last few years in various areas of business growth continues to increase, especially business Cafe. Many explored various brand Cafe, for example Unnormal, Lawson, and Strabuck as a response to increasing community lifestyle that requires the hanging around for both socialization and business. It caused the increasingly tight competition. The companies have various strategies to win the competition. One of the strategy is to improve the quality of the product and the quality of service in the best possible way to their customers. The strategy is done so that the company can create a *brand image* and *Brand Trust* is good in the end will have an impact on *Brand Loyalty*

The company should build a strong brand image on a sustainable basis to maintain its market share because anyone can easily create a variety of products with almost the same quality. *Brand Image* is important for the survival of the company and has become the responsibility of the company to continue to manage, notice, maintain and improve the image of the good (Sugiharti, 2012).

So also with Starbucks Corporation to have a *brand image* and *Brand Trust* that strong, Starbucks Corporation has successfully create their brand as a brand that is recognized in the world. Based on the stages of the registered, Starbucks received various awards in various categories among others is the first stage of the *Top Brand For Teens Index* in 2018, the fifth stage of the *World's Most Admired Companies* by 2014, and the second stage of *Social Brands Top 100* 2012. For more details can be seen In Table 1, 2, 3 below.

In view of the above phenomenon indicates that the success of Starbucks built by maintaining *Brand Loyalty* continuously and maintain the quality of the extraordinary in terms of products and services in each *cafénya*. He has been able to seize it for many years so that with the image of the good and strong, with easy he gain confidence brand from its consumers. If a *brand* is able to meet the consumer expectations and provide quality guarantee on every usage, and the company has a good reputation, that the consumer will be more confident with the choice and consumers will have a strong confidence toward *brand* (Edris, 2009).

To get a strong confidence from consumers, then formed by *Brand Loyalty*. *Brand Loyalty* is a condition where consumers have a positive attitude toward the *brand*, has a commitment to the *brand*, and have a tendency to purchase in future (Tjahyadi, 2006).

The results of research and Nopiska Rizan (2011) stated that the *brand image* and *brand trust* in the same significant effect toward *brand loyalty*. While the results of research done by Tjahjaningsih and Yuliani (2009) that *brand image* does not have the direct effect of *brand loyalty*.

The purpose of this research is to know the influence of *Brand Image* and *Brand Trust* toward the *Brand Loyalty Starbucks Coffee Cafe, Setiabudi Building, South Jakarta*.

Table 1 – Top Brand for Teens Index 2018

CAFE/ Place Hanging Around		
Registered	TBI	TOP
The international Starbucks chain	18.5%	TOP
Lawson	18.2%	TOP
Upnormal Cafe	11.6%	TOP
Circle of K	6.6%	
Indomaret Point	6.2%	

Source: [www.topbrand-award.com](http://www.topbrand-award.com)

Table 2 – The world's Most Admired Companies of the year 2014

	Name	The Logo	Last Ranking
1.	Apple		1
2.	Amazon.com		3
3.	Google		2
4.	Berkshire Hathaway		8
5.	Starbucks		5
6.	Coca Cola		4
7.	FedEx		10
8.	Southwest Airlines		7
9.	General Electric		11
10.	American Express		13
11.	Costco		23
12.	Nike		18
13.	BMW		14
14.	P&G		15
15.	IBM		6
16.	Nordstrom		16
17.	Singapore Airlines		31
18.	Johnson & Johnson		24
19.	Whole Food Market		19

Source: [www rankingthebrands.com](http://www rankingthebrands.com)

Table 3 – Social Brands Top 100, 2012

	Name	The Logo
1.	Innocent Drinks	
2.	Starbucks	
3.	Giffgaff	
4.	Cancer Research UK	
5.	British Red Cross	
6.	ARKive	
7.	Asos.com	
8.	Confectionery maker Cadburysliding	
9.	The Met Office	
10.	The Ellen DeGeneres Show	-
11.	HTC	
12.	Guinness World Records	
13.	Lurpak	
14.	Red Bull	
15.	Xbox	
16.	Manchester United Football Club	
17.	WWF	
18.	DoSomething.org	
19.	Cravendale	
20.	Help for Heroes	

Source: [www.rankingthebrands.com](http://www.rankingthebrands.com)

*The study of the library and the development of the hypothesis.* Brand Image is an important thing for the consumer. It is because at the time of the consumers remember a registered then will realize positive or negative impacts of a brand. According to the opinion of Shimp (2003) that brand image is something that appears in the minds of consumers when they remember a brand. Then According To Tjiptono (2015:49) "brand image is the description of the association and consumer confidence to certain brand".

Brand Trust according to Prasaranphanich (2007: 23) is when consumers believe a company, they prefer to purchase repeatedly and share personal information is valuable for the company. While according to (Lau & Lee, 1999, p. 344) in (Rizan, Saidani, & Sari 2012).

Customer trust in the brand (brand trust) is defined as a customer desire to rely on a brand with the risks faced by the expectations of the brand will cause a positive result.

According to Ariestonandri (2006: 63) it was basically nationality brand loyalty as an indication of how loyal customers using the brand that offered. While according to Riana (2008:187) customer loyalty can be based on actual purchase behavior product that is associated with the proportion of purchase. Based from the view and brand loyalty is defined as a customer desire to do re-purchase.

The results of research done by Tjahjaningsih and Yuliani (2009) that brand image does not have the direct effect of brand loyalty.

Sibagariang Research & Nursanti (2010) "The Influence of Brand Image and Brand Trust toward the brand loyalty on PT Bank Sinarmas" the result shows that the variables brand image and brand trust influential simultaneously against the brand loyalty of PT Bank Sinarmas.

Research & Nopiska Rizan (2011) the influence of brand image and trust the brand against brand loyalty: Lux Customer Survey in Liquid Carrefour MT Haryono the result shows that the variables brand image and brand trust has positive and significant impact on the brand loyalty.

Research Rizan, Saidani, & Sari (2012) "the influence of brand image and brand trust toward the brand Loyalty Bottle Teh Sosro", shows that the brand image and brand trust has a positive and significant effect of brand loyalty.

Laroche research (2012) explore whether brand community based on social media (special type of registered online community) have positive effects on the elements of the main community and the practice of the creation of the value in Indonesia. The results of the study showed that the brand belief have full mediation role in converting the practice of making the value to the brand loyalty.

Saaed (2013) test the influence of brand image brand loyalty and moderate the role of customer satisfaction in it. The research results show the impact of marketing communication and consumer knowledge about brand loyalty. The organization must pay special attention to the formation of brand image, achieve customer satisfaction and then through this they also become successful in reaching the brand loyalty.

Bastian (2014) Analysis of the influence of brand image (Brand Image) and Trust Brand (Brand Trust) to brand loyalty (Brand Loyalty) ADES PT. Ades Alfindo Putra Faithful the result shows that the variables brand image and brand trust affect brand loyalty.

Lee (2015) examine about the effect of using the Blackberry users to customer satisfaction, trust and brand loyalty. Findings from this research assert that the simplicity and interactivity is two significant determinants of mobile phone functionality and simplicity of the interface is important prerequisites for positive interactivity and usability experience.) We also show that the utility is the defining brand loyalty, summoning the influence of not directly through the mediator of customer satisfaction and trust.

*Hypothesis development:*

- H1: Brand image affect brand loyalty;
- H2: Brand trust affected brand loyalty.

## **METHODS OF RESEARCH**

Researchers obtain data directly with the spread of the questionnaire to consumers Starbucks Coffee Cafe, Setiabudi Building, South Jakarta who had been selected as respondents.

The population of this research is the consumers of Starbucks Coffee Cafe, Setiabudi Building, South Jakarta with samples of 60 respondents.

Validity test is used to test the validity or accuracy of the measuring cup, to verify whether the information as expected.

From the table of variables Brand Image, the variables Brand Trust, and variables Brand Loyalty can be explained that all statements contained in the variables stated valid.

Reliability test is intended to show the nature of the appliance to measure whether enough accurate, stable or consistent in measuring what would be measured. Brand Image, Brand Trust, And Brand Loyalty results of Cronbach Alpha coefficient greater than 60% (0.60) means that all statements contained in each variable does not exist that are not reliable and can be used for further analysis.

$$Y = \alpha + \beta_1(BRANDIMAGE) + \beta_2(BRANDTRUST) + \epsilon$$

Where: Y = Brand Loyalty; B1 = Regression Coefficient Brand Image; B2 = Regression Coefficient Brand Trust; X1 = Variables Brand Image; X2 = Variables Brand Trust; E = Standard error.

Test statistics t used to know the influence of each free variable namely brand image and Brand trust against the variables bound namely brand loyalty. With this t test can be known which of the free variable has the influence of most of the variables are bound.

The F test is used to test whether the model used to explain the influence of the independent variables (X1: Brand Image and X2: Brand Trust) to the dependent variables (Y: Brand Loyalty) accepted or not.

Basically the determination coefficient (R2) is used to measure how far the ability model (brand image and Brand Trust) in explaining the variation of the dependent variables (Brand Loyalty). The determination coefficient value is between zero (0) and one (1). The value of R2 that bigger means the ability of independent variables in explaining the dependent variations, the better. The value of nearly one means independent variables provide almost all the information needed to predict the variation of the dependent variables.

## RESULTS AND DISCUSSION

*Multiple Regression Analysis.* In this research used double regression with the aim to know is whether or not the influence of the free variables of the variables are bound together.

Table 4 – Multiple Regression Measurement between Brand Image and Brand Trust Toward the Brand Loyalty

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	STD. Error	Beta		
1	(Constant)	-2.100	.825		-2.546	.014
	brandimage	-.176	.067	-.393	-2.605	.012
	brandtrust		.202 1.812	1.355	8.985	.000

Dependent Variables: brandloyalty  
Source: Data processing result SPSS 20

From the results when written in the form of common regression is as follows:

$$Y = -2.100 - 0.176(BRANDIMAGE) + 1.812(BRANDTRUST) + \epsilon$$

Free variable regression coefficient X1 amounting - 0,176 with the level of any contributed 0.012 smaller than from the alpha level 0.05, which has the meaning of free variable brand image influence significantly to the bound variable brand loyalty. The value of variable regression coefficient of negative brand image shows that the influence of the brand image of brand loyalty is not the direction, means when brand image low, then will increase brand loyalty or when the brand image high then will reduce the brand loyalty;

Free variable regression coefficient X2 amounting 1.812 with any 0,000 level smaller than from the alpha level 0.05, which has the meaning of free variable brand trust significant effect against the variables bound brand loyalty. The value of variable regression coefficient brand trust that positive indicates that the influence of brand trust toward the brand loyalty clockwise means when brand image low, then will reduce the brand loyalty or when the brand image high then will increase brand loyalty.

From both the free variables (X1= brand image, X2= brand trust) that have the greatest effects/dominant against brand loyalty is brand trust with the value of Beta 1.812.

*F Test results.* F tests the test is used to test the model used to explain the influence of (X1= brand image and X2= brand trust) against the variables bound (Y= brand loyalty). The Test Results Table F is served under this

Table 5 – F Test Results

ANOVA						
	Model	Sum of Squares	df (disk free)	Mean Square	F	Sig.
1	Regression	743.816	2	371.908	514.939	,000 <sup>b</sup>
	Residual	41.168	57	.722		
	Total	784.983	59			
a. Dependent Variables: brandloyalty						
Predictors: (Constant), brandtrust, brandimage						
Source: Data processing result SPSS 20						

Based on the results of the ANOVA test or F test on the following table obtained F count of 514.939 using the level of confidence 95%, alpha ( $\alpha$ ) = 5 percent degree of freedom (*degree of freedom*) quantifiers of k-1 or 3-1 = 2 and the degree of freedom both operate (n - k) or 60 - 3 = 57 (n is the amount of data and k is the number of independent variables and dependent service), then obtained the results of F the table of 2.18. Can be known F count of 514.939 greater than F the table of 2.18. This shows that the Ho was rejected and Ha accepted. This means that the model used to explain the influence of Brand Image and Brand Trust toward the Brand Loyalty accepted.

The determination coefficient R<sup>2</sup> is used to measure the ability of the models in the describe the variation of the dependent variables, the value of the determination coefficient as follows:

Table 6 – The results of the determination Coefficient

The Model Summary<sup>b</sup>

The Model	R	R Square	It said the R Square	Std. The error of the Estimate
1	.973 <sup>a</sup>	.948	.946	They have

A. Predictors: (Constant), brandtrust, brandimage

B. Dependent Variables: brandloyalty

Source: Data processing result SPSS 20.

Based on the following table known R of 0,973 near 1 means that the brand image and brand trust strong effect toward brand loyalty, on it said the R Square of 0,948 or 94,8% factors that affect brand loyalty can be explained by factors brand image and brand trust, while at 5.2 percent is another factor that is not examined.

In this discussion will be analyzed the influence of each variable namely Brand Image and Brand Trust toward the brand loyalty.

The results of this research shows that the Brand Loyalty Starbucks Coffee Cafe, Setiabudi Building, South Jakarta influenced by the brand image and the results of his negative. This means that the higher the brand image to encourage people to reduce the Brand Loyalty. This is less fair because should Brand Image is high will encourage customers to have a Brand Loyalty that high. This can occur is possible because of the use of respondents less many. The results of this research is slightly different with the results of research & Nopiska Rizan (2011) shows that the brand image variables and trust the brand has positive and significant impact on the brand loyalty while the results of this research Brand Image have pengrus but negative. This research is the exact opposite of conjoint with the results of research done by Tjahjaningsih and Yuliani (2009) that brand image does not have the direct effect of brand loyalty.

Brand Loyalty Starbucks Coffee Cafe, Setiabudi Building, South Jakarta influenced by Brand Trust and positive result. This means that the higher the Brand Trust encouraging people to increase brand loyalty. This is fair because consumers who have brand trust that the higher then will be encouraged to have a brand loyalty that stronger. The results of this

research in line with the results of research Bastian (2014) that (brand image Brand Image) and Trust Brand (Brand Trust) affect brand loyalty (Brand Loyalty).

## CONCLUSION

The results of research on the influence of brand image and brand trust toward the brand loyalty Starbucks Coffee Cafe, Setiabudi Building, South Jakarta can be summarized as follows:

- Brand image negative effect toward brand loyalty Starbucks Coffee Cafe, Setiabudi Building, South Jakarta;
- Brand trust positive effect toward brand loyalty Starbucks Coffee Cafe, Setiabudi Building, South Jakarta.

## RECOMMENDATIONS

In this research the author provide recommendations that might be useful for Starbucks Coffee Cafe or for further research that is as follows.

To Starbucks:

- Related to the brand image recommended more increase in the case of a solution for customer expectations, this is due to the variable brand image on the dimensions;
- Related to the brand trust recommended more confidence to customers in terms of providing services more than expected consumers and does not disappoint in terms of quality and service, this variables especially on the dimensions of benevolence has lowest value compared to other indicators.

For Further Research:

- It is expected that can examine with more variables in order to obtain a better result;
- It is recommended to use the number of samples more so that the result more optimal.

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## **ANALYSIS OF DIFFERENT PERCEPTIONS ON REFUND, RESCHEDULE, AND ONLINE CHECK-IN SERVICES OF EFRU TOUR & TRAVEL AND TRAVELOKA**

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### **ABSTRACT**

Recently, the condition of tour and travel industry is quiet promising. The companies currently compete not only about promotion, pricing, and services but also about providing after-sales services that are required by the customers. There were the same after-sales services owned by EFRU Tour & Travel and Traveloka, namely refund, reschedule, and online check-in services. The problem of this research was that both companies had the same after-sales service and the regulation of the services was also determined by the airline company, but there was a possibility that customer's perception of both companies might differ in response to this. Therefore, this research aimed to examine whether there were different perceptions in refund, reschedule, and online check-in services between EFRU Tour & Travel and Traveloka. The data analysis of this research applied Manova method. The findings of this research showed that there was different perception on refund service between EFRU Tour & Travel and Traveloka. It indicated that there was no different perception on reschedule and online check-in services between EFRU Tour & Travel and Traveloka.

### **KEY WORDS**

Service, after-sales service, perception, refund, reschedule, online check-in.

Currently, Indonesia's tourism sector is one of the important economic sectors in Indonesia. According to the available data on the website of Indonesia Investment, in 2016, Indonesia's tourism sector contributed about 11% of total Gross Domestic Product. According to the same source, by 2017, the contribution of the tourism sector will grow to 13% and will continue to grow from year to year.

By 2015, based on the data from the Central Bureau of Statistics, the number of foreign tourists coming to Indonesia was 9.7 million or increased about 300,000 from the previous year. Since 2007, the number of foreign tourists coming to Indonesia has increased steadily. The natural resources and diverse cultures are the important component of tourism in Indonesia. Based on data from the Central Bureau of Statistics, some of the most visited provinces are Bali, DKI Jakarta, Special Region of Yogyakarta, East Java, West Java, North Sumatra, Lampung, South Sulawesi, South Sumatra, Banten, and West Sumatra.

By 2019, the Indonesian government wanted to increase the revenue two-fold from the tourism sector. The increase is derived from the two-fold increase of foreign tourists or approximately 20 million tourists. Therefore, the government is currently supporting the progress of tourism in Indonesia. The support is realized in the improvement of Indonesia's infrastructure (including technology and communications infrastructure), access (road), cleanliness of tourism objects, and also the enhancement of online promotion that can be seen by the foreign tourists to get to know Indonesia better. In addition, the government also revised the policy of free access visa which has set in 2015 to citizens from 45 countries.

With the improvements in some parts of Indonesia's tourism, not only foreign tourists, local tourists will also be interested to do travelling. The increasing number of tourists will create various business opportunities. The increasing number of tourists will also increase the demand for lodging so that it can attract local and foreign investors to invest in additional lodging (Pleanggra and Yusuf, 2012). In addition, the need for places or tourist rides will also

increase that will cause the foreign investors to invest in Indonesia. The companies engaged in the field of tour and travel also take advantages to this matter. According to Saleh (2013), in his article available on the website [industry.bisnis.com](http://industry.bisnis.com), in 2013 there were about 4000 companies engaged in this field and the numbers tended to rise and fall from time to time.

Industrial condition in the field of tour and travel is currently quite promising. This is because the current number of tourists is increasing, both foreign and local tourists. Based on data from the Central Bureau of Statistics, the number of tourists coming to Indonesia has increased cumulatively from January to February 2017 of 16.91%.

Currently, companies engaged in this field compete for get customers. The companies compete in terms of price, promotion, and services they provide. This creates a newly established company that cannot do the same strategy as the previous companies. Nowadays, the companies more focus on the provided services because all the major companies do the pricing strategy. The provided services including the search process, payment, and even the companies recently provide after-sales service.

ERFE Tour & Travel is a newly established company so it still needs to set a strategy to get more customers in the future. ERFE Tour & Travel is a provider of traveling services such as airfare, hotel (domestic and overseas), tour (domestic and overseas), and handling the necessary letters/ documents for travelling. By 2017, the contribution of each service provided by the company was 40% for airfare, 40% for hotel, 15% for tour, and 5% for handling the letters/ documents. Currently the company has implemented an online system (not necessarily face-to-face/ meet) to serve their customers. The problem faced the company recently is that the company needs to focus on how the application of after-sales service is needed by the customers. The followings are some after-sales services provided by ERFE Tour & Travel as well as the competing companies that are engaged in the same field of business.

Table 1 – Companies' After-Sales Services

Type of Service	ERFE Tour & Travel	Traveloka
Refund	In accordance with the provisions of the airline and government	In accordance with the provisions of the airline and government
Reschedule	In accordance with the provisions of the airline and government	In accordance with the provisions of the airline and government
Online Check-In	In accordance with the provisions of the airline (mostly 24 hours before departure) and can be represented by the travel party	In accordance with the provisions of the airline (mostly 24 hours before departure) and is made the customers themselves
Point	No	Traveloka Point
Price Alert	No	Price Alert
Travelers Picker	No	Keeping the details of passengers who have ever made booking
Feedback	Positives: <ul style="list-style-type: none"> <li>• Fast service</li> <li>• Purchase is served 24 hours non-stop</li> <li>• Competitive price</li> </ul> Negatives: <ul style="list-style-type: none"> <li>• Lack of promo</li> <li>• Lack number of hotels</li> <li>• Long search process for tickets/ hotels</li> </ul>	Positives: <ul style="list-style-type: none"> <li>• Fast system service</li> <li>• Easy and practical application</li> <li>• Great promotion</li> </ul> Negatives <ul style="list-style-type: none"> <li>• Refund service is not in agreement</li> <li>• Sometimes, the payments experience troubles</li> <li>• The process for refund</li> </ul>
Newsletter and Promo Info	No	Yes
Push Notification	No	Yes

Source: the processed data (2018).

Based on Table 1, there are the same after-sales services provided by ERFE Tour & Travel and Traveloka. The same after-sales services are refund service, reschedule service,

and online check-in service. From the three after-sales services, the existing provisions are determined not from the company of service provider but by the respective airlines. Therefore, the three after-sales services provided to customers from each company are considered as the same because the existing provisions are made by the airline company rather than the company of service provider.

This research will focus more on the different perceptions on after-sales services consisting of refund service, reschedule service, and online check-in service. This research is conducted because the after-sales services from the two service provider companies have the same provision but it may have different customer's perceptions. Kotler & Keller (2009) mentioned that in marketing, perception is more important than reality because perception affects the actual behavior of the customers. By conducting this research, it is expected to improve knowledge for business owners of ERFE Tour & Travel about customer perceptions on after-sales services in the forms of refund, reschedule, and online check-in.

*Research Problems.* Based on the above background of the research, the formulation of the research problems are the following:

- Is there any different perception on refund service between ERFE Tour & Travel and Traveloka?
- Is there any different perception on reschedule service between ERFE Tour & Travel and Traveloka?
- Is there any different perception on online check-in service between ERFE Tour & Travel and Traveloka?

*Research Objectives.* Based on the formulation of the above problems, the research objectives are the following:

- To analyze different perception on refund service between ERFE Tour & Travel and Traveloka;
- To analyze different perception on reschedule service between ERFE Tour & Travel and Traveloka;
- To analyze different perception on online check-in service between ERFE Tour & Travel and Traveloka.

## **METHODS OF RESEARCH**

This study was a quantitative research. The type of this research was comparative research because the problem formulation in this research was comparative problem formulation which analyzed different perceptions on refund service, reschedule service and online check-in service between ERFE Tour & Travel and Traveloka. According Sugiyono (2014) the formulation of comparative problem is the formulation of a research problem that compares the existence of one or more variables in two or more different samples, or at different times.

*Population and Samples.* The population of ERFE Tour & Travel was around 1,500 people. On the website beritasatu.com, the number of Traveloka app downloaders ranged around 15 million users. The sampling technique used in this research was simple random sampling. According to Sugiyono (2014), simple random sampling is the sampling technique that is conducted randomly without any regard to strata of the population. The selection of the sample with the application of that method is carried out when the population members are considered as homogeneous. In this research, the populations that were going to be used were those who have used the services in the field of tour and travel respectively. In addition, it also included the customers who had ever used refund, reschedule, and online check-in services. According to Santoso (2017), the number of samples in a research applying Manova method should amount to 20 respondents per group. In this research, there were 2 groups that would be tested (ERFE Tour & Travel and Traveloka) so that the number of the samples was 40 respondents. The respondents that were going to be used in this research were 20 customers from ERFE Tour & Travel and 20 customers from Traveloka. After conducting several outlier tests, the number of the existing data was 20 customers from ERFE Tour & Travel and 11 customers from Traveloka.

*Data Analysis.* In this research, the analysis method for data obtained to draw the conclusions was Manova Analysis (Huberty and Olejnik, 2006). In this research, Manova was used to test the hypothesis of customer's different perception on refund service, reschedule service and online check-in service in ERFE Tour & Travel and Traveloka. According to Santoso (2017), the basic processes of Manova are:

- Testing the assumptions of Manova data;
- Testing the differences between the groups (The core of Manova);
- Interpreting the output as well as the result of validation process.

## RESULTS OF STUDY

Outlier test is used to distinguish the data that are significantly different from the other existing data (Aggarwal, 2015). The data are not considered to be outlier if the standardized value (Z) of the data is between -2.5 to +2.5 (Santoso, 2017). If there are any have a value exceeding the limit, then it can be considered that the data are outlier. Based on the outlier test results in this research, some of the results stated that some data were classified as outlier. Several outlier tests had been conducted for the data of this research. The following is the final results of the outlier test:

Table 2 – Outlier Test

Company	Z-refund	Z-reschedule	Z-online check-in
1	-1.77165	-0.97999	-1.52409
1	-1.01015	-1.66599	-0.89121
1	-1.01015	-0.97999	-0.89121
1	-0.24865	-0.29400	-0.25832
1	-0.24865	-0.29400	-0.25832
1	-0.24865	-0.29400	-0.25832
1	-0.24865	-0.29400	-0.25832
1	-0.24865	-0.29400	-0.25832
1	-0.24865	-0.29400	-0.25832
1	0.51285	-0.97999	-0.89121
1	0.51285	0.39200	-0.25832
1	0.51285	-0.29400	0.37457
1	0.51285	0.39200	0.37457
1	1.27435	1.76399	1.64034
1	2.03585	1.07799	1.64034
1	2.03585	1.76399	1.64034
1	2.03585	1.76399	1.64034
1	2.03585	1.76399	1.64034
1	2.03585	1.76399	1.64034
1	2.03585	1.76399	1.64034
1	2.03585	1.76399	1.64034
2	-1.01015	-0.97999	-0.89121
2	-1.01015	-0.97999	-0.89121
2	-1.01015	-0.97999	-0.89121
2	-1.01015	-0.97999	-0.89121
2	-1.01015	1.76399	-0.89121
2	-0.24865	-0.97999	0.37457
2	-0.24865	1.76399	1.64034
2	0.51285	-0.97999	-1.52409
2	0.51285	0.39200	0.37457
2	0.51285	1.07799	1.00745
2	0.51285	0.39200	1.64034

In this research, there were 40 respondents who had answered the questions of the questionnaire. From the 40 respondents, there were some data that had the standardized value (Z) exceeding the upper limit or is below the bottom limit. The data that exceeded the limit were 9 respondents so that current data that did not contain outlier amounted to 31 respondents. In the next test, the data that were going to be used were the data that did not contain outliers.

The Kaiser Meyer Olkin test is used to determine the adequacy of the data in the research. In this research, after conducting the outlier test there were some discarded data because they were outlier. Therefore, the amount of data that had been through the outlier test would be tested for its data adequacy. The following is the Kaiser Meyer Olkin test:

Table 3 – Kaiser Meyer Olkin Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.738
Bartlett's Test of Sphericity	Approx. Chi-Square	64.881
	df	3
	Sig.	.000

Based on the results of KMO test, it was found that the value was 0.738 which was more than 0.5 so it could be considered that the data had good criteria (Field, 2009). Therefore, the total data, after conducting the outlier test, was considered to be adequate or has good criteria and they could be used for further testing.

Normality test was performed to see if the data have been normally distributed. The data are considered to be normal if the significance rate of Kolmogorov-Smirnov is more than 0.05 and if they are less, it can be said that the data are not normally distributed. The following is the results of the normality test:

Table 4 – Normality Test

Normality Test	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Refund Average	.177	31	.014	.894	31	.005
Reschedule Average	.207	31	.002	.857	31	.001
Online Check-In Average	.200	31	.003	.859	31	.001

a. Lilliefors Significance Correction

From the obtained results, it was found that the data of this research did not meet the criteria to be normally distributed. This was because the significance value of each variable was less than 0.05. But in a multivariate research, performing a normality test is very complex. Therefore, it could be assumed that each dependent variable was normally distributed or it was close to normal (Santoso, 2017). In addition, in this research, all the outlier data had been omitted.

Box's M test was used to find out the similarity of variance-covariance matrices for the dependent variables (Mendenhall et al., 2012). The following is the results of Box's M test in this research:

Table 5 – Box's M Test

Box's Test of Equality of Covariance Matrices <sup>a</sup>	
Box's M	33.533
F	4.861
df1	6
df2	2740.573
Sig.	.000

The analysis of the research hypotheses is:

- $H_0$ : The three dependent variables (refund service, reschedule service and online check-in service) have the same variance-covariance matrix, both ERFE Tour & Travel and Traveloka;
- $H_1$ : The three dependent variables (refund service, reschedule service and online check-in service) have different variance-covariance matrix, both ERFE Tour & Travel and Traveloka.

In Box's M test, if the significance value is more than 0.05 then  $H_0$  is accepted, but if the significance value is less than 0.05 then  $H_0$  is rejected. Based on the results of this test, the significance value was 0.000 in which it was less than 0.05 so it could be said that  $H_0$  was rejected. It meant that the variance-covariance matrix of the variables of refund, reschedule and online check-in services was different for either the ERFE Tour & Travel group or Traveloka group. Since the available data obtained from the test were not equal, the results of Box's M test were ignored (Tabachnick & Fidell, 2001).

Levene test was used to see the variance-covariance matrix of each dependent variable. The following is the result of Levene test of the research:

Table 6 – Levene Test

Levene's Test of Equality of Error Variances <sup>a</sup>				
n/n	F	df1	df2	Sig.
Refund	2.959	1	29	.096
Reschedule	.037	1	29	.850
Online Check-In	.081	1	29	.779

The description of Table 6 on the Levene test is as the following:

- $H_0$  = the dependent variable (refund service) had the same variance-covariance matrix both in ERFE Tour & Travel and Traveloka;
- $H_1$  = the dependent variable (refund service) had different variance-covariance matrix both in ERFE Tour & Travel and Traveloka.

It could be seen that the significance value was .096 so it could be said that the variance-covariance matrix of refund service is individually the same for each group of ERFE Tour & Travel or Traveloka.

- $H_0$  = the dependent variable (reschedule service) had the same variance-covariance matrix both in ERFE Tour & Travel and Traveloka;
- $H_1$  = the dependent variable (reschedule service) had different variance-covariance matrix both in ERFE Tour & Travel and Traveloka.

It could be seen that the significance value was .850 so it could be said that the variance-covariance matrix of reschedule service is individually the same for each group of ERFE Tour & Travel or Traveloka.

- $H_0$  = the dependent variable (online check-in service) had different variance-covariance matrix both in ERFE Tour & Travel and Traveloka;
- $H_1$  = the dependent variable (online check-in service) had different variance-covariance matrix both in ERFE Tour & Travel and Traveloka.

It could be seen that the significance value was .779 so it could be said that the variance-covariance matrix of online check-in service is individually the same for each group of ERFE Tour & Travel or Traveloka.

Based on the results of Levene test for each dependent variable, it was found that the variance-covariance matrix was the same. Therefore, it could be said that the assumed variance-covariance was met and the analysis process of Manova output could proceed.

Multivariate Test was conducted to determine whether there were significant differences in the dependent variables (refund service, reschedule service and online check-in service) between ERFE Tour & Travel and Traveloka. This test would obtain the significance value of Wilks' Lambda. If the significance value of Wilks' Lambda was less than 0.05 then it could be said that there was a significant difference in the dependent variables between the two groups, but if the significance value of Wilks' Lambda was more than 0.05 then it could be said that there was no significant difference in the dependent variables between the two groups. The following is the results of Multivariate Test:

- $H_0$  = the dependent variables (refund, reschedule, and online check-in) simultaneously showed no difference both in ERFE Tour & Travel and Traveloka;
- $H_1$  = the dependent variables (refund, reschedule, and online check-in) simultaneously showed differences both in ERFE Tour & Travel and Traveloka.

Table 7 – Multivariate Test

Multivariate Test <sup>a</sup>		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.994	1424.462 <sup>b</sup>	3.000	27.000	.000
	Wilks' Lambda	.006	1424.462 <sup>b</sup>	3.000	27.000	.000
	Hotelling's Trace	158.274	1424.462 <sup>b</sup>	3.000	27.000	.000
	Roy's Largest Root	158.274	1424.462 <sup>b</sup>	3.000	27.000	.000
Perusahaan	Pillai's Trace	.178	1.948 <sup>b</sup>	3.000	27.000	.146
	Wilks' Lambda	.822	1.948 <sup>b</sup>	3.000	27.000	.146
	Hotelling's Trace	.216	1.948 <sup>b</sup>	3.000	27.000	.146
	Roy's Largest Root	.216	1.948 <sup>b</sup>	3.000	27.000	.146

a. Design: Intercept + Company  
b. Exact statistics

From Table 7, it was known that the significance value of Wilks' Lambda was 0.146. Therefore, it could be argued that in this research,  $H_0$  was accepted so that there was no significant difference on the refund service, reschedule service and online check-in service for both companies.

Test of Between-Subjects Effects was conducted to test whether there were significant differences of each dependent variable (refund service, reschedule service and online check-in service) between ERFE Tour & Travel and Traveloka. Based on this test, if the result of significance value of each variable was less than 0.05 it could be said that there were significant differences between the two groups, but if the significance value was more than 0.05 then there was no significant difference between the two groups. The following is the results of the Between-Subjects Effects test:

Table 8 – Test of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Refund Average	.528 <sup>a</sup>	1	.528	4.304	.047
	Reschedule Average	.105 <sup>b</sup>	1	.105	.600	.445
	Check-In Online Average	.175 <sup>c</sup>	1	.175	.920	.345
Intercept	Refund Average	540.528	1	540.528	4407.115	.000
	Reschedule Average	550.000	1	550.000	3146.909	.000
	Check-In Online Average	548.723	1	548.723	2893.864	.000
Company	Refund Average	.528	1	.528	4.304	.047
	Reschedule Average	.105	1	.105	.600	.445
	Check-In Online Average	.175	1	.175	.920	.345
Error	Refund Average	3.557	29	.123		
	Reschedule Average	5.068	29	.175		
	Check-In Online Average	5.499	29	.190		
Total	Refund Average	605.125	31			
	Reschedule Average	610.625	31			
	Check-In Online Average	611.125	31			
Corrected Total	Refund Average	4.085	30			
	Reschedule Average	5.173	30			
	Check-In Online Average	5.673	30			

a. R Squared = .129 (Adjusted R Squared = .099)  
b. R Squared = .020 (Adjusted R Squared = -.014)  
c. R Squared = .031 (Adjusted R Squared = -.003)

The description of the test results in Table 8 is as follows:

- $H_0$  = refund variable did not show the real difference between ERFE Tour & Travel and Traveloka.
- $H_1$  = refund variable showed the real difference between ERFE Tour & Travel and Traveloka.

The test result of the refund variable showed the significance value of 0.047. The significance value was less than 0.05 so it could be said that  $H_0$  was rejected. In this

research, the refund variable showed the real difference between ERFE Tour & Travel and Traveloka.

- $H_0$  = reschedule variable did not show the real difference between ERFE Tour & Travel and Traveloka.
- $H_1$  = reschedule variable showed the real difference between ERFE Tour & Travel and Traveloka.

The test result of the reschedule variable showed the significance value of 0.445. The significance value was more than 0.05 so it could be said that  $H_0$  was accepted. In this research, the reschedule variable did not show the real difference between ERFE Tour & Travel and Traveloka.

- $H_0$  = online check-in variable did not show the real difference between ERFE Tour & Travel and Traveloka.
- $H_1$  = online check-in variable showed the real difference between ERFE Tour & Travel and Traveloka.

The test result of the online check-in variable showed the significance value of 0.345. The significance value was more than 0.05 so it could be said that  $H_0$  was accepted. In this research, the online check-in variable did not show the real difference between ERFE Tour & Travel and Traveloka.

## DISCUSSION OF RESULTS

*Perception on Refund between ERFE Tour & Travel and Traveloka.* Based on the test results, it was found that there was different perception between ERFE Tour & Travel customers and Traveloka customers in the refund variable. In this case, the different perception could be affected by the provision of refund information to the customers. Traveloka had already provided information about the refund rules of each airline so that the customers could find out how the rules of the airlines they were going to make refund. So far, ERFE Tour & Travel had not provided the information as what had been done by Traveloka. All this time, ERFE Tour & Travel only informed the refund nominal to the customers without providing refund information from each airline. In terms of government regulations, regarding the refund, both ERFE Tour & Traveloka still did not provide information about it. In addition, the refund system from Traveloka was application-based. By using the application, the customers could refund quickly and easily. Meanwhile, ERFE Tour & Travel did not use the application and still used online media or phone calling from the customers to the company to inform the company if the customers wanted to do refund. Based on a research conducted by Graham et al. (2010), most cancellations were made by the customers who mainly like to travel. Therefore, the customers would prefer a company that provided services they need in more easily and quickly ways. Based on this discussion, ERFE Tour & Travel is required to improve its services to make the customers feel satisfied in doing refund.

*Perception on Reschedule between ERFE Tour & Travel and Traveloka.* Based on the test results, it was found that there was no different perception on reschedule variable between ERFE Tour & Travel and Traveloka. It showed that ERFE Tour & Travel, which had only been established for almost two years, could have the same customer perception as Traveloka that had been established since 2012. Therefore, the customer perception on ERFE Tour & Travel and Traveloka services had no difference. In this case, perception did not make a difference because the respondent's point of view to the services was the same. However, if it was viewed from the fact of the services performed by each company, there was still a clear difference. The first difference was that Traveloka had provided information about reschedule from each airline so that the customers could read it clearly. Meanwhile, ERFE Tour & Travel had never had any information that the customers could read as what Traveloka had done. The next was about the speed of the service in which Traveloka was already using the application so if the customers wanted to do reschedule, they could do it quickly and easily. In addition, the apparent difference of the reschedule service was the administration fee given to the customers of each company in which ERFE Tour & Travel charged IDR 25,000 per booking code while for Traveloka charged IDR 15,000 per

passenger per route. Based on research conducted by Graham et al. (2010), the research findings indicated that the customers have greater desire to make changes to the schedule when they are approaching the scheduled departure of their tickets because at the approaching scheduled departure, the customers will do the reschedule in a hurry so that the tickets they have at least not become 100% invalid.

*Perception on Online Check-In between ERFE Tour & Travel and Traveloka.* Based on the test results, it was found that there was no different perception because online check-in rules were all governed by each airline. Therefore, the responses of the respondents showed that it had no difference because they assume that all regulations were made by the airline not the company. However in this case, the online check-in service provided by ERFE Tour & Travel should be better than that what was provided by Traveloka. It was because ERFE Tour & Travel provide the services so that the customers may have it and they only needed to mention the booking number and name listed on the ticket and seat number they want. After that, the company would check whether it was available. The customers could directly do online check-in and the latest ticket would be sent to them immediately. On the other hand, Traveloka did provide online check-in service but the customer had to do it by themselves. It might be done if the consumer is accustomed to do so but if they were not accustomed to do online check-in by themselves, then they might be confused and it would take a long time. A research article by Murali et al. (2016) mentions that after sales service significantly affects customer satisfaction toward the products or services they use.

*Limitations of the Research.* In conducting a research, there will be definitely some limitations experienced by the researchers. Below are the limitations in conducting this research, among others:

- Regulation of each service was in accordance with the provisions of the airline so that the respondents could have the same perceptions with other respondents that resulted in the absence of different perception.
- It was difficult to know to what extent the seriousness of the respondents in filling in the questions existing in the distributed questionnaires.
- There was a possibility that some respondents might not use any of the services analyzed in this research. After rechecking the respondents, there were indeed respondents who did not use any of the three services analyzed here.

## CONCLUSION

Based on the findings of the research that had been conducted, several conclusions were obtained. These conclusions would answer all the questions existing in the formulation of the research problems, among others:

There was a different perception on refund service between ERFE Tour & Travel and Traveloka. It was viewed from the significance value in the Test of Between-Subjects Effects of 0.047 which meant that it was below 0.05 so it could be concluded that there was a difference in refund service on both companies.

There was no different perception on reschedule service between ERFE Tour & Travel and Traveloka. It was viewed from the significance value in the Test of Between-Subjects Effects of 0.445 which meant that it was above 0.05 so it could be concluded that there was no difference in reschedule service on both companies.

There was no different perception on online check-in service between ERFE Tour & Travel and Traveloka. It was viewed from the significance value in the Test of Between-Subjects Effects of 0.345 which meant that it was above 0.05 so it could be concluded that there was no difference in online check-in online service on both companies.

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## THE EFFECT OF EDUCATION ON VILLAGE TREASURER PERFORMANCE WITH MOTIVATION AND TRAINING AS MODERATION VARIABLES

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### ABSTRACT

This study aimed at finding empirical evidences concerning the effect of education on village treasurer performance of Badung Regency with motivation and training as moderation variables. Treasurer's performance supported by appropriate educational background will reach more maximum performance. Data of this study were collected through questionnaires of which village treasurers of Badung Regency as the respondents in total of 46 people. The analysis of data used Moderated Regression Analysis. This study revealed that education positively influenced the performance of village treasurer. The moderation test showed that motivation and training strengthened the effect of education on village treasurer performance.

### KEY WORDS

Education, motivation, training, village treasurer, performance.

The Law No 32 of 2004 concerning Local Government and Government Regulation No 72 of 2005 concerning Village, legally acknowledge the existence of village which means that Village is a society protected by Law and exist within limits of area which has authority to regulate and manage their people's interests based on local customs and origin which are acknowledged and respected within the Government of Republic of Indonesia (Wisakti, 2008).

The implementation of those regulations provides full authority to plan, supervise, control and evaluate policies produced by the village. The existence of this Law of Village is expected to provide positive effect on the village development. However, there is a worry of may contradictions when the central or local government could not respond positively the effect of the existence of this Law. It is important to manage all sectors in order to implement this Law starting from evaluating past performance of every village until making more strategic new system related to the performance assessment (Widodo, 2016).

Based on Regulation of Minister of Home Affairs (*Permendagri*) No 113 of 2014, village fund management is the whole activities which covers planning, implementation, administrating, reporting, and accountability of the village fund. The existence of this Law causes all rights and obligations of the local government including local fund in local government implementation which can be valued in money covering all properties owned by the local government. The management of local fund should be conducted in well-manner and wisely in order to achieve efficient implementation and in accordance to local needs. The most important party in this issue is the village treasurer (Eka, 2015).

Treasury requires fast and effective management, as well as comprehensive and integrated planning which is the function and role of a treasurer, so village treasurer performance is highly concerned because it is evaluated based on their capability to accomplish functional and administrative report well and presenting the report to financial division of Badung Secretary Office on time.

Basically, performance is defined as any means of employees' activity which can influence their contribution to the company or organization. The declining of employees' performance directly influences the company's performance so it may disturb company stability. Therefore, company should pay more attention on employees' performance, especially for employees who have under standardized performance.

To have better performance of village treasurer, they should require appropriate capability with their jobs. There are several factors that may influence someone's performance such as individual, leadership, and workplace. One of individual factors that highly influences performance is education. Education the paramount factor that form human resources. Based on this fact, education level of employees used to do their jobs will help them to improve their performance so in the end it will affect the performance of their company in which they work (Kasmini, 2016). This empirical finding confirms that education is an important predictor as the determiner of someone's performance level.

Previous researches about the effect education on employees' performance were conducted by some researchers such as Pelitawati (2012), Madi (2013), Ningrum et.al. (2013), Irdianto (2014) and Pakpahan (2014) who stated that there is significant relationship between education and employees' performance, while researches of Widodo (2013), Gohari, et.al.(2013), Eriva, et.al. (2013) and Muttaqin, et.al. (2014) found that there is no significant relationship between education on employees' performance. The inconsistency of the previous researches causes conjecture other factor that influence the performance, i.e. training and motivation (Mahmudi, 2007).

Based on the above explanation, the researchers conducted empirical test about the relation of education level and village treasurer performance of Badung Regency with motivation and training as the moderation variables. This research was conducted to find empirical evidence about potency of motivation and training to moderate the influence of education on village treasurer performance of Badung Regency.

## THEORETICAL REVIEW

Learning according to Weiss (1990) in Robbins and Judge (2008) is the result of experience. Learning is not only conducted and gained from educational institution such as school but it happens every time. Three components involved in learning definition are (a) learning involves changes; (b) the change should be relatively permanent; and (c) requires experience, which can be gained directly through observation or practice, or can be gained indirectly. Social learning theory is closely related to this study because learning theory views that someone gains learning through both direct and indirect experiences. Through education and training gained by someone, it may affect him/her to have better attitude to finally influence his/her performance.

According to Herzberg (Hasibuan, 1996:108), there are two factors owned by someone that triggering them to achieve satisfaction and avoiding dissatisfaction. In this study, these needs are related to someone' psychological state, i.e. the need of education. Therefore, two factors motivational theory of Herzberg can be used to explain the relation between education level and village treasurer performance with motivation as the moderation variable.

The use of contingency approach aimed at identifying contingency variables which influence village treasurer performance. The existence of inconsistency of the previous research findings shows that there is other factor that influences the relationship. Contingency approach in this study is used to find out the effect of training and motivation as moderation variables on the relationship between education and village treasurer performance.

*Education on Village Treasurer Performance.* Learning theory according to Robbins and Judge (2008) is a condition which causes someone to give certain response as an attempt to respond something that is recognized. One of them is having education. Education is an implementation of the ability of someone to finish certain job. Siagian (2011) stated that everyone has a desire to develop by improving their ability so the ability will be effective of which the way is through well-education. With well-education, the analysis ability will be higher so they will have better ability to solve problem. Based on the above explanation, it can be formulated research hypothesis as follows:

H<sub>1</sub>: Education positively influences the village treasurer performance.

*Motivation Moderates the Effect of Education on Village Treasurer Performance.* Motivation theory states that a way that can provide individual encouragement and

perseverance as an effort to achieve the desired target (Robbins, 2008). Motivation level of a village treasurer comes from internal and external motivation. A well performance can be produced by a village treasurer who have not only a strong internal motivation but also supported by external motivation. Based on the above explanation, it can be formulated research hypothesis as follows:

H<sub>2</sub>: Motivation strengthens the effect of education on the village treasurer performance.

*Training Moderates the Effect of Education on Village Treasurer Performance.* Social learning theory according to Robbins and Judge (2008) is a view that states learning process can be gained through direct experience or indirect experience. Training is an effort organized by organization which aims to improve employees' performance (Dessler, 2011). Needs analysis of the training roles as a foundation for systematic effort to solve performance problem in organization which is caused by the difference of actual behavior of the village treasurer including knowledge and skill with expected person by organization to finish any kinds of jobs so there should be training that can support village treasurer performance (Simamora, 2002).

H<sub>3</sub>: Training strengthens the effect of education on the village treasurer performance.

### METHODS OF RESEARCH

*Population and Research Samples.* Population of this research were all village treasurers of Badung Regency. The samples were chosen by using nonprobability sampling technique with saturated sampling method, i.e. sampling decision method in which all population members are used as sample (Sugiyono, 2013: 122), on purpose of to get representative sample. Therefore, samples of this study were all village treasurers of Badung Regency in total of 46 village treasurers.

*Research Instruments.* This study used primary data sources which were collected through research questionnaires and measured with five point Likert scale. The questionnaires referred to the operational definition of the variables as described. Treasurers' performance (Y) was measured with 5 indicators from Mitchell and Larson (1987) in Wirama (2010) i.e. ability, initiative, punctuality, quality of work, and communication. These five indicators are described in 15 statements with 5 points of Likert scale. Education (X<sub>1</sub>) was measured by considering how high the village treasurers acquired education calculated with success year, i.e. the length of acquiring formal education as follows: (1) Senior High School was scored 12, (2) Diploma-3 was scored 15, and (3) Bachelor Degree was scored 16 which were developed by Irdianto (2014). Motivation (M<sub>1</sub>) with the used instrument to measure level of motivation was summarized by Hasibuan (2013) and adopted from Maslow (in Robbins and Judge, 2015) comprising of 14 questions with 5 points of Likert scale. Training (M<sub>2</sub>) with the used instrument to measure level of training by Lubis (2008) comprised 14 questions 5 points of Likert scale.

The following is the concept of this research:

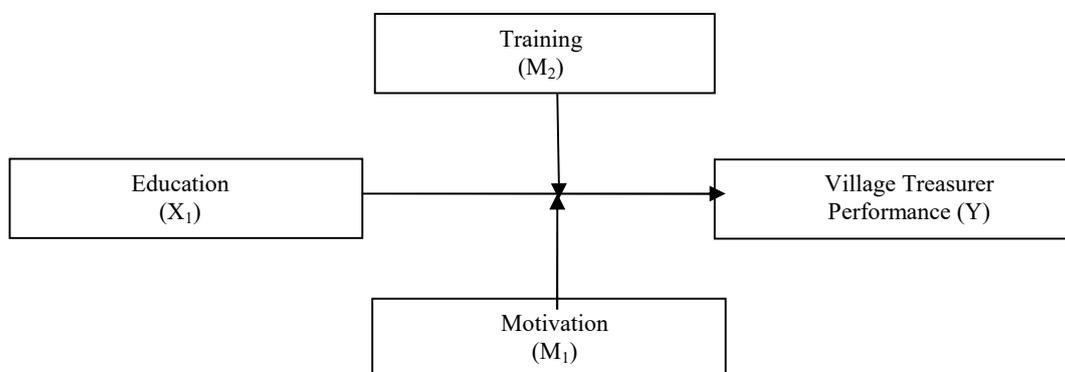


Figure 1 – Research Concept (Source: managed primary data, 2017)

*Technique of Data Analysis.* The used data analysis technique to test the data of this research was Moderated Regression Analysis (MRA). The used MRA model in this research was assumed linier and tested with significant level of 5%. Before Moderated Regression Analysis (MRA) testing, it was preceded by instrument tests including validity and reliability test, descriptive statistical analysis, and classic assumption test comprising of normality test, multi-collinearity test, and heteroscedasticity test.

## RESULTS AND DISCUSSION

*Instrument Test.* Based on the result of instrument test, comprising validity and reliability tests, it was found that the result of instrument validity test of each statement item from each research variables had correlation coefficient score more than 0.30 so all statement items of the research questionnaires could be stated as valid. For reliability test result, each research variables gained Cronbach's Alpha score more than 0.70 so all of the research variables could be stated as reliable.

*Moderated Regression Analysis (MRA).* Before conducting Moderated Regression Analysis (MRA) test, the research model was tested by using classic assumption test and it was stated passed the normality test, multi-collinearity test, and heteroscedasticity test. Based on the result of Moderated Regression Analysis (MRA) model testing, it was found that the score of calculated F- coefficient was 12.846 with significant 0.000 less than 0.05. It means that this research model is feasible for further analysis. Determination coefficient shows that the score of adjusted R square was which means that 56.80% variation of up and down of change of village treasurer performance was influenced by independent variable of education and moderator variables of motivation and training, while the other 43.20% was influenced by other variables which are not explained in this model.

Based on Table 1, the result of Regression Analysis (MRA) in this research can be seen, so the moderation regression formulation can be formulated as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 M_1 + \beta_3 M_2 + \beta_4 X_1 M_1 + \beta_5 X_1 M_2 + e = -0.45 + 0.456X_1 + 0.239M_1 + 0.457M_2 + 0.230X_1M_1 + 0.309X_1M_2 \quad (1)$$

Table 1 – The Result of Moderated Regression Analysis (MRA)

Model	Unstandardized Coefficient		Standardized Coefficient Beta	t	Sig.
	B	Std. Error			
Constants	-0.45	0.099		-0.459	0.648
Education (X <sub>1</sub> )	0.456	0.099	0.456	4.596	0.000
Motivation (M <sub>1</sub> )	0.239	0.109	0.239	2.190	0.034
Training (M <sub>2</sub> )	0.457	0.124	0.457	3.672	0.001
X1M1	0.230	0.108	0.233	2.124	0.040
X1M2	0.309	0.123	0.313	2.519	0.016

Source: Managed Data, 2018.

### *Hypothesis Testing:*

*The Effect of Education on Village Treasurer Performance.* Based on the above Table 1, the research result showed that T-test coefficient was 4.596 with significant level of 0.000 less than 0.05. It means that education positively influenced the village treasurer performance, so the H<sub>1</sub> was accepted. The higher education acquired by village treasurer, the better performance was showed by the village treasurer.

*Motivation Moderates the Effect of Education on Village Treasurer Performance.* Based on Table 1, the result of research showed that T-test coefficient was 2.124 with significant level of 0.040 less than 0.05. It means that motivation strengthened the effect of education on village treasurer performance, so H<sub>2</sub> was accepted. The higher education acquired by village treasurer, supported by certain motivation level so it will trigger them to have ability to achieve optimum performance.

*Training Moderates the Effect of Education on Village Treasurer Performance.* Based on Table 1, the result of research showed that T-test coefficient was 2.519 with significant level of 0.016 less than 0.05. It means that training strengthened the effect of education on

village treasurer performance, so  $H_3$  was accepted. The higher education acquired by village treasurer, and following certain training which supporting their job so it will trigger them to have ability to achieve optimum performance.

## CONCLUSION

Based on the analysis and discussion of this research, so it can be concluded that education positively influenced village treasurer performance who work in all village office of Badung Regency. Moreover, this research found that motivation strengthened the effect of education on village treasurer performance who work in all village office of Badung Regency. Training strengthened the effect of education on village treasurer performance who work in all village office of Badung Regency. Kinds of the used moderation of this research was quasi moderation because beta coefficient of motivation variable and training was significant, and the beta coefficient of interaction variable between education with motivation and training was significant. It means that motivation and training are moderator variables of the relation between education level on village treasurer performance as well as became independent variable.

## SUGGESTIONS

Based on the above research conclusion, so there are some suggestions that can be proposed based on the result of this research. For the Head of Village of Badung regency who recruits village treasurer should pay attention more on indicator of ability and work quality. It is because to improve their ability, a village treasurer should comprehend the given tasks, while to improve work quality, a village treasurer should be able to explain orally and in details of their works. Moreover, for the parties who will provide training to use needs analysis of the training so the training will be more useful for the village treasurer.

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## **THE EFFECT OF THE MARKETING MIX ON CUSTOMER SATISFACTION IN BUILDING CUSTOMER LOYALTY: A CASE STUDY OF PT PUPUK SRIWIDJAJA**

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### **ABSTRACT**

Sales decline is caused by low customer loyalty that makes customers to quickly switch to other products. This research aimed to analyze the performance of marketing mix, the level of customer satisfaction and loyalty, and the factors of marketing mix that affected customer satisfaction and loyalty, as well as to formulate strategies that could be performed to improve customer satisfaction and loyalty. This research applied Structural Equation Modeling method. Based on the analysis results of the factors affecting purchase decision to PT PUSRI fertilizer, it could be concluded that the level of customer satisfaction of PT PUSRI fertilizer was in the 'satisfied' category with the value of 67.8 percent, while the level of customer loyalty of PT PUSRI fertilizer was in the 'loyal' category with the value of 64.51 percent. Factors of the marketing mix that significantly affected customer satisfaction to PT PUSRI fertilizer were product and price, while place and promotion factors significantly did not affect it. Customer satisfaction significantly affected the building of customer loyalty. The strategy that could be applied for product variable was differentiation of aesthetic quality and for price variable was low-cost leader pricing.

### **KEY WORDS**

Fertilizer, loyalty, marketing mix, satisfaction.

Indonesia is an agrarian country, a country where most of the population works in agriculture. Agriculture has a very important role in the economic sector, the fulfillment of the need for food and agricultural sector in which it contributes significantly to the labor recruitment. The agricultural sector contributes substantially to economic growth in Indonesia. Based on data from the Central Bureau of Statistics (2015), agriculture is the third largest sector, in the total of Gross Domestic Product (GDP) after the industry and trade sectors, that contributes as many as 13.38%.

One of the agricultural sectors affecting the country's income is agribusiness. Agribusiness is defined as the overall production and distribution activities of farming production facilities, farming production activities, storage activities, processing activities, and distribution of agricultural commodities (Sudana, 2005). The development of agribusiness sector towards Indonesia's economic growth is inseparable from supporting industries that support the advancement of the agricultural sector. One of the supporting industries comes from the agribusiness sub-sector, namely the fertilizer industry. Pranitit (2016) mentioned that fertilizer is utilized as a source of nutrients to meet the nutritional needs of plants and improve soil structure. The provision of fertilizer in the planting media can increase the nutrient content and fertility.

A lot of companies engaged in fertilizer industry shows that the competition for fertilizer business starts to increase. The increasing contribution of agribusiness to Indonesia's economic growth is accompanied by the increasing of Indonesia's agricultural production. It also affects the increasing needs for fertilizer that must be met. Indonesia established the first fertilizer company named Pupuk Sriwidjaja (PUSRI).

PUSRI is a company established as a pioneer of urea fertilizer producer in Indonesia on December 24, 1959 in Palembang South Sumatra, under the name of PT Pupuk Sriwidjaja (Persero). The long history of PUSRI as the pioneer of national fertilizer producers for more than 50 years has proven its ability and commitment in performing the important tasks given by the government. PT PUSRI began to get new competitors from China in 2000.

For 10 years, the importation of Chinese fertilizer was still relatively small at around 300,000-400,000 tons/year. The importation of fertilizer experienced a very high increase in 2010 to the present. The high importation of Chinese fertilizer affected the sales decline at PT PUSRI but it turned out that there were national fertilizer companies that could withstand the onslaught of Chinese fertilizer import. It could be seen from the sales of PT Petro Kimia and PT Pupuk Kaltim that experienced no sales decline (Figure 1).

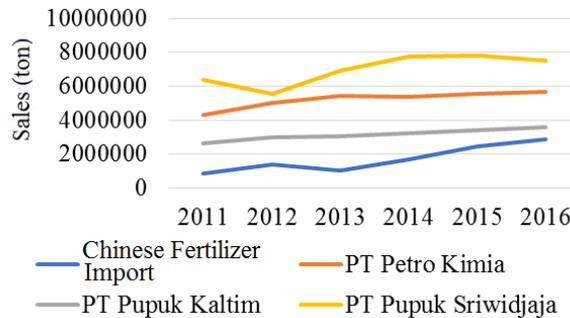


Figure 1 – Chinese Fertilizer Import Chart, Fertilizer Sales of PT Pupuk Kaltim, and Fertilizer Sales of PT Pupuk Sriwidjaja in 2011-2016

In tight competitive conditions, finding new customers requires greater cost and time than maintaining the existing customers. The company spends five times greater on finding new customers rather than maintaining the existing ones (Kotler and Keller 2009; Wills 2009). One of the switching barriers that can be performed to maintain the customers is by building or growing customer loyalty.

Loyalty is a voluntary commitment that may occur when a customer is loyal to a product, even when they have the opportunity to switch to other products at any time. The increasing customer loyalty will increase customer retention (Schiffman & Kanuk 1997). It is mentioned that the better the customer retention by the management, the greater the number of customers and profits. Loyal customers have advantages and give benefits to the profit growth of the company (Raphel et al., 2007).

Customer loyalty can be built from the satisfaction they feel (Zeithaml and Bitner 2000). Customer satisfaction and customer loyalty, within its process, are affected by the performance of marketing mix. The performance of marketing mix is a reflection of the performance of the company. The marketing mix that is able to satisfy the customers has the potential to lead to long-term and short-term sales growth, as well as repurchasing (Kotler and Keller 2009). Therefore, a company must be able to manage the elements of the marketing mix through strategy steps and evaluate the performance of marketing mix in order to maintain the customers from switching to other competitor companies.

**Research Problem.** PT PUSRI sets the sales target as the indicator of business success. This sales target is based on the company's productivity and sales from the previous years, so the sales target that had been set will always increase every year. However, the high level of competition has made it difficult for PT PUSRI in achieving the predetermined sales target. Moreover, PT PUSRI experienced sales decline in 2015.

As a company engaged in the field of agribusiness, the management of PT PUSRI is required to understand the importance of customers for the sustainability of the company. In running the business, the management should be customer oriented in order to survive the competitive level of business competition and should increase the sales in order to achieve the predetermined target. One effort that can be performed by the management of PT PUSRI is to grow the sense of loyalty in their customers. Loyal customers are the company's greatest asset because they will re-visit, buy more, and recommend the company's products to others without additional promotional costs. Growing customer loyalty does not only retain the existing customers but also open the opportunities to attract the new customers. It may affect the increase in sales which will increase the profitability of the company.

The company needs to focus on what factors affecting customer loyalty and how to improve or enhance the factors affecting this matter. In its creation, loyalty is affected by customer satisfaction that is also affected by marketing mix. The dimensions in the marketing mix affect customer loyalty through customer satisfaction indirectly.

If the customer perception on the actual performance of the company is higher than what they expect, customers who have a positive experience will keep that experience in their memories. If the customers at any time require the product, then they will remember the products that had provided positive experience for themselves, and repurchase the product that had given them the sense of satisfaction.

This sales decline is a serious problem for the company. This fierce business competition requires PT PUSRI to improve its marketing strategy as soon as possible. The company should know what factors affecting customer's decision in buying the fertilizer.

Based on the problems that have been described above, the following problems can be formulated:

- How is the performance of marketing mix of PT Pupuk Sriwidjaja?
- How is the level of customer satisfaction and loyalty to the fertilizer of PT Pupuk Sriwidjaja?
- What are the factors of marketing mix that affect customer satisfaction and loyalty?
- What are the strategies that can be conducted to improve customer satisfaction and loyalty to the fertilizer of PT Pupuk Sriwidjaja?

*Research Objectives.* Based on the research problems that have been mentioned above, the objectives of the research are the following:

- Analyzing the performance of marketing mix of PT Pupuk Sriwidjaja;
- Analyzing the level of customer satisfaction and loyalty to the fertilizer of PT Pupuk Sriwidjaja;
- Analyzing the factors of marketing mix that affect customer satisfaction and loyalty;
- Formulating the strategies that can be conducted to improve customer satisfaction and loyalty to the fertilizer of PT Pupuk Sriwidjaja.

*Significance of the Research.* This research is expected to be an input for PT PUSRI as a consideration in determining the policy of an effective company marketing strategy. The significance of this research for researchers is as a means of improving self-competence, both in terms of knowledge and skills in analyzing production efficiency.

*Scope of the Research.* This research described the factors determining customer satisfaction and loyalty to the purchase of PT PUSRI fertilizer. The analyzed factors consist of product, price, place, promotion, customer satisfaction, and customer loyalty. The research object was PT PUSRI fertilizer which was well known by the customer. The criterion of respondents in this research was farmers who use non-subsidized fertilizer from PT PUSRI in the distribution area that experienced the most severe sales decline; the area of South Sumatera. South Sumatera was chosen because it was the main marketing area of PT PUSRI.

## METHODS OF RESEARCH

*Setting, Time and Research Approach.* Based on the obtained information, it was known that the worst sales decline in South Sumatra was in Tanjung Lago District and Mekar Sari District of Banyuasin of South Sumatra. This research was conducted for six months starting from December 2017 until April 2018. The approach used in this research was quantitative approach by using survey method involving respondents from the level of farmers.

*Types and Sources of the Data.* The type of data used in this research was primary data that were coming from inside and outside of the company. The primary data were obtained through observation, focus group discussion, and interview that were conducted directly to internal and external sources. The secondary data were obtained from literature study.

**Respondent Determination Method.** The sample collecting technique of the research was based on non-probability sampling method involving convenience sampling technique. According to Sumarwan et al. (2015), non-probability sampling, in the sample determination, does not require an opportunity so that the generated data are only applied to the persons who become the research respondents. Convenience sampling was chosen based on consideration of ease in obtaining the data required by the researcher. According to Sumarwan et al. (2015), one of the reasons for the popularity of this technique is that the researcher can do the research in easy-to-find crowded places.

All respondents filled out the questionnaires voluntarily without any coercion. The criteria of the respondents are:

- Ever used PT PUSRI fertilizer in the last 6 months;
- Purchase PT PUSRI fertilizer through authorized distributor.

**Conceptual Framework.** Based on the empirical studies that had been performed, the dimensions of marketing mix (4P) were assumed to affect customer satisfaction. In addition, customer satisfaction was assumed to affect loyalty. Conceptually, the framework of this research can be seen in Figure 1 below.

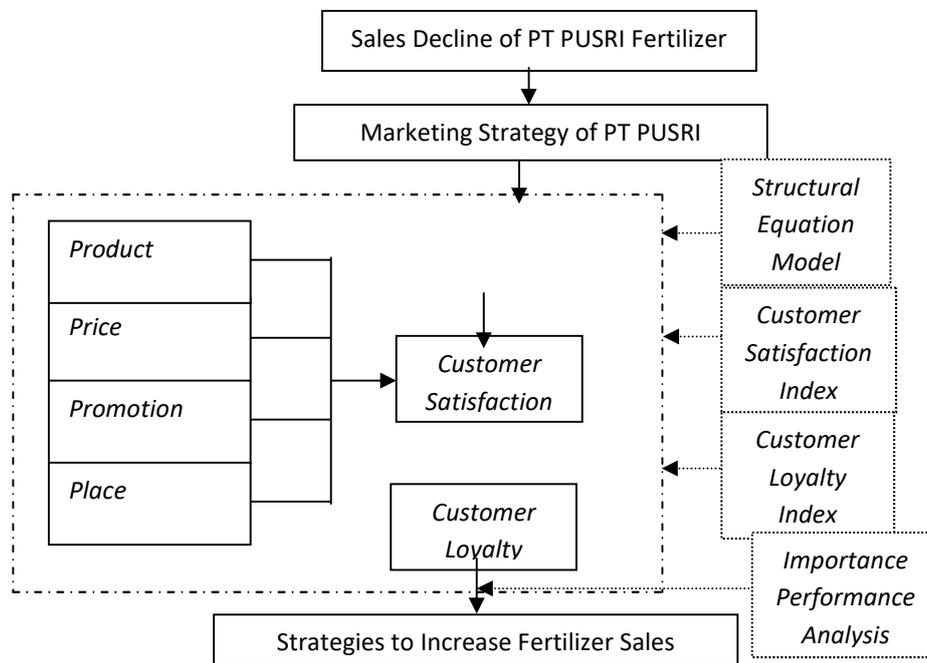


Figure1 – Conceptual Framework

**Research Hypotheses.** Based on the conceptual framework above, the hypotheses to be tested in this research are:

- H1: Product has positive and significant effect on satisfaction;
- H2: Price has positive and significant effect on satisfaction;
- H3: Place has positive and significant effect on satisfaction;
- H4: Promotion has positive and significant effect on satisfaction;
- H5: Satisfaction has positive and significant effect on loyalty.

**Data Analysis and Processing Technique.** The data processing of the research was performed with some analyses. The data analyzes were Customer Satisfaction Index (CSI), Customer Loyalty Index (CLI), Structural Equation Model (SEM), and Importance Performance Analysis (IPA).

## RESULTS AND DISCUSSION

*Performance Level of Marketing Mix.* Factors determining marketing mix on customer satisfaction and loyalty consisted of Product, Price, Place, and Promotion. Each factor that was assumed to affect the interest of customer behavior contained the variable of assessment indicator.

The performance level of the indicator variables in each factor was determined through frequency analysis in the form of a percentage of the results of the customer assessment of the statement or the indicator variable on each of these factors. The assessment was carried out by using Likert scale 1-5 (1 = strongly disagree to 5 = strongly agree). The number of respondents (n) in this research was 110 people. Descriptive statistics on the research variables were used to provide an overview of the responses from the respondents to the research variables. The analysis of descriptive statistics was conducted on 110 respondents to be further processed. Descriptive statistics from the respondents' answers would be explained per indicator of each variable. Table 1 showed the number of respondents (n), mean value, minimum value, and maximum value. The mean score indicated the average values of the respondents' answers. The median value is the mid value of the data whose magnitude had been ordered in sequence. The maximum and minimum values described the answers to the question items selected by the respondents in the questionnaire.

Table 1 – Descriptive Statistics of the Variables

Constructs	Indicators	Mean	Min	Max
Product	X11	3.97	1	5
	X12	3.91	1	5
	X13	3.91	1	5
	X14	3.74	1	5
Price	X21	3.52	1	5
	X22	3.56	1	5
	X23	3.22	1	5
Place	X31	3.43	1	5
	X32	3.1	1	5
Promotion	X41	2.85	1	5
	X42	2.98	1	5
	X43	2.6	1	5

### *Factors Affecting Satisfaction and Loyalty:*

*Evaluation of Model Fit Level.* According to Hair et al. (1995), fit evaluation was performed through several stages, namely 1) overall model fit, 2) measurement model fit, and 3) structural fit model. The evaluation stage was aimed to see how the fit level of the original data (in the field) matched the designed model.

Based on the evaluation of the overall model fit, this model was considered to have met the requirements and was classified as good fit so that the research model was considered to be feasible. Based on the measurement model fit test, the attributes contained in the model were valid because they had standardized loading factor (SLF) value  $\geq 0.5$ . The indicators of  $X_{31}$ ,  $X_{41}$ , and  $Y_{22}$  were removed from the model. The reason was that the t-count values in all three indicators in the initial model were less than 1.96. The final SEM measurement model can be seen in Figure 2 below.

*The Contribution of Dimensions to Variables.* The product variable had four indicators. These indicators are features, reliability, performance, and durability. These four indicators had higher t-count values than t-tables (1.96), so it could be considered that these four indicators had a significant contribution to the product variable. The four indicators were sufficiently feasible to reflect the product variables in this research because it had loading factor value of 0.62, 0.75, 0.81, and 0.78 (Table 2).

The price variable had three indicators. All three indicators were match-to-quality price, competitive price, and affordable price. All three indicators had t-count values greater than t-table that were respectively 3.91, 17.94, and 3.78. These findings indicated that these three

indicators contributed significantly to the price variable. In addition, these three indicators had positive and different loading factor value of 0.7, 0.96, and 0.68. The indicator that had the highest loading factor value was the competitive price.

The customer satisfaction variable had two indicators. The two indicators were overall satisfaction and harvest yields. The two indicators almost had the same loading factor value of 0.81 and 0.78. This indicated that both indicators had almost equal contribution in reflecting satisfaction variable. Similar findings were also obtained from a research conducted by Iskandar AYS (2017) using the overall satisfaction indicator.

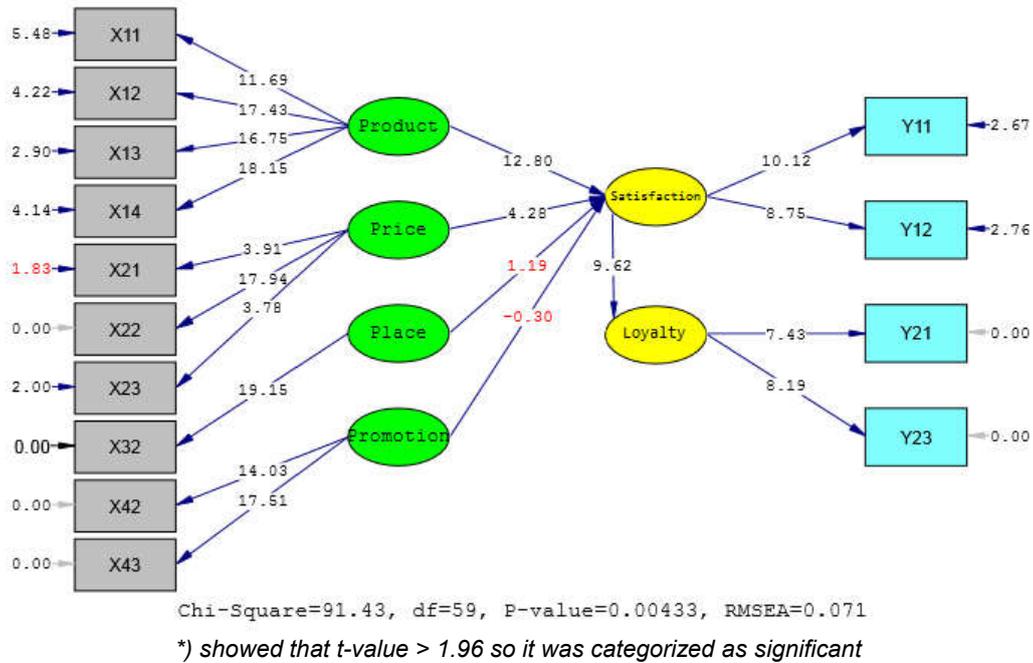


Figure 2 – SEM Measurement Model

The loyalty variable had three indicators. The three indicators were referrals, repurchases, and retention. Among the three indicators, the retention indicator had a t-value <1.96 at 1.56 (Table 2) so that the indicator must be removed from the model. Therefore, in this variable there were only two indicators that could describe the loyalty variable namely repurchase and referrals.

Table 2 – t-count and Loading Factor Values on the Indicators of Product, Price, and Satisfaction Variables

Variables	Indicators	Loading Factor	t-count
Product	Features	0.62	11.69
	Reliability	0.75	17.43
	Performance	0.81	16.75
	Durability	0.78	18.15
Price	Match-to-quality Price	0.7	3.91
	Competitive Price	0.96	17.94
	Affordable Price	0.68	3.78
Satisfaction	Overall Satisfaction	0.81	10.12
	Harvest Yields	0.78	8.75
Loyalty	Repurchase	0.94	7.43
	Referrals	0.97	9.19

**Research Hypotheses Testing.** The effect of dimension in marketing mix on customer satisfaction could be seen from the construct coefficient value and the t-count value. Based on the findings of the research, from the four marketing mix variables, there were only two marketing mix variables that had t-count values greater than t-table (1.96). Both variables

were product and price which had t-count values respectively 12.80 and 4.28 (Table 3). These values indicated that both variables significantly affected customer satisfaction. However, not all marketing mix variables had significant effect on customer satisfaction. Place and promotion variables had smaller t-count values than t-table (Table 3). It meant that these two variables significantly had no effect on satisfaction.

The satisfaction variable itself had a t-count value greater than t-table. It meant that satisfaction significantly affected loyalty. Marketing mix had a weak direct effect in affecting loyalty, so customer satisfaction was required as the intervening variable to see the effect of marketing mix on loyalty indirectly (Cengiz & Yayla, 2007; Muala & Qurneh, 2012; Pyeong et al., 2014). The findings of previous research also suggested that a positive construct coefficient indicated that increasing customer satisfaction would increase the loyalty of the customer and they would tend to behave in a favorable way to the company (Semuel 2006; Oghojafor et al., 2014).

Table 3 – Results of SEM Model Estimation

The Effect of the Variables			Loading Factor	t-count	Conclusion	Description
1. H <sub>1</sub> : Product	→	Satisfaction	0.77	11.27	Significant	Accept H <sub>1</sub>
2. H <sub>2</sub> : Price	→	Satisfaction	0.21	1.73	Significant	Accept H <sub>2</sub>
3. H <sub>3</sub> : Place	→	Satisfaction	0.07	15.47	Not Significant	Reject H <sub>3</sub>
4. H <sub>4</sub> : Promotion	→	Satisfaction	-0.01	11.25	Not Significant	Reject H <sub>4</sub>
5. H <sub>5</sub> : Satisfaction	→	Loyalty	0.76	3.56	Significant	Accept H <sub>5</sub>

Note: \*) significant t-count > t-table (1.96).

**Customer Satisfaction Index.** The overall CSI value was obtained by the total sum of the CSI values per indicator. The total CSI value of PT PUSRI fertilizer customers was 67.80 percent. This value was in the range of values 0.60 - 0.80 or 60% < x ≤ 80%, which belonged to the “satisfied” category. The calculation of CSI values could be seen in Table 4 below.

Table 4 – Calculation Result of Customer Satisfaction Index of PT PUSRI Fertilizer

Indicators	Loading Factor	Coefficient Construct	Effect	Volume	CSI %	CSI Per Indicator
Features	0.64	0.8	0.53	0.19	72.73	13.6
Reliability	0.74	0.8	0.61	0.22	73.64	15.93
Performance	0.66	0.8	0.55	0.19	71.82	13.85
Durability	0.73	0.8	0.61	0.21	63.64	13.58
Match-to-quality Price	0.72	0.2	0.14	0.05	58.18	2.95
Competitive Price	0.96	0.2	0.19	0.07	62.73	4.24
Affordable Price	0.68	0.2	0.14	0.05	50.91	2.44
Building	1	0.1	0.06	0.02	45.45	0.96
Promotional Quantity	0.87	0	0.01	0	41.82	0.13
Purchase Bonus	0.96	0	0.01	0	34.55	0.12
Total			2.84			
CSI						67.8

**Customer Loyalty Index.** The result of the calculation yielded the overall CLI value. The CLI value of PT PUSRI fertilizer customers was 64.50 percent (Table 5). This value was in the range of 0.60 - 0.80 or 60% < x ≤ 80%. It meant that the customer loyalty index of PT PUSRI fertilizer was in the criteria of “loyal”.

Table 5 – Calculation Result of Customer Loyalty Index of PT PUSRI Fertilizer

Indicators	Loading Factor	Effect	Volume	CLI %	CLI per Indicator
Repurchase	0.94	0.94	0.49	40.91	20.13
Referrals	0.97	0.97	0.51	80.91	41.09
Total		1.91			61.22
CLI					64.51

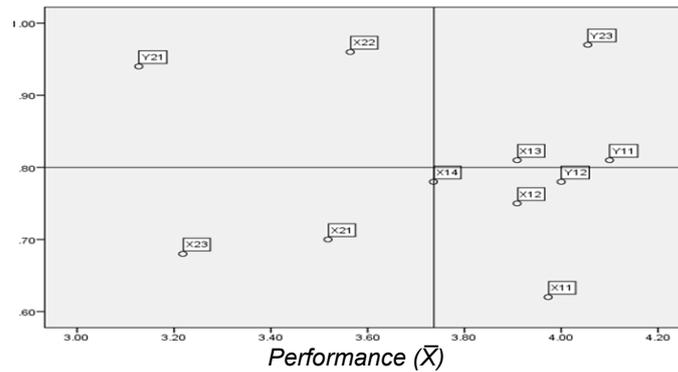


Figure 3 – IPA Diagram of the Customer of PT PUSRI Fertilizer

Based on the results of the IPA diagram evaluation, the order of priority level of improvement that PT PUSRI should perform was (1) Competitive Price, (2) Performance, (3) Match-to-Quality Price, (4) Affordable Price, (5) Features, (6) Reliability, and (7) Durability.

*Strategies to Increase the Sales.* The research obtained some findings which would then be compiled into managerial implications that were beneficial for PT PUSRI. The performance of PT PUSRI marketing mix was still below the average. It meant that all the performance of the variables at PT PUSRI could still be improved. After obtaining the results from SEM analysis, there were only 2 variables that had significant effect, those were product and price. The priority strategy from the indicators of these two variables would be ordered by using IPA analysis.

Based on the results of IPA analysis, there was an indicator that became the first priority but it decreased the performance of the company. The indicator was the competitive price of the price variable. The strategy that could be applied to the price element was low-cost leader pricing. A leader in low-level pricing was not necessarily at the forefront volume (Sumarwan et al., 2009). This strategy could be performed by reducing production costs. PUSRI was planning to create a new factory that could replace three old factories. Replacing the three factories into one factory resulted in a reduction in human resources. After the construction of the new plant is completed, PUSRI employees would be retired in large numbers. The reduction of human resources and the reduction of production process would lead to a decrease in the selling price of fertilizer.

In the product element, differentiation strategy of quality aesthetics could be applied. In this strategy, producers are expected to create products by providing fit, finishing, and appearance of a product that are different from others (Sumarwan et al., 2009). The durability of fertilizer depended on the coating (coating the fertilizer granules with certain chemical compounds) in which the better the coating the better the durability of the fertilizer. The coating of PT PUSRI fertilizer used bentolite which had good durability but had a slightly expensive price of raw material. The alternative material that can be used other than bentolite was clay. Clay did not have long endurance like bentolite but it had cheaper price of raw material. Based on the research findings, it was found that the durability of PUSRI fertilizer was too excessive so it could be reduced by replacing it with clay. Clay material was easily destroyed so it would be easy for the farmers to use it while cultivating the crops. Another brand still used bentolite a lot. Clay use in PUSRI would provide an interesting difference.

## CONCLUSION AND SUGGESTIONS

The performance of marketing mix of all indicators could still be improved. Based on the average value of the variables that must be improved from first to the end in sequence were: product, place, price and promotion. Factors of the marketing mix that significantly affected customer satisfaction of PT PUSRI fertilizer were product and price. Place and promotion factors had no significant effect on customer satisfaction. Meanwhile, customer satisfaction had significant effect in building customer loyalty. The level of customer satisfaction of PT PUSRI fertilizer was in the 'satisfied' category with a value of 67.8 percent.

While the level of customer loyalty of PT PUSRI fertilizer was at the level of 'loyal' with a value of 64.51 percent.

Based on the evaluation results of the IPA diagram, the order of the main priority level of the improvement that should be carried out by PT PUSRI were (1) Competitive Price, (2) Performance, (3) Match-to-Quality Price, (4) Affordable Price, (5) Features, (6) Reliability, and (7) Durability. The key priority indicator was the competitive price. Improving the performance was by reducing the performance of features, reliability, and durability indicators. The indicator that should be maintained performance was performance. The managerial implication that could be performed was on the product element by implementing differentiation strategy of quality aesthetics. At the price element, low-cost leader pricing strategy could be conducted. The manufacture of the new factory could replace the three old factories.

Based on the above conclusions, there are several suggestions that can be given from this research, among others:

- The management of PT PUSRI is suggested to improve the performance of the variables that significantly affect customer satisfaction;
- Further research can analyze more deeply about the product and price indicators. Within these variables, there may still be other indicators that can be added;
- It is recommended to find new variables to further refine the next research.

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**THE INFLUENCE OF ORGANIZATIONAL CULTURE ON THE EMPLOYEE PERFORMANCE MEDIATED BY WORK ETHIC: AN EMPIRICAL STUDY AT PT BANK NEGARA INDONESIA (PERSERO) TBK KEDIRI BRANCH, EAST JAVA**

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**ABSTRACT**

The impact of globalization demands the banking industry to always improve its ability to provide banking solutions to all customers of PT Bank Negara Indonesia (Persero) Tbk Kediri Branch. This study aims to evaluate the influence of organizational culture on employee performance through work ethic. Data analysis technique uses structural model approach of Partial Least Square assistance of SmartPLS program 3.2.7. The findings show that there is an organizational culture influence on performance through work ethic. This finding implies the importance of a high work ethic that must be entrusted to Bank Negara Indonesia.

**KEY WORDS**

Globalization, organizational culture, work ethic, performance.

Problems regarding human resources at this time are still the center of attention for companies, especially banks. Along with the development of science and technology, human resources need a lot of innovation and creativity in order to be able to balance the progress, so that the performance is in line with the expectations of a company. Employee performance is one of the conditions for the company to achieve its goals. The achievement of the company's goals is derived from the company's efforts to manage potential human resources so that it can improve its work. Therefore, employee performance is something that should be considered by the company leader.

Organizational culture is the principal problem solving internally and externally which is carried out consistently by a group which is then developed and inherited to overcome external adaptation problems and internal integration problems. An organizational culture is a form of beliefs, values, or ways that can be learned to overcome and live in an organization. Organizational culture is well implemented through organizational members. Robbins (2001) defines organizational culture as a value system that is a guideline and carried out by members of the organization, so that it can be distinguished from other organizations. Organizational culture as a cognitive framework which consists of attitudes, values, rules, norms, attitudes, and expectations that belong to the members of the organization and the characteristics of the company so that employees can work as desired by the company (Greenberg and Baron, 2003)

Related to what was stated above PT Bank Negara Indonesia, Tbk is one of the companies engaged in banking services which is the oldest commercial bank in the history of Indonesia. The bank was established on July 5, 1946. BNI currently has 169 branch offices, 911 service offices in Indonesia and 5 overseas. The role of Bank Negara Indonesia Tbk to support the Indonesian economy is increasingly strategic with the emergence of initiatives to serve all levels of society from Sabang to Merauke in the 1960s by introducing various banking services.

The impact of globalization also demands the banking industry to always improve its ability to provide banking solutions to all customers. PT Bank Negara Indonesia, Tbk. A focus on corporate banking that is supported by a strong retail banking infrastructure and

continuously strives to increase capitalization are the hallmarks of PT Bank Negara Indonesia, Tbk. But from everyday reality that can be observed in the field, especially PT Bank Negara Indonesia, Tbk. Kediri branch, the condition of employee discipline is still visible. Many of the employee's work do not fully follow the rules or work procedures that should be obeyed. The low culture of innovation for each employee and the lack of responsiveness of employees to customers are also often found in PT Bank Negara Indonesia, Tbk. Kediri branch. This organizational culture problem often causes employee performance to decline.

The reason behind this research is that employee performance is still not optimal, most employees have egocentric in each unit causing a lack of totality of employee work involvement in activities organized by the company, work that is only used as a routine without developing themselves in the company, and the severity again employees only know conceptually about the company's goals but are reluctant to engage further in realizing the achievement of company goals. This is also a problem that occurred at PT Bank Negara Indonesia, Tbk. Kediri branch which causes employee performance to decline. Employee performance at PT Bank Negara Indonesia in Table 1.

Table 1 – Employee Performance

DPK						
BRANCH	Des-16	Goal Dec-17	Realization		Achiev Goal FY	
			Nov-17	31-Des-17	Rp M	%
Total DPK	1.870,0	2.443,8	2.244,1	2.223,2	(220,65)	91,0%
Savings	722,4	902,3	953,9	951,9	49,60	105,5%
Giro	130,9	151,7	308,9	268,0	116,28	176,7%
Deposit	1.016,7	1.389,9	981,3	1.003,3	(386,53)	72,2%
Casa	45,63%	43,13%	56,27%	54,87%		
Credit						
Branch / Centra	BD 2016 Migration	Goal *) Dec-17	Realization		Achiev Goal FY	
			Nov-17	31-Des-17	IDR M	%
Credit Consumer	107,8	159,0	171,7	172,2	13,3	108,4%
Griya	79,2	88,6	125,7	125,5	36,9	141,6%
Fleksi	20,9	54,2	24,7	24,7	(29,5)	45,6%
Other	7,8	16,1	21,3	22,0	5,9	136,5%
Credit Small	432,7	557,7	463,8	509,2	(48,6)	91,3%
Total Credit	540,6	716,7	635,4	681,4	(35,3)	95,1%

Source: [www.bni.co.id](http://www.bni.co.id)

Table 1 shows that the total DPK of the office of Bank Negara Indonesia, Tbk of Kediri, achieved only reached 91.0% of the total full year 2017 target of 220.65 Milyar. While achieving total credit reached 95.1% of the full year 2017 target of 35.3 billion.

Research conducted by Nizam (2016) entitled "The effect of organizational culture on employees. The case performance of Singapore Tellecommunication" whose results suggest that Organizational Culture has a significant effect on employee performance, which means that the better the Organizational Culture by employees, the better the performance.

The research conducted by Alainein (2016) entitled "The Effect of Job Involvement on Job Performance at UNRWA Gaza Field Office" suggests that employee involvement has a significant positive effect on employee performance, this also suggests that the better the involvement of employees among employees, the better also it's performance. Based on the description of previous research, it can be seen that there is a research gap or research gap that can be entered by a researcher based on the experiences or findings of previous researchers, in this research the variables of Organizational Culture, Performance, Work Ethics and Employee Engagement.

The difference between this study and the previous research is the integration of the Organizational Culture, Performance, Work Ethics and Employee Involvement variables with different indicators and assessments and is the reason for the need for further research to answer the results of the existing research and in accordance with the delivered,

## METHODS OF RESEARCH

This research was conducted at the PT. Bank Negara Indonesia, Tbk. Kediri branch as many as 115 employees. This study uses an explanatory quantitative approach and data collection by survey method with a Saturated Sampling (Census) approach. Data were collected using questionnaires with 1-5 Likert scale. Data analysis technique using Partial Least Square, the assistance of Smart PLS packages 3.2.7.

## RESULTS OF STUDY

*Testing of Partial Least Square Structural Models.* The Unidimensionality test of each construct is done by looking at the convergent validity of each construct indicator. According to Ghozali (2011) an indicator is said to have good reliability, if the value of outer loading or loading factor is greater than 0.70, but the loading factor of 0.50 to 0.60 can still be maintained at the initial stage. Based on the above criteria, if found outer loading is below 0.50 it will drop from the model. The test is done by doing several tests: Convergent validity, Discriminant Validity and Composite Reliability as follows:

*Convergent Validity Testing.* Convergent validity calculation aims to find out instrument items that can be used as indicators of all latent variables. The convergent validity test results are measured based on the value of the loading factor (outer loading) of the laten (construct) indicator. Convergent validity test results which have the value of outer loading below 0.50 will drop from the model, and then the results of the initial analysis of the outer loading value can be seen as visualization Table 2.

Table 2 – Convergent Validity Test

Variable	Indicator	Outer loading	Description
Organizational Culture (X1)	Innovation and risk taking (X1.1)	0,794	Valid
	Attention to detail (X1.2)	0.807	Valid
	Out come orientation (X1.3)	0.833	Valid
	People orientation (X1.4)	0.818	Valid
	Team orientation (X1.5)	0.65	Valid
	Aggressiveness (X1.6)	0.254	Invalid
	Atability (X1.7)	0.676	Valid
Work Ethics (Z1)	Hard work (Z1.1)	0.939	Valid
	Discipline (Z1.2)	0.845	Valid
	Honest and Responsible (Z1.3)	0.81	Valid
	Diligent and diligent (Z1.4)	0.201	Invalid
Employee Performance (Y)	Quantity (Y1.1)	0.467	Invalid
	Quality (Y1.2)	0.674	Valid
	Timeliness (Y1.3)	0.701	Valid
	Effectiveness (Y1.4)	0.787	Valid
	Presence (Y1.5)	0.77	Valid

Source: Analysis results processed, 2018.

Table 3 – Convergent Validity Test (Processed)

Variable	Indicator	Outer loading	Description
Organizational Culture (X1)	Innovation and risk taking (X1.1)	0,794	Valid
	Attention to detail (X1.2)	0.809	Valid
	Out come orientation (X1.3)	0.831	Valid
	People orientation (X1.4)	0.817	Valid
	Team orientation (X1.5)	0.648	Valid
	Atability (X1.7)	0.677	Valid
	Hard work (Z1.1)	0.943	Valid
Work Ethics (Z1)	Discipline (Z1.2)	0.851	Valid
	Honest and Responsible (Z1.3)	0.812	Valid
Employee Performance (Y)	Quality (Y1.2)	0.629	Valid
	Timeliness (Y1.3)	0.675	Valid
	Effectiveness (Y1.4)	0.84	Valid
	Presence (Y1.5)	0.823	Valid

Source: Analysis results processed, 2018.

Table 2 above shows that there are several indicators that have the outer loading value  $\leq 0.50$  so it needs to drop out of the model, including X1.6, Z1.4, and Y1.1. After that, the data is tested again and the convergent validity test results can be seen as visualized in Table 3.

Table 3 is the result of the test again after the indicator that has the value of outer loading  $> 0.5$  is dropped and the test results show that all indicators have the value of outer loading above 0.6. So that, the indicator meets the appropriate convergent validity criteria.

**Discriminant validity.** Discriminant validity is a measurement of reflexive indicators based on cross-loading with its latent variables. Another the method is by comparing the value of the square root of the average variance extracted (AVE) of each construct, with the correlation between other constructs in the model. In connection with this, it is recommended that the measurement value must be greater than 0.50. Furthermore, the results of Discriminant Validity testing can be seen as visualized in Table 4.

Table 4 – Results of Discriminant Validity Testing

Variable	Average variance extracted (AVE)
Organizational Culture (X1)	0.587
Work Ethics (Z1)	0.758
Employee Performance (Y)	0.558

Source: Analysis results processed, 2018.

Table 4 shows the results of discriminant validity testing where all the values of Average variance extracted (AVE) are more basic than 0.50. Thus it can be concluded that this measurement has met Convergent validity requirements based on the value of Average Variance Extracted (AVE).

**Composite Reliability.** Reliability composite testing aims to examine the validity of the instrument in a research model. The results of reliability composit testing can be seen as visualization of Table 5.

Table 5 – Test Results for Composite Reliability

Variable	Composite Reliability	Description
Organizational Culture (X1)	0.894	Reliable
Work Ethics (Z1)	0.903	Reliable
Employee Performance (Y)	0.833	Reliable

Source: Analysis results processed, 2018.

Based on Table 5, can be explained the results of testing composite reliability that shows satisfactory value, where all latent variables have been reliable because all the variable values have a composite reliability value  $\geq 0.70$ . In other words, the questionnaire used as an instrument in this study is reliable or consistent. Thus it can be concluded that all indicators are indeed the measure of their respective constructs.

**Modeling Structural Equations PLS Approach.** This study uses a structural equation model approach to Partial Least Square (PLS). The results of testing the empirical model of this study can be seen 7.

**Goodness of Fit Model.** The Goodness of Fit test for structural models in the inner model uses predictive-relevance ( $Q^2$ ) values. The R2 value of endogenous variables in this study can be seen as visualized in Table 6.

Table 6 - R<sup>2</sup> values of endogenous variables

	R Square	R Square Adjusted
Work ethic_ (Z1)	0.198	0.191
Employee Performance (Y)	0.770	0.764

Source: Analysis results processed, 2018.

Goodness of Fit testing The structural model in the inner model uses predictive-relevance ( $Q^2$ ).  $Q$  - Square predictive relevance  $Q^2$  calculation is done by the formula:

$$Q^2 = 1 - (1 - R_1^2) (1 - R_2^2) \dots (1 - R_p^2)$$

Where:  $R_1^2, R_2^2 \dots R_p^2 = R$ -square endogenous variables in the  $Q^2$  Interpretation model are the same as the total determination coefficient in path analysis (similar to  $R^2$  in regression). According to Solimun (2014), the magnitude of  $Q^2$  has a value with a range of  $0 < Q^2 < 1$ , where getting closer to 1 means the model is getting better.

The results of the above calculation obtained  $Q^2$  value of 0.8155, the value is close to 1, it can be concluded that the model is in a good category. This shows that 81.55% of the variability in the variable employee performance is explained by organizational culture while the remaining 18.45% is explained by variables that are not included in the model. Because  $Q^2 > 0$  or  $0.8155 > 0$ , then the model can be said to be feasible because it has predictive-relevance ( $Q^2$ ) values that are relevant to this research model or fit into a fairly good category.

**Hypothesis Testing Results.** The results of testing the hypothesis with Partial Least Square show that of the three direct influences the hypothesis is stated to be significant. While the test results from an indirect effect, the hypothesis is significant. Hypothesis testing of direct influence is done by using t-test (t-test) on each path of influence between endogenous variables and exogenous variables.

Table 7 – Results of Direct and Indirect Influence Hypothesis Testing

Direct Influence	Estimate	T-Statistic	P-Value	Description
H1 : Organizational Culture (X) -> Employee Performance (Y)	0.495	5.167	0.000	Significant
H2 : Organizational Culture (X) -> Work Ethics (Z1)	0.445	7.289	0.000	Significant
H3 : Work Ethics (Z1) -> Employee Performance (Y)	0.278	4.747	0.000	Significant
Indirect Influence				
H4: Organizational Culture (X) -> Work Ethics (Z1) -> Employee Performance (Y)	0.124	3.420	0.001	Significant

Source: Analysis results processed, 2018.

Table 7, the results of the analysis show that all hypotheses on direct and indirect effects show significant results so that it can be said that the Performance Variables are influenced by Work Culture, Employee Work Ethics.

#### **Hypothesis 1: The Effect of Organizational Culture on Employee Performance.**

Testing hypotheses with the PLS approach produces path coefficients of the influence of Organizational Culture on Employee Performance have a significant effect on the path coefficient of 0.495 and t-statistics of 5.167 with a p-value of 0.00 at  $\alpha$  5%. Because the p-value is 0.00 smaller than 0.05, there is enough empirical evidence to accept H1: which states that there is a significant influence on Organizational Culture on Employee Performance. The coefficient positive sign indicates that the better the Organizational Culture the better the Employee Performance will be..

#### **Hypothesis 2: The Influence of Organizational Culture on Work Ethics.**

Hypothesis testing with the PLS approach produces a path coefficient of the influence of Organizational Culture on Work Ethics has a significant effect on the path coefficient of 0.445 and t-statistics of 7.289 with a p-value of 0.00 at  $\alpha$  5%. Because the p-value is 0.00 less than 0.05, there is enough empirical evidence to accept H1: which states that there is a significant influence on Organizational Culture on Work Ethics. Coefficients with positive signs indicate that the better the Organizational Culture, the better the Work Ethics will be.

#### **Hypothesis 3: The Effect of Work Ethics on Employee Performance.**

Testing the hypothesis with the PLS approach produces a path coefficient of the effect of Work Ethics on Employee Performance has a significant effect on the path coefficient of 0.278 and t-statistics of 4.747 with a p-value of 0.00 at  $\alpha$  5%. Because the p-value is 0.00 smaller than 0.05, there is enough empirical evidence to accept H1: which states that there is

a significant influence on work ethics on employee performance. The coefficient positive sign indicates that the better the Work Ethic, the better the Employee Performance will be.

**Hypothesis 4: Influence of Organizational Culture on Employee Performance mediated by Work Ethics.**

Indirect influence between Organizational Culture on Performance through Work Ethics, obtained indirect coefficient of influence of 0.124. Direct influences (Organizational Culture to Work Ethics, and Work Ethics to Performance) are both significant, based on p-value <0.05, so it can be concluded that there is a significant indirect effect between Organizational Culture on Performance through Work Ethics. This means that the higher the Organizational Culture value, the higher the Performance value, if the value of Work Ethics is also high.

## DISCUSSION OF RESULTS

*Influence of Organizational Culture on Employee Performance.* The results of this study indicate that organizational culture influences performance. This result means that good organization culture can improve the performance at PT. Bank Negara Indonesia Tbk. Kediri Branch. This finding supports the opinion of Suharto & Nusantoro (2018), Raharjo et al., (2018), Calciolari et al., (2018), Aasi et al., (2018), Daulay and Pratiwi (2014) that organizational culture positively influences performance. Organizational culture will certainly bring various impacts on Human Resources (HR), so that employees of an organization must be able to respond to the organizational culture properly. Besides that the organizational culture that works well will certainly bring the organization to get its goals and the role of culture in the organization is very important, where culture can be a characteristic of an organization and differentiate it from other organizations Giani and Mukzam (2017).

In addition, the results of this study are the same as those conducted by Anggraeni (2008), Andino and Novadjaja (2015), Puspita Sari (2007), and Maramis (2013) which prove that organizational culture directly affects performance. As stated by Wardani, Mukzam, and Mayowan (2016) which states that organizations with a strong culture will influence the behavior and effectiveness of employee performance. The results of previous studies differ from this research, namely Susanti (2017) argues that organizational culture has a positive but not significant effect on employee performance. This is because the values and norms that have not been well received and understood by employees as a basis in the rules contained in the organization, as well as the presence of anxiety in the face of problems of external adaptation and internal integration. Muarif, Munazar, Bernhard Tewal, and Greis Sendow (2015) research also suggested that organizational culture had no significant effect on employee performance.

The empirical findings are based on the loading factor of the organizational culture variable for the aggressive indicator with the smallest loading. These results indicate that aggressiveness is reflected through being interested in learning new things outside of their work with the aim of enriching the knowledge they possess (X1.6.1) and creating a healthy competitive atmosphere between employees (X1.6.2) is still less applied to the BNI branch of Kediri. Independence shows how far people are aggressive and competitive rather than relaxed. These findings provide important recommendations for employees at BNI Kediri branch to be more aggressive in doing the job.

Research in the banking sector is interesting and needs to be studied about the behavior and effectiveness of employee performance considering that banks play an important role as financial institutions with the main task of collecting funds from the public, which is a successful banking record, of course, reliable human resources are needed. an indication for the bank, that the bank concerned has the trust of the community. The results of the empirical study found that organizational culture at PT. Bank Negara Indonesia Tbk. The Kediri Branch Office needs to be improved again so as to have an impact on improving performance. The research results proved that organizational culture has not been optimally implemented at PT. Bank Negara Indonesia Tbk. Kediri Branch Office. The findings show that the indicators that most reflect the organizational culture are the orientation of the results

reflected through the awarding of the results achieved by employees and respecting the work of employees rather than the work process. Based on the results of research and theoretical support, the bank more optimize the organizational culture in order to create better performance in the future.

*The influence of organizational culture on work ethics.* Organizational culture influences performance. This result means that a good organizational culture will improve the work ethic. An organization needs a strong organizational culture, as stated by Sathe (1985) stating that the strength of corporate culture can be characterized by the homogeneity and stability of members of a company's organization when in a long and intense shared experience. In addition to a group of organizational members if successful in overcoming problems related to maintaining organizational sustainability in the long term, varied and high intensity experience, will strengthen the corporate culture and differentiate between one company and another. Whereas a weak organizational culture as stated by Susanto (2004) explains that a weak corporate culture is not able to provide encouragement to employees to have a desire to move forward with the company. Characteristics of a weak corporate culture are not having clear values or beliefs about efforts to succeed in the business, even though they may have many beliefs but are not agreed upon as important.

The results of this study are in line with the research conducted by Nurhakim (2007), Semedi (2009) that the relationship of corporate organizational culture to work ethics that has a strong relationship, namely a strong corporate culture will make a high professional work ethic. A high work ethic usually arises because of various interesting challenges, hopes, and possibilities. Such a situation can make people work diligently, conscientiously, dedicated, and with great responsibility (Widodo and Yuwantono, 2017).

The findings of this study indicate that organizational culture still needs to be improved to achieve a good work ethic at PT Bank Negara Indonesia Kediri Branch. The existence of a good organizational culture can help improve the work ethic. This is because the work ethic is an important factor in any organization, especially at PT Bank BNI. Based on the results of this study it is expected that banking organizations, especially at PT Bank BNI, can improve organizational culture.

*Effect of Work Ethics on Performance.* Work ethic has a positive effect on performance. This result means that a good work ethic will improve performance. The results of this study are in line with research conducted by Sapada et al., (2018), Osibanjo et al., (2018), Mohammad et al., (2018), Meriac & Gorman. (2017), Goebel & Weißenberger(2017), Luthfia et al, (2017), Timbuleng and Sumarauw (2015) that the work ethic affects performance. Employees who have a good work ethic will try to show an attitude, character and belief in carrying out a job by acting and working optimally (Octarina, 2013).

The results of other research studies that are different from this research are Febriantoro (2016) arguing that the work ethic does not significantly influence employee performance. Dodi, et al, (2013) explains that the work ethic is an attitude, views, habits, characteristics or attributes about how to work owned by a person, a class or a nation. Work ethic is the spirit of work seen in the way a person responds to a job, the motivation behind a job (Fadillah, 2010). The result stated that there is work ethic in PT BNI branch organization. This is evident that there is employee participation in terms of enthusiasm in completing work in order to get satisfactory results, complete even difficult work, obey the rules, carry out orders correctly, be honest, diligent in completing work and want to learn from mistakes to complete the work more satisfying.

The dominant factor influencing work ethic in this research is hard work and discipline, honesty and responsibility is important at PT. Bank Negara Indonesia Tbk. Kediri Branch. According to Salamun et al. (1995) an employee who has a high work ethic is indicated by: (1) hard work, where employees have the character of being drunk to be able to achieve the goals to be achieved, (2) work discipline, where employees have an attitude of respect, respect obedient and obedient to the regulations that apply, (3) honest, where employees in carrying out their work in accordance with the rules that have been determined, (4) responsibility, where the work done is something that must be done with diligence and sincerity, (5) diligently, the creation of personal habits of employees to maintain and improve

what has been achieved, and (6) diligent means diligent, hard-hearted, and earnest (work, study and effort). Referring to the results of the research is expected that the Bank improve the work ethic of employees through hard work and discipline, honest and responsibility. With an optimal work ethic, there is an increase in performance.

The findings in this study indicate that the smallest diligent and diligent indicator (Z1.4) with the outer loading reflected through not easily bored and diligent in completing the work (Z1.4.1) and Want to learn from mistakes to complete a more satisfying job (Z1. 4.2). These findings illustrate the indicators of Diligent and Diligent (Z1.4) are still lacking in BNI Kediri branch. Thus these findings provide recommendations of the importance of diligent and diligent so as to contribute to employee performance.

*The Influence of Culture on Performance through Work Ethics.* The results of the study prove the influence of organizational culture on performance through work ethics. This shows that the work ethic is able to mediate the influence of organizational culture on performance. With the existence of an organizational culture, employees are encouraged to carry out new innovations, develop their capabilities. Gives more focus on the results achieved.

Organizational performance in this study is reflected in the form of factors of quantity, quality, timeliness, effectiveness and presence. The most influencing factor is the effectiveness of the maximum utilization of resources and time in the organization to increase profits and reduce losses, in addition the level of employee presence in the company can determine employee performance.

Based on the perceptions of employees, PT Bank Negara Indonesia (PERSERO) Tbk. Kediri Branch was more focused on all performance indicators, namely quality, quantity, on time, effectiveness and attendance; this was evidenced by the average of all indicators in the high category. In addition to indicators that affect performance, other factors that influence performance achievement are knowledge, skills, and motivation factors. Thus the performance needs to be upgraded to achieve the mission vision of PT BNI Kediri branch.

## CONCLUSION AND RECOMMENDATIONS

Results of the study it can be concluded that organizational culture has a direct effect on employee performance, organizational culture influences the work ethic, work ethic directly affects the performance of Kediri branch employees of Bank Negara Indonesia and the culture of organization influences performance through work ethic. This the study recommends that the Kediri branch of Bank Negara Indonesia leaders pay attention to the importance of an organizational culture that has the characteristics of risk-taking innovation, detail attention, results orientation, human orientation, team orientation, aggressiveness and stability can improve employee performance at PT Bank Negara Indonesia (PERSERO) Tbk. Kediri Branch. This is based on the findings of a strong organizational culture in measuring performance. Thus the leadership can direct and remind employees of the importance of organizational culture.

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**THE EFFECT OF SERVICE QUALITY ON CUSTOMER LOYALTY WITH CUSTOMER SATISFACTION AND TRUST AS THE INTERVENING VARIABLES AT PT BANK TABUNGAN NEGARA PERSERO TBK OF SURABAYA BRANCH OFFICE**

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**ABSTRACT**

The aims of this research were: to analyze the direct effect of service quality on customer loyalty, to analyze the indirect effect of service quality on customer loyalty with customer satisfaction as the intervening variable, and to analyze the indirect effect of service quality on customer loyalty with customer trust as the intervening variable. This research tested the hypothesis that was intended to strengthen the theory applied as the reference material. Quantitative approach was applied in this research. The population of this research was all customers of BTN of Surabaya Branch Office. The researchers took a sample of 200 customers. Based on the research findings, it was found that the service quality had a direct effect with a significant and positive result on customer loyalty that could be used as a reference by BTN to better maintain and improve its services. Customer of BTN of Surabaya Branch Office commonly felt satisfied with the provided services. However, the satisfaction was derived from the service quality so that customer loyalty in this research showed insignificant result. Meanwhile, the effect of service quality on customer loyalty mediated by customer trust showed significant and positive result which meant that the trust obtained from good service quality provided by BTN of Surabaya Branch Office truly gave positive effect on customer loyalty.

**KEY WORDS**

Service, quality, loyalty, satisfaction, trust.

In the modern world, to promote the economy of a country, the role of banking services is very large and also important. Banking institutions are the core of financial system of a country (Hermansyah, 2009). Almost all sectors dealing with financial activities always need bank services. In the banking business, the quality of service is very important. In addition to diversity, a wide range of products are offered, improvements in information technology, physical services, and non-physical services are intended to improve service quality (Ariyani, 2008).

Customer assessment of the bank is affected by how customers interpret the bank products or services they receive. Providing high quality service is a must to achieve customer satisfaction and it must be carried out (Bedi, 2010). To the customers, the service quality and customer satisfaction come from an organized service in which customers will directly receive the services from the banking institutions. Customer loyalty will be a true financial source because it costs efficiently compared to having to find new customers which will cost up to five times greater. Encouraging customer desires to use bank products and services and establishing close relationships with customers is a real challenge to banking services (Suhardi, 2006).

In choosing banking services, especially in saving the funds the customers own to avoid the risk of loss due to poor performance of a bank, customers are now becoming smarter and more selective. The element of trust is indeed a major factor. Trust will also be needed to build and maintain long-term relationships (Akbar and Parves, 2009). Long-term business continuity is based on a high customer commitment to a bank.

The dynamics of the situation and conditions on external factors in the context of marketing of banking services should be a business opportunity to generate profit or benefit

and also to maintain the existence of the bank. For the sake of the smoothness of the matter, the bank is required to continuously adjust the products and services to the needs of the customers. The quality of products and services, which is in accordance with the customer desires, determines the level of customer satisfaction. There are two main things that are closely related between the customer satisfaction and the provided service that is the customer expectation of service quality and customer perception on service quality. Customers will be satisfied if the performance on the products and services exceeds their expectations.

Commonly, customers will be satisfied if they are served properly by the bank employees. Therefore, the bank must place the customer as king in its service. It is important for banks to learn how customers behave, what customers want and how to serve the customers well and excellently. Services provided in serving the customer must be in accordance with the banking etiquette that is the procedure to serve the customer well according to Kashmir (2004).

Customer satisfaction obtained by customers directly or indirectly affects the bank image which will also affect the increase of NOA (Number of Account) and VOA (Volume of Account) and will contribute directly and positively to Bank Tabungan Negara. In such a situation, the bank must put customer satisfaction above all to obtain customer empathy so that customers who have joined Bank Tabungan Negara will have an increasing level of loyalty.

Interpersonal relationship has been proven to be an obstacle for the customers to move to another bank (Suryani, 2006). The research findings from a research conducted by Molina et al. (2007) revealed that belief has a dominant effect on loyalty. The development of the banking industry in Indonesia, that is increasingly tough and high, especially coupled with the development of global banking conditions in which the market has been able to access the domestic market, the effort in terms of modeling the trust and customer satisfaction can be a weapon that can be used by each bank to compete with each other maximally and it will also be able to produce more value that is very useful for its customers.

The aims of this research were: 1) to analyze the direct effect of service quality on customer loyalty, 2) to analyze the indirect effect of service quality on customer loyalty with customer satisfaction as the intervening variable, and 3) to analyze the indirect effect of service quality on customer loyalty with customer trust as the intervening variable.

## **METHODS OF RESEARCH**

This research tested the hypothesis that was intended to strengthen the theory applied as the reference material. A quantitative approach was applied in this study in which it used a post-positivist paradigm (such as thoughts about cause and effect, reduction on the variables, hypotheses and specific questions, the use of measurement and observation, and theory testing) in developing science. This quantitative approach applied some strategies consisting of experiment and survey that required statistical data. Based on the depth of the research, this research could be categorized as explanative research because it correlated between cause and effect that occurred between the variables under the research. Based on the data type, this research could be classified as field research.

*Population, Sample and Sampling Technique.* The population of this research was all customers of BTN of Surabaya Branch Office. The researchers took a sample of 200 customers of BTN of Surabaya Branch Office in which according to Hair et al. (2010) the number of samples (observational data) is at least 5 times of the parameters to be estimated or at least one hundred people. The researchers determined the criteria that had been determined in advance by using purposive sampling technique. The technique in taking the sample was called the sampling technique. The sampling technique used in this research was purposive sampling technique. According to Suharyadi (2011), purposive sampling technique is the selection of non-random samples in which the sample is selected based on certain considerations.

*Data Analysis Technique.* Sugiyono (2012) mentioned that data analysis technique on quantitative research use statistics. According Sugiyono (2012), descriptive statistics are statistics used to analyze the data by describing or illustrating the data that have been collected without the intention to make a conclusion that applies for the public or to make a generalization. The data analysis of this research was performed by using classical assumption test, multiple linear regression analysis and hypothesis testing of intervening variables.

In this research, the researchers applied path analysis technique because there was an assumption that the variables of customer satisfaction and trust which affected the correlation between independent variable were the service quality to customer loyalty in BTN. The level of confidence used in this research was 95% and  $\alpha$  was 5%.

## RESULTS OF STUDY

*Data Normality Test.* Data normality test is a classical assumption test that aims to test whether the regression model and residual data on the dependent and independent variables have a normal distribution or not.

Table 1 – Test Results of One Sample Kolmogorov-Smirnov

No	Description	Results
1	Mean	0.000
2	Std. Deviation	0.296
3	Test Statistics	0.815
4	Asymp. Sig. (2-tailed)	0.521

Based on Table 1, test results of one sample Kolmogorov-Smirnov, it showed that the value of Kolmogorov-Smirnov was 0.815 and the significance level of the test was 0.521. It could be concluded that the regression model was normally distributed because of its significance value  $> 0.05$ .

*Multicollinearity Test.* Multicollinearity test is a test performed to see whether or not there is a high correlation between the independent variables in a multiple linear regression model.

Table 2 – Results of Multicollinearity Test

No	Variables	Tolerance Value	VIF Value
1	SQ (Service Quality)	0.181	5.535
2	CS (Customer Satisfaction)	0.233	4.291
3	CT (Customer Trust)	0.236	4.242

Based on the results of multicollinearity test, the tolerance value  $> 0.10$  and VIF value  $< 10$  from each variable, hence model was free from multicollinearity assumption.

*Multiple Regression Analysis.* Based on the data processing using SPSS 16 software, it obtained the value of constants and regression coefficients as presented in Table 3 below:

Table 3 – Results of Regression Analysis (X Variable to Y Variable)

R		R Square		Adjusted R Square	
0.803		0.644		0.643	
No	Variables	Coefficient Unstandardized	Standardized	T	Sig
1	Constant	-0.513		-2.357	0.019
2	SQ (Service Quality)	1.104	0.803	21.202	0.000

*Dependent Variable: (LY) Loyalty.*

Based on the calculation of regression analysis in table 3, it obtained multiple linear regression equation as follows:

$$Y = -0.513 + 1.104X + e$$

Based on the above regression equation, it obtained the effect of independent variable of service quality to dependent variable that is customer loyalty. There was a direct correlation of independent variable namely service quality to dependent variable namely customer loyalty. To know how big effect of independent variable to dependent variable that is customer loyalty, it could be seen from the regression coefficient value.

The coefficient value of the service quality variable (X) was 1.104 in the positive direction. A positive sign meant that the independent variable had a direct change correlation with the dependent variable. If the service quality variable increases, the customer loyalty would also increase and vice versa if the service quality variable decreases then customer loyalty will also decrease.

Based on table 3, it could be found out how much dependent variable could be explained by independent variable which could be seen from the coefficient of determination R<sup>2</sup> (R Square) value that was equal to 0,644. It meant that the independent variable of service quality affected customer loyalty by 64.4%, while the 35.6% was affected by other variables outside the regression model.

Correlation coefficient (R) could also be used to measure the closeness of a correlation between independent variable and independent variable. Based on the test results, it was known that the value of the correlation coefficient (R) was 0.803 or 80.3%. It proved that independent variables namely service quality had closeness correlation with customer loyalty as many as 80.3%.

*Path Analysis.* Path analysis is an advanced level of regression analysis that gives the output or outcome of indirect influence of independent variable namely service quality to dependent variable consisting of customer loyalty through the intervening variable consisting of customer satisfaction and customer trust. Based on the calculation using SPSS 16 software, it was known that the result of path analysis test was as follows:

Table 4 – Results of Path Analysis Test

R		R Square		Adjusted R Square	
0.840		0.706		0.702	
No	Variables	Coefficient Unstandardized	Standardized	t	Sig
1	SQ (Service Quality)	0.455	0.112	4.070	0.000
2	CS (Customer Satisfaction)	0.110	0.084	1.297	0.196
3	CT (Customer Trust)	0.550	0.086	6.373	0.000

*Dependent Variable: LY (Loyalty).*

Table 4 showed the results of the path analysis. However, to know the indirect effect of independent variable consisting of service quality through intervening variable consisting of customer satisfaction and customer trust, it further affected customer loyalty. Based on the results of path analysis test, it could be concluded as follows:

*The Effect of Service Quality on Customer Loyalty through Customer Satisfaction.* Based on the results of path analysis, it was found that there was a direct correlation between the independent variable X (Service Quality) → Z (Customer Loyalty) as many as 0.331. Indirect correlation between X (Service Quality) → Y1 (Customer Satisfaction) → Z (Customer Loyalty) was  $0.803 \times 0.093 = 0.075$ . Thus, the correlation value between the independent variable and the dependent variable was 0.075. It meant that the customer satisfaction as the intervening variable could not be proved as an intervening variable because the total value of the indirect correlation of the independent variable (X) through the intervening variable (Y) to the dependent variable (Z) was 0.075 which was less than the direct correlation of the independent variable (X) to the dependent variable (Z) of 0.331.

*The Effect of Service Quality on Customer Loyalty Mediated by Customer Trust.* Based on the results of path analysis, it was found that there was a direct correlation between the independent variable X (Service Quality) → Z (Customer Loyalty) as many as 0.331. Indirect correlation between X (Service Quality) → Y2 (Customer Trust) → Z (Customer Loyalty) was  $0.803 \times 0.454 = 0.365$ . Thus, the correlation value between the independent variable and the

dependent variable was 0.365. It meant that the customer trust as an intervening variable could be proved as the intervening variable because the total value of the indirect correlation of the independent variable X through the intervening variable Y2 and then to the dependent variable (Z) was 0.365 which was greater than the direct correlation of the independent variable (X) to the dependent variable (Z) of 0.331.

## **DISCUSSION OF RESULTS**

The aims of the research conducted by the researcher was to test each indicator of service quality effect on customer loyalty with customer satisfaction and customer trust as the intervening variables at PT Bank Tabungan Negara represented by Surabaya Branch Office as the research sample. Based on the results of the first hypothesis testing, the service quality had a direct effect on customer loyalty that obtained the positive and significant result. Thus, the service quality did have a direct positive effect on customer loyalty. Maximum service that was as much as possible beyond what was expected by the customer would have a great effect on the loyalty of the customers to keep using the existing products of the bank.

In a research conducted by Ngo and Nguyen (2016), it was true that the effect of the service quality provided by a bank to its customers has a great effect on the customer's ability to maintain their loyalty to use the banking products they already have before. The better the quality service provided by a bank then the loyalty level of the customer will increase in a straight direction. From the transformation carried out by BTN, it became the best bank with the third rank and BTN continued to provide the best service to its customers. As the evidence, it held the Best Front-liner Award event every year starting from the Branch Office and would be implemented centrally at BTN Headquarters in Jakarta after getting the best representative from the Branch Office. It was also an effort of BTN to always improve the service quality given by their employees which would affect the loyalty of its customers.

The result of second hypothesis testing of this research was about the effect of service quality to customer loyalty with customer satisfaction as the mediator. It obtained the result that the direct effect of customer service to customer loyalty was greater than the indirect effect. The result of indirect effect of service quality on customer loyalty mediated by customer satisfaction obtained smaller result. Thus, it could be explained that the customer satisfaction was not necessarily followed by the establishment of customer loyalty. From the open questions given by the researcher to the respondent in the questionnaire, it was found that the customer was satisfied with the service provided by BTN but it was more dominated by the answer that the customers use or open the BTN account only for Housing Credit (KPR) transaction. Once the mortgage liabilities of the client were fully paid, then the existing account in BTN would mostly be left without any transaction or it would become a passive account. There were answers to the limitations of BTN ATMs that were still rare in Surabaya compared to other banking competitors such as BRI, Mandiri and BNI. It had made the variable of customer satisfaction to have little effect on customer loyalty.

The result of the third hypothesis testing was about the effect of service quality on customer loyalty with customer trust as the intervening variable. It obtained the result that the indirect effect generated by the customer trust as a mediator was greater or it obtained a significant and positive result which was greater than its direct effect. Mian (2014) mentioned that the presence of customer trust greatly determined customer loyalty in the future. An important factor affecting customer loyalty was the high level of customer trust to the bank. Thus, it could be said that customer trust was indeed a factor that could affect customer loyalty from the service quality provided by a bank.

*Implications of research findings.* The findings of this research can be used as a reference for decision making in the future. The variables under the research concern about service quality, customer satisfaction, customer trust, and customer loyalty. The findings of this research can also be used as a useful input for the internal management of PT Bank Tabungan Negara Tbk in general and Bank Tabungan Negara of Surabaya Branch Office in particular, which became the setting of the research. In accordance with the transformation

efforts undertaken by BTN, as a bank that could be aligned with other banks, BTN should get a lot of inputs that can be used as a reference to support the process of those efforts.

With the achievement of good service quality provided by BTN, it can be used as a strategic plan by the company to become better and increase customer loyalty to BTN. In addition, with increased levels of customer satisfaction and customer trust then BTN will be able to achieve its goals smoothly. Due to the increasingly tight banking business competition in Indonesia, BTN is required to be able to catch up what it has not performed. With the improvement of service in terms of physical and non-physical improvement performed by Bank BTN, it was also expected to increase customer satisfaction and also customer trust that can positively affect customer loyalty so they are more loyal to BTN.

Based on the findings of this research, the company is expected to know the gap that can be used to improve the provided service quality and also as one way for the company to be able to develop the aspect of customer service in order to increase the level of customer satisfaction, customer trust and customer loyalty that will directly affect the consistency of BTN in the future to become better and more advanced.

## CONCLUSION

In the banking world, the customer is a major asset whose comfort and security should always take precedence. By improving the service quality, it would be very useful to support the level of customer satisfaction which would also affect the customer trust as well as customer loyalty as the final estuary of the achievement of success in retaining the customers. The high level of customer loyalty would show the existence of a bank in the banking business competition which was increasingly tight day after day. All banks were competing to provide the best possible customer service which would make their customers felt comfortable and eventually became loyal to the bank. This was also carried out to attract new customers with a good level of service provided by the bank.

Based on the research findings, it was found that the service quality had a direct effect with the significant and positive results on customer loyalty that could be used by BTN as a reference to further maintain and further improve its services. Customer satisfaction, in this research, could not be used as a benchmark of customer loyalty due to several reasons that might produce different results; depending on the objects of the conducted research. Customer of BTN of Surabaya Branch Office commonly felt satisfied with the provided services. However, the satisfaction was derived from the service quality so that customer loyalty in this research showed insignificant result. This might be due to the reason that the customers had BTN account only for mortgage requirements. Meanwhile, the effect of service quality on customer loyalty mediated by customer trust showed significant and positive result which meant that the trust obtained from good service quality provided by BTN of Surabaya Branch Office truly gave positive effect on customer loyalty.

*Limitations of the research.* This research had been pursued and carried out in accordance with scientific procedures, however it still had limitations including: 1) the respondents used in this research were only the customers who owned savings account at BTN of Surabaya Branch Office, 2) the research conducted only analyzed the effect of service quality, satisfaction and customer trust and customer loyalty at PT Bank Tabungan Negara of Surabaya Branch Office Tbk.

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**EFFECT OF INTERNAL AUDITOR INDEPENDENCE, AUDIT COMMITTEE AND INSTITUTIONAL OWNERSHIP TO THE INTERNAL CONTROL DISCLOSURE: A CASE STUDY CASE OF MANUFACTURING IDX COMPANY DURING PERIOD OF 2014-2016**

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**ABSTRACT**

The purpose of this research is to examine the effect of the independence of internal auditors, audit committee, and institutional ownership disclosure on internal control. Disclosure of internal control was measured with Internal Control Disclosure Index. The population of this research was the manufacturing firms listed in Indonesia Stock Exchange during 2014-2016. The samples in this research were taken using purposive sampling method and the number of the samples fulfilling the criteria was 69. The mean value of the internal control disclosure is 58.69%. The result of multiple regression analysis testing show that the independence of the internal auditor and institutional ownership has a significant positive effect on internal control disclosure. The audit committees do not have any effects on internal controls on disclosure.

**KEY WORDS**

Independence, internal auditors, audit committee, institutional ownership, internal control disclosure.

The executor of work is required to improve the efficiency and good performance in order to provide security for its investors. Thus, companies in the small and large scale must have an effective internal control system to support effective and efficient operation of the company. In the financial statements found some cheating scandal that could mislead users of financial statements.

The companies that have go public in Indonesia will reveal internal control at the company's annual report. Government Institutions Capital Market Supervisory Agency and Financial Institution (Bapepam-LK) has issued Regulation No. XK6.2012 on Obligation to Submit Report For issuers or Public Companies. The regulation is a refinement of the previous regulations which are intended to improve the quality of information disclosure in the annual report of the Issuer and public companies as a source of important information for shareholders and the public in making investment decisions.

PT Akasha Wira International Tbk, PT Kimia Farma Tbk, and PT Indofarma Tbk is a partial example of a manufacturing company who commit fraud in financial statements. Companies that have a long business process is manipulating the information content of profit by increasing sales and improving the value of inventory so that the profits presented higher than the actual situation (Dipanusa, 2013). According to Moeller (2009), everything was falsified, concealed, or made-up, is a form of fraud.

Effective internal control is the first step for the company to fight against fraud attacks. With the implementation of good internal control, enterprise management has a reasonable assurance that the company's goal has been achieved, the financial statements presented have been fair, as well as laws and regulations relating met (Boynton, 2006). Internal controls have become the basis for the effectiveness of their operational processes and corporate finance (Moeller, 2009).

The internal auditor is a business unit within the company that is required to maximize the disclosure of internal control to help companies avoid frauds that can make companies face risks are not expected. The independence of an auditor is the ability to act on the integrity and objectivity. Integrity is a moral principle that is impartial, honest, and suggested

looking at the facts as they are. While objectivity is an attitude of impartiality in considering the facts, personal interest is not in fact facing (Barry, 2001).

In addition to internal auditors also needed as the audit committee of the supervisory committee for the audit committee has a great responsibility in preparing the audit, do ratifikasi of the internal control system, and resolving disputes in accounting rules. The audit committee serves to provide views on issues relating to financial policy, accounting and internal control (Pancawati H, 2010).

Means to create an effective internal control is also needed external parties participating in supervising the disclosure of internal control through institutional ownership. Institutional ownership is ownership by investors other than individual ownership and managerial ownership (Ujiyantho, 2007). The institutional shareholders will seek to improve oversight of the management of behavior in an effort to minimize the level of fraud that may arise which can decrease the value of the company. So with institutional ownership supervision carried out will be more effective and its effect on the broad disclosure of information by management.

Based on this background, the study entitled "Effect of Independence of Internal Auditors, the Audit Committee and Institutional Ownership to The Internal Control Disclosure on Manufacturing Company in Indonesia Stock Exchange Year 2014-2016.

Based on the description of the background of this research, the formulation of research problems that can be identified, as: Is the independence of the Internal Auditor, Audit Committee, and Institutional Ownership had effect on the Internal Control Disclosure?

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Jensen and Meckling (1976) define agency theory as a contract in which one or more persons (as the principal) to request the other party (as the agent) to carry out a number of jobs in the name of principle which involves delegating some decision-making authority to the agent. Furthermore, Jensen and Meckling (1976) states that the agency problem can arise between the agent and the principal because of the tendency of one party for selfish and conflicts arise when multiple interests meet in a joint activity. The existence of a conflict of interest between principal and agent because of their different objectives encourage asymmetry information. Jensen and Meckling (1976) stated that there are two types of asymmetry information, namely: (1) *Adverse Selection*, for the agent to know more information than the principal, (2) *Moral Hazard*, occur because of the separation principal with the agent in managing the company, so the principal do not fully know about the running of the company.

To overcome this, we used the agency cost which consists of monitoring costs, bonding costs, and residual loss. Monitoring costs are costs incurred and borne by the principal to monitor the agent's behavior, which is to measure, observe, and control the behavior of the agent. Bonding costs are the costs borne by the agent to establish and adhere to a mechanism that ensures that the agent will act in the interests of the principals. Residual loss is a sacrifice in the form of principal welfare losses as a result of differences in the decision and the decision of the principal agent. The independence of the Internal Auditor and Internal Control Disclosure

The independence by IAI through SPAP (2001: 220): "This standard requires the auditor be independent, that is not easily influenced, because he was carrying out work in the public interest (differentiated in terms he practiced as an internal auditor)". The independence of the internal auditor is an independent attitude possessed by the internal auditor, so as to assess objectively and in the absence keterpihakan at an interest so as to suppress the disclosure of internal control.

Research results of Adani Yusrina (2013) and Rizal Alfian (2014) matches the positive influence the independence of the internal auditor of the internal control.

*H1: The Independence of Internal Auditor Positively Influences to The Internal Control Disclosure.*

Decision of the Capital Market Supervisory Board No. 29 / PM / 2004 is an audit

committee formed by the board of directors for at least a member of the audit committee has the task of accounting education and management control of the company. The formation associated with the review of the company's internal control system, ensuring the quality of information disclosure and improve the effectiveness of the audit function.

Research results of Adani Yusrina (2013) and Febi Maulina (2014) found a significant influence on the results of internal control. Meanwhile, Amalia Wardhani (2010) get the results of the audit committee does not affect the internal controls were weak due to the organizational structure.

*H2: Audit Committee Positively Influences to The Internal Control Disclosure.*

Institutional ownership is ownership by financial institutions such as pension funds, mutual funds, insurance and other institutional ownership. The institutional shareholders will seek to improve oversight of the management of behavior in an effort to minimize problems that might arise agency (Jensen and Mecking, 1976).

Research results of Zulfikar, Rosiana. & Nariah (2015) to get the positive significant effect on the disclosure of internal control. Meanwhile, Amalia D Latifah (2013) to get the institutional ownership has significant negative effect on the disclosure of internal control as the number of institutions that control policies lead to a less transparent disclosure.

*H3: Institutional Ownership Positively Influences to The Internal Control Disclosure.*

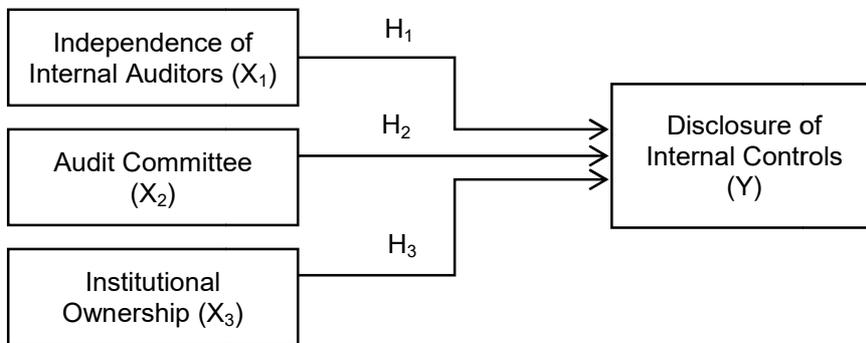


Figure 1 – Conceptual Framework

### METHODS OF RESEARCH

The independence of the internal auditor is an internal auditor impartiality on an interest. Internal auditors in charge of controlling and ensuring policies and procedures are in accordance with the decision of the agency's top management to minimize conflict. independence of internal auditors in this study was measured by the number of internal auditors in the company.

$$IAI = \sum \text{Auditor Internal in the Firm}$$

Decision of the Capital Market Supervisory Board No. 29 / PM / 2004 is an audit committee formed by the board of directors to perform supervisory tasks of corporate management. Bank Indonesia Regulation No. 08.14.2006 states that at least one member of the audit committee have the skills of accounting education.

$$ACEDU = \frac{\sum \text{Audit committee with accounting education background}}{\sum \text{Audit Committee in the firm}}$$

Institutional ownership is ownership by institutional investors other than individual ownership and managerial ownership. Institutional ownership has a very important role in minimizing teradi agency conflict between shareholders and management. Institutional ownership is measured by the percentage of institutional ownership in the company.

$$IO = \frac{\sum \text{Common stock owned by institution}}{\sum \text{Share issued}} \times 100\%$$

Disclosure of internal control is the disclosure of information relating to the implementation of the company's internal control conducted disclosed in the company's annual report. This study uses the Internal Control Disclosure Index (ICDI) was measured using a dummy, by giving a value of 1 for each item disclosed, and the value 0 for items that are not disclosed, then divide the total items disclosed to the maximum value of all the items that amounted to 18 criteria. Disclosure items are arranged based on the regulation XK6.2012 on the Obligation to Submit Annual Reporting for Listed Company public.

$$ICDI_j = \frac{\sum X_{ij}}{\sum n_j}$$

Where:

ICDI<sub>j</sub> = Internal Control Disclosure Index company j;

n<sub>j</sub> = Number of items that must be disclosed company n<sub>j</sub> = 18 items;

x<sub>ij</sub> = Dummy variable: 1 (if the item i disclosed); 0 (if the item i is not disclosed);

0 ≤ ICDI<sub>j</sub> ≤ 1.

This study using purposive sampling method with the following criteria: (1) The manufacturing company which is consistently listed in the Indonesia Stock Exchange (BEI) during the period 2014-2016, (2) the Company issued its annual report for the period 2014-2016, (3) the Company provides data full on the variables used in the study. Samples obtained was number 69 the company's data.

Data used in the study of secondary data, the annual report of companies listed on the Indonesian Stock Exchange (BEI) in the period 2014-2016. Data obtained from the website of Indonesia Stock Exchange [www.idx.co.id](http://www.idx.co.id),<sup>[1]</sup><sub>SEP</sub>

Descriptive statistics are directly related to data collection and measures of centralization of data and presentation of results of measures of central tendency of the data. Descriptive statistics were used to describe and provide a general overview of statistical research data for each variable in the study. Applications used for processing data in this research is the application of SPSS 20.0.

This study uses multiple regression analysis were used to measure the relationship between two or more variables and show the direction of the relationship between the dependent and independent variables (Ghozali, 2011). Prior to the calculation of multiple regression analysis to determine the effect of the independent variable on the dependent variable is bersasa together, it will be held the classical assumption test. Classic assumption test is done in order to meet the nature of regression estimation that is BLUES (Best Linear Unbiased Estimation). Classic assumption test consisting of: (1) Normality Test; (2) Test Multicollinearity; (3) Test Heteroskidastity; and (4) Test of autocorrelation. Regrsinya equation as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where:

Y = Disclosure of Internal Control;

α = constant;

β<sub>1</sub>...β<sub>n</sub> = Coefficient regression direction;

X<sub>1</sub> = Internal Auditor Independence;

X<sub>2</sub> = the Audit Committee;

X<sub>3</sub> = Institutional Ownership;

e = Residual Error.

## RESULTS AND DISCUSSION

Based on empirical testing, the result for the descriptive statistical information which includes the minimum value, maximum value, average value, and standard deviation. Descriptive statistics in Table 1 show the disclosure of internal control (PPI) has the lowest

value of 0.2778 and 1.0000 highs. The lowest value disclosure of internal control is owned by PT. Light Wilmar Indonesia Tbk. occurred in 2014, while the greatest value disclosure of internal control is owned by PT. Indopoly Swakarsa Industry Tbk and PT. Tiga Pilar Sejahtera Food Tbk. occurred in 2016. The average PPI owned the entire company during the year of follow-up samples is 0.586957 with a standard deviation is 0.1887539. It shows the distribution of PPI data has the degree of variation of 32.16% which indicates that the data obtained tend relatively homogeneous or have the same tendency among companies sampled.

Table 1 – Descriptive statistics

n/n	N	Minimum	maximum	mean	Std. deviation
PPI	69	.2778	1.0000	.586957	.1887539
IAI	69	1	37	6:30	8026
ACEDU	69	.0000	1.0000	.502415	.3494776
INSOWN	69	.1400	74.0800	24.832743	19.2190622

Source: Data processed, 2017.

The independence of the internal auditor has the lowest value (minimum) of 1 (one) and the highest (maximum) of 37 (thirty-seven). Based on the statistical processing, the value of the average (mean) of the number of internal auditors amounted to 6.30 and has standard deviation of 8.026. From these data, the degree of variation of internal auditor independence can be seen at 127.39%, which means that data is processed is heterogeneous in that the data relative to vary between companies.

Table 2 – Classic Assumption Test

## (1) Normality Test

	Residual unstandardized
N	69
Kolmogorov-Smirnov Z	.552
Asymp. Sig. (2-tailed)	.921

## (2) Test Results autocorrelation

dU	dW	4 - dU	RESULTS	CONCLUSION
1.7343	1,813	2.2657	$dU \leq dW \leq 4 - dU$	NO AUTOCORRELATION

## (3) Multicollinearity Test

Model		collinearity Statistics	
		tolerance	VIF
1	(Constant)	-	-
	IAI	.753	1,328
	ACEDU	.926	1,080
	INSOWN	.954	1049

## (4) Heteroscedasticity Test

Model		Coefficients unstandardized		standardized Coefficients	t	Sig.
		B	Std. Error			
1	(Constant)	.031	.227		.138	.891
	IAI	-.001	.002	-.100	-.750	.456
	ACEDU	.064	.031	.246	2,041	.055
	INSOWN	-.001	.001	-.229	-1921	.059

Source: Data processed, 2017.

Accounting background audit committee has the lowest value (minimum) of 0 (zero) and highest value (maximum) of 1 (one). Based on the statistical processing, the value of the average (mean) of the number of internal auditors amounted 0,502415 and have standard deviation of 0.3494776. From these data, the degree of variation accounting educational backgrounds of the audit committee can be seen at 69.56%, which means the data are homogeneous or have the same inclination relative data between companies.

Institutional ownership has the lowest value (minimum) at 0.1400 and the highest value

(maximum) of 74.08. The lowest value indicated by PT Mayora Indah Tbk. (MYOR) in 2013 is 0.14% and the highest value indicated by PT Kabelindo Murni Tbk (KBLM) in 2013 which is 74.8%. The average value (mean) of the sample firms of institutional ownership amounted to 24.832743 and has a standard deviation of 19.2190622. Institutional ownership has a degree of variation of 77.4%, which means the data are homogeneous, i.e. have relatively similar trend among companies sampled.

Based on the classic assumption test by using the Kolmogorov-Smirnov test, Durbin-Watson test, Run Test, and test Glejer note that the data used in this study the distribution data are normal and valid.

Table 3 – The Results of Multiple Linear Regression Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	beta			
1	(Constant)	-.179	.401		-.447	.656
	IAI	.011	.003	.482	4,269	.000
	ACEDU	.071	.055	.131	1,289	.202
	INSOWN	.002	.001	.210	2,099	.040

*Coefficient Determination Test*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.622 <sup>a</sup>	.387	.349	.1523145	1.813

Source: Data processed, 2017.

Based on the table, equation influence the independence of the internal auditor, the audit committee, and institutional ownership on the disclosure of internal control, sebgai follows:

$$PPI = - 0,179 + 0,011 IAI + 0,071 ACEDU + 0,002 INSOWN + \text{error}$$

Based on Table 3, the value of Adjusted R Square of 0.349 (34.9%). This suggests that the independent variables used in this study may explain the disclosure of internal control (PPI) amounted to 34.9%, while the remaining 65.1% influenced by other variables that are not used in this study.

*Hypothesis 1: The independence of the Internal Auditor Positively Influence to the Internal Control Disclosure.*

The hypothesis of this study aimed to examine the effect of the internal auditor independendensi (IAI) on the disclosure of internal control (PPI). From the regression results are presented Table 3 it can be concluded that the independence of the internal auditor (IAI) effect on the disclosure of internal control. This can be seen by the significant value of count (Sig.) of 0.000. This demonstrates the significant value count <error rate (0.05). This marks the independence of the internal auditor significant effect on the disclosure of internal control at the 95% confidence level.

Number of auditors can increase independence with increasingly diverse findings and opinions by internal auditors can streamline management measures in the disclosure of information. Based on the calculated value and the significance of the regression coefficients to see the effect of the internal auditor independence on the disclosure of internal control, it can be concluded that the independence of the internal auditor has a positive effect on the disclosure of internal control and proved significant.

*Hypothesis 2: Audit Committee Positively Influence to The Internal Control Disclosure.*

The hypothesis of this study aimed to examine the effect of the audit committee (ACEDU) on the disclosure of internal control (PPI). From the regression results are presented Table 3 it can be concluded that the audit committee accounting background but not significant effect on the disclosure of internal control. This can be seen by signifikanansi count (Sig.) Of 0.202. This demonstrates the significant value count > error rate (0.05). This marks the audit committee accounting background but not significant effect on the disclosure of internal control.

Background regression coefficient value accounting for 0,071 audit committee concluded the audit committee accounting background can increase the Disclosure of Internal Control (PPI) and the positive impact on the PPI. The audit committee accounting background has a high competence in reviewing the company's internal control system and ensures the quality of information disclosure, no significant results occurred because the educational background of accounting audit committee can not give a guarantee for the disclosure of internal control is effective or ineffective. The audit committee seeks accounting background to perform its role as a corporate function corresponding commitment and experience. Based on the calculated value and the significance of the regression coefficients to see the effect of an accounting background audit committee on disclosure of internal control, it can be concluded that audit committees effect but not significant to the disclosure of internal control.

*Hypothesis 3: Institutional Ownership Positively Influence to The Internal Control Disclosure.*

The hypothesis of this study aimed to examine the effect of institutional ownership (INSOWN) on the disclosure of internal control (PPI). From the regression results are presented Table 3 it can be concluded that institutional ownership (INSOWN) effect on the disclosure of internal control. This can be seen by the significant value of count (Sig.) Of 0,040. This demonstrates the significant value count <error rate (0.05). This indicates institutional ownership has a significant effect on the disclosure of internal control at the 95% confidence level.

Institutional ownership regression coefficient of 0.002 can be concluded institutional ownership can increase the Disclosure of Internal Control (PPI) and the positive impact on the PPI. Increasing the institutional share holders institutions'll attempt to improve oversight of the management of behavior in an effort to minimize agency problems that may arise. Based on the calculated value and the significance of the regression coefficients to see the influence of institutional ownership on the disclosure of internal control, it can be concluded that institutional ownership affects the disclosure of internal control and proved significant.

## **CONCLUSION**

This study examines the effect of the independence of the internal auditor, the audit committee, and institutional ownership on the disclosure of internal control. The following are the conclusions of this study:

- The test results and analysis indicate that the independence of the internal auditor proxied by the number of internal auditors affect the significance level of 5%;
- The test results and analysis indicate that the audit committee is proxied by the educational background of the audit committee of accounting does not affect the significance level of 5%;
- The test results and the analysis show that institutional ownership proxied by the percentage of institutional ownership affects the significance level of 5%.

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## **FACTORS DRIVING REMITTANCES BY MINANGKABAU'S MIGRANTS TO SENDING HOUSEHOLDS IN RURAL AREAS**

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### **ABSTRACT**

Minangkabau culture is characterized by a matrilineal family system and high level of migration. The contribution of Minangkabau migrants to rural origins and household left behind is generally very high. However, there is currently limited empirical research on this issues especially to paddy farm households in rural areas. This article emphasizes what decision to remit is intensely associated to individual migrant, farm household and social group characteristics. Using farm households survey data from three villages in West Sumatera, our results lend support that remittances are sending to farm households with low levels of welfare. Futhermore, individual characteristics such as gender and migrant expenditure are influential in remitting patterns. In addition, no differ between clan groups of migrants. These results indicate primary driver of Minangkabau migrants in sending remittances is altruism. Understanding the sending of remittances behavior is crucial for rural areas to improve these potential capital transfer for more sustainable agricultural development programme.

### **KEY WORDS**

Mirgation, remittances, rural, farm, households.

Migration is a global phenomenon, the number of migrant is generally presumed to be growing. Indonesia as the island country has a considerable level of mobility. The Minangkabau are one ethnics in Indonesia has a high level of migration. Minangkabau's has experienced high migration outflows and remittances inflows in West Sumatera. Migrations of the Minangkabau is a culture that has become the rite de passage, especially for young men (Naim, 1979). Meanwhile, Murad (1978) said that merantau is a socially and culturally institutionalised pattern of migration in Minangkabau society. Unsurprisingly Socio-economic factors became one of the dominant factors that drive migration Minangkabau ethnic (Murad, 1978; Kato, 2005)..

Although it was far from the area of origin, do not reduce the bond with the family and indigenous community in the village. Minangkabau migrants are known to have a high spirit of Philanthropy (Addiarrahman, 2013) and concern over the welfare of the region of origin is also very high (Kato, 1982). According to Murad (1978), migrants visit the region to meet their obligations and duties in the family at the same time contribute to sustainable development. For example, if there are construction projects such as building schools, clinics or mosques, the migrants send money or building materials.

A large empirical study was recently the impact of remittances on increased development and welfare, both global level as well as the household. Remittances are a source of sustainable external capital can reduce poverty in developing countries (Mohapatra et al., 2010; Adams and Page, 2005; SOPEMI, 2006). Remittance also contributes to welfare through increased income, savings and investment (Ratha,2003). On the side of the household, remittances can be input to the decision-making process, influencing the supply of labor, self-employment, and fertility (Funkhouser, 1995). Remittances could reduce the

income risk of the family left behind by diversifying the source of income. (Stark, 1991; Agarwal and Horowitz, 2002).

Remittances can increase the agricultural output (Huy, 2016). Although migration reduces the availability of labor in agriculture and resulted in the loss of the crops, but can be compensated through the reinvestment of remittances. In the Philippines, remittances positive effect on increasing the ownership of household goods, time for entrepreneurship and investment in the sectors of transport, communications and manufacturing (The,2008). While in Guatemala, remittances are used to improve the household human capital such as schools and investment in housing (Adams and Cuecuecha, 2010)

Recipients of remittances in Indonesia more use for the consumption of basic necessities. (Adams and Cuecuecha, 2010). High poverty rates and low levels of remittances is alleged to be the cause of such behavior. Similar conditions occurred in Tajikistan, where remittances have significantly improved the level of household consumption however negatively impact spending on investment (Clément 2011).

It is important to note that remittances can give a negative or positive impact on household welfare in the area of origin. The effect of remittances on well-being varies with the economic characteristics of migrants, migration experience and diversity of arrangements. For instance, migrants welfare may be positively affected by transferring money to the family left behind (Akay et.al, 2012). In the context of West Sumatera, there are a unique aspects of Minangkabau culture, such as a strong moral obligation to care for family left behind. The contribution of Minangkabau migrants is not only for family, but also for the benefit of the development of their home villages (Murad, 1978). Brown and Walker (1995) said that migrants can be motivated to remit for reasons of saving and investment in their country origin, including investment in human capital formation of the next generation. However, there is currently limited empirical research on Minangkabau's behaviour to sending remittances, especially on paddy farm households.

Thus, it is crucial to identify what factors pushing migrants send remittances to his family in the rural of origin. This research aims to analyze the effect of the characteristics of the migrants and household origin against the level of remittances sent by migrants in the Minangkabau ethnic. The target of this research is specifically intended for paddy farm households, considering most of the migrants come from rural-based agriculture.

## LITERATURE REVIEW

Remittances sent in the household in the region ranged from 10-30% of the income of migrants (Stark,1978). Stepick and Portes (1989) report, the number of remittances sent by Haitians to the region reached 39%. Empirical studies show that the amount and pattern of delivery of remittances vary widely depending on the type of migrant origin, the income level of the family and the level of remittances received. What factors encourage migrant sending remittances to families in the region of origin in question the researchers. Considering each individual migrant and regional origin of the differences in the conditions and characteristics.

Willingness to remit really depends on many factors such as the migrant's ability, motivation, duration of migration and the conditions of the family left behind. Stark and Lucas (1988) said that to understand how patterns of remittances from rural to urban needed knowledge of the contractual agreement between the migrants with the family. Based on several studies about the factors that encourage the willingness to remit there are two themes: first studies related to the motivation of the migrant and the second relates to the characteristics of the migrant and the household left behind.

The analysis of the variation in willingness to remit can be approached from different frames of views. A basic motivation of a willingness to remit may be altruistic feelings towards the household left behind. In the Becker's model the migrant derives positive utility from the consumption by the family. Consequently migrant cares about poverty, welfare, shocks, etc of household left behind and sends remittances. Research on the motivation of sending remittances was first expressed by Lucas and Stark (1985) which stated that the delivery of remittances in influence by the difference of motivation. Types of motivation were

split into three, namely: 1) pure altruism, 2) pure self-interest and 3) The enlightened self-interest. Some type of agreement the agreement-related motivation sending remittances between migrants and the household left behind are divided into categories such as 1) co-insurance, 2) Loan repayment and 3) exchange motives.

Deppo (2014) stated that pure altruistic became the dominant factor in motivating migrant remittances sent to Guiana region. According to Funkhouser, (1995) the migrant remittances increase if income increases and altruism. While Batista and Umblijs (2016) found that migrants who have a risk of high wages and strong financial resources with the migrants will have a high motivation to post remittances. This phenomenon is known by the term self-insurance. The existence of the insurance motive, means that remittances play a key role in the improvement of welfare of households (Nnyanzi, 2016)

In addition to the altruistic motivation, another important factor affecting migrants send remittances are migrant and household left behind characteristics. Funkhouser (1995) states relations with migrant household becomes important in encouraging migrants to send remittances. Migrants who have parents, siblings, wife, and children in the regions of origin tend to send larger remittances. In addition, the migrant characteristics such as education, gender, type of work, duration of migration and the amount of income also determine the level of remittances sent.

Hagen-Zanker and Siegel (2007) finding that the causes and patterns of migration influence the remitting behaviour. Geographical location, economic possibilities, individual and household characteristics that influence remitting patterns. Migrant age, sex, marital status, education, household income, wellbeing and migration patterns are influential in determining the amount of remittances received. Males are the majority of migrant in Albania and Moldova. In Albania, higher amounts are sent to the poorer households. Albanian men send higher amounts of remittances probably due to cultural practice, while in Moldova women send higher amounts. In another study Brown and Ahlburg (1999) said a dominant characteristic of migration in the Pacific is the family. Furthermore, Piracha and Saraogi (2011) suggest that combination of household and migrant characteristics and some community level variables are the key elements in explaining the remittances behaviour in Moldova.

## METHODS OF RESEARCH

The data used in this study come from paddy farm household survey questionnaires in Sulit Air, Sungai Tarab, and Koto Baru villages. The respondents of the research were that paddy farmer . Information of migrant came from farm households were interviewed. The amount of the paddy farm households with migrant 163 people, without migrant 75 people and migrants to 371 people. The survey collected information on paddy farm household characteristics, asset endowment, non farm activities and migrant's data. Data analysis model of migrants intended to find out the factors that influence variation remittances to sending household left behind

Logit regression is used for the analysis of the driving factors for migrants to send remittances. The dependent variable (Y) are kategorikal i.e. the decision to send remittances: yes (1) and no (0). The decision shows the probability of sending remittances (P) and not send remittances (P-1) are expressed in the following formula:

$$P = E\left(Y = \frac{1}{x}\right) = \frac{1}{1+e^{-z}}$$

$$Z = \beta_0 + \beta_1 X_1$$

$$1-P = \frac{e^{-z}}{1+e^{-z}}$$

The above equations are molded into the next equation Odd Ratio with the following form:

$$\frac{P}{1-P} = \left[ \frac{1}{\frac{1+e^{-Z}}{e^{-Z}}} \right] = \frac{1}{e^{-Z}} = e^{-Z}$$

Factors driving the migrant's decision to send remittances are obtained through the logit model as follows:

$$Y = \beta_0 + \beta_1 X_{1-14} + \beta D_1 X_{D1} + \beta D_2 X_{D2} + e \quad (1)$$

Where:

- X1 = farm HH Income, X2 = Villages Location;
- X3 = Land size, X4 = farm HH size;
- X5 = schoolchild, X6 = HH Head years of school;
- X7 = HH Head age, X8 = Migrant gender;
- D1 = Ethnics Dummy, X9 = Migrant years of school;
- X10 = Migrant age, X12 = Migrate duration;
- D2 = Marital status of migrant (dummy), X13 = type of destination areas;
- X14 = The destination minimum wage, X11 = Migrant HH size.

## RESULTS AND DISCUSSION

*The Descriptive Statistics.* Paddy farm households who have the largest migration of members came from the village of Silit Air (40.97%). However the household in the villages of Koto Baru has the average number of members who go the migration more than other villages (Table 1). The village of Silit Air is known as an area with high levels of mobility in West Sumatra. Silit Air is located in ridges and hill slopes; dry, barren and hilly, causing less developed agricultural sector. It is becoming one of the driving population Silit Air migrate. The same situation also applies to the village of Koto Baru. Whereas Sungai Tarab, as the village centers of agriculture especially Paddy, has more arable land. The village is a major producer of paddy. So population migrate less than any other villages.

Table 1 – The Distribution Of Paddy Farm Households Members Migrating

Villages	N	Percentage	Average of Migrants
Sungai Tarab	88	23,72	1,69
Silit Air	152	40,97	2,33
Koto Baru	131	35,31	2,85
Total	371	100,00	

Source: Field survey, 2017.

A list of the characteristic of paddy farm households with and without migrant in Table 2. The subset of data obtained for this study focuses on the land tenure, demographic data and household income. Paddy farm households with migrants tend to be of less welfare (based on paddy land size and total income per year) and less educated than household without migrants.

Table 2 – Characteristics of Paddy Farm Households

Characteristics	HH with at least one migrant	HH without migrant
Paddy land size (hectares)	0,43	0,61
Household Size	4,12	4,52
Number of School children	1,10	1,45
HH Head years of education	7,67	8,93
HH Head age	56,96	51,04
Average HH Total Income	30.598.119	43.496.095

Source: Field survey, 2017.

Based on paddy farm households characteristics, the classification of the income source came from multiemployment, i.e. on farm, off farm, non farm, government grant, migrant organizations grants, remittances and other sources. The highest income share of paddy farm households is still derived from agriculture (33.91 percent). Agricultural sector especially paddy cultivation is still a major source of livelihoods for households in rural West Sumatera (Afrizal et al., 2017). Non-farm activities are also one of the sources of income is large, reaching 25 percent. While remittances contribute 9.55 percent of total income (see Table 3).

Table 3 – Paddy farm Households Total Income Distribution

Sources	Income (IDR)	Percentage
On farm	10.376.413	33,91
Off-Farm	5.199.619	16,99
Non-Farm	7.950.239	25,98
Government grants	465.585	1,52
Migrant organization grants	61.534	0,20
Remittances	3.623.006	9,55
Other sources	2.921.723	11,84
Total income	30.598.119	100

Source: Field survey, 2017.

Futhermore, Table 4 showing the characteristics of migrants. Paddy Farm household members who migrate are dominated by male sex (62%) and married (74%). The matrilineal culture in Minangkabau has encouraged young Minang men to migrate (the age 20-35 years whilst 61% ). Refers to Murad (1978), matrilineal culture is often to compel Minang man in disadvantaged kinship positions in their homeland to migration.

Table 4 – Characteristics of Migrants

Characteristics	N	Percentage
Male	230	62
Female	141	38
Married	276	74
Unmarried/divorced, widowed	95	26
Age		
20-35	225	61
36-50	125	33
51-65	19	5,5
> 65	2	0,5
Education:		
No formal schooling/incomplete	16	4
Elementary school	53	14
Junior high school	109	29
Senior high school	171	46
colleges	22	6
Duration of Migration:		
< 1 year	12	3
1-5 years	123	33
6-10 years	98	26
11-15 years	52	14
16-20 years	42	11
>20 years	44	12
Destination areas:		
West Sumatera	43	12
Jakarta/the capital city of Indonesia	114	31
International	3	1
Inter-provincial	211	57

Source: Field survey, 2017.

According to the data, only 4% of migrants are illiterate or had no more than elementary school education and 14% have reached the level of junior high school. The

proportion of migrants who have reached the senior high school and colleges is 52 %. It indicates that migrants from rural areas in West Sumatera more educated than their head households in homeland.

Regarding the choosen of areas destination, more than 31% of migrants lived in Jakarta, the capital city of Indonesia, 12% migrate in West Sumatera Province and only 1% go to overseas. However the majority of migrants (57%) widespread of inter-provincial in Indonesia. It can be seen that the largest number of Minang people from rural areas in the district have migrant to Jakarta. Unsurprisingly that pletora Indonesian migrants had chosen Jakarta as destination area . Refers to Murad (1978), that Jakarta was the single most preferred province for Minangkabau migrants and secondly were chosen the neighbouring provinces such as Riau, Jambi, Palembang and North Sumatera. International migration is rarely chosen by the Minangkabau ethnic group who come from the rural areas.

There seem to be interesting that about 64 % of migrants have stayed in destination areas more than 5 years. Although originally the Minang ethnic migration is commuter and circular, there is now a permanent tendency. The data show that the duration of migration is 97% permanent. The results of this study were supported by Maude (1979), that a half of all medium and long-term migrants from West Sumatera are now permanent migrants.

Characteristics of migrants behavior to sending remittances are drawing on Table 5. The total number of migrants who sending remittances to household left behind was 337 person or 91% from all data. It is interesting to noted that Minang migrants from rural areas predominantly responsible to their family in homeland. According to Addiarrahman (2013) and Kato (2005) were said that Minangkabau migrants are known to have a high spirit of Philanthropy and concern over the welfare of the region of origin is also very high (Kato, 1982). More than 52% of migrants send remittances, and the range of average transferred amount exceeds IDR 500.000-1.500.000 per year.

Table 5 – Characteristics of Remittances Behavior

Characteristics	N	Percentage
a. Sending remittances (at least 1x/year)		
Yes	337	91
No	34	9
Sum	371	100
b. Channels of I Remittances		
Bank	271	81
Post office	13	4
Family/friendship	14	4
Visit homeland	39	12
c. Remittances (IDR)		
>500.000	95	28
500.000-1.500.000	176	52
1.500.001-2.500.000	34	10
2.500.001-3.500.000	7	2
>3.500.000	25	7

Source: Field survey, 2017.

There are four payment channel to sending remittances to relatives households left behind: bank servics (81%), post office (4%), via family/friends (4%) and carrying cash when travelling back home (12%). Overall, the majority Minangkabau migrants are likely to use formal channels and bank services are generally preferred for it. Kosse and Vermeulen (2014) find that higher educated migrants are less likely to use informal channels or to carry cash themselves. Drawing on data (Table 5) , 46 % of migrants were high school graduated and 6% from colleges. At the same time, however, kinship functions between migrants and family system still guarded. There are 12% migrants visit their homeland in order to carry cash remittances.

*Results of The Logit Model.* The model was tested using the Likelihood Ratio Test. This model according to statistics G spread in Chi-Squared ( $\chi^2$ ). The estimates of equations are shown in Table 4. The value of the Likelihood Ratio obtained 23.7388 with p-value 0.0954.

The conclusion is the entire model can explain or predict the decision of Minangkabau's migrant send remittances. migrant opportunities send remittances amounted to 72.9 percent. The Wald test results are shown by the coefficient value of  $\beta$ . Of the sixteen predictor variables, only four variables had a significant effect on the decision to send remittance.

Table 6 – Logit Regression Analysis of determinants of Remittances to Paddy Farm Households

Predictor Variables	Parameter $\beta$	Wald	Significance	Exp ( $\beta$ )
Constant	-0.9339	0.2267	0.6340	0.0366
Income	-44E-11	0.0008	0.9775	0.8370
Paddy land size	-2.2122	6.2073	0.0127	0.7394
Household Size	0.0117	0.0058	0.9394	0.7073
Number of School children	0.1991	0.5520	0.4575	0.1611
HH Head years of education	0.0496	0.4381	0.5080	0.7091
HH Head age	0.0182	0.7672	0.3811	0.2076
Gender of migrant	-0.8709	4.3698	0.0366	0.0372
Ethnics dummy	-0.0526	0.0423	0.8370	0.419
Migrant years of education	0.0630	0.6517	0.4195	0.949
Migrant age	0.0104	0.1107	0.7394	1.065
Marital status of the migrant	-0.1265	0.1410	0.7073	1.010
HH migrant size	-0.2645	1.9636	0.1611	0.881
Duration of migration	0.0108	0.1392	0.7091	0.768
Villages location	-0.5777	3.0839	0.0791	0.4195
Type of Destination Area	0.6027	1.5880	0.2076	1.011
The destination minimum wages	-1.1E-6	4.3419	0.0372	1.827
Likelihood Ratio (Chi-Square) = 23.7388 ; Pr>ChiSq = 0.0954				
Percent Concordant	72,9	Somers'D		0,465
Percent Discordant	26,4	Gamma		0,468
Percent Tied	0,7	Tau-a		0,076

Characteristics of paddy farm households variables that have a significant effect, only land tenure. Estimated parameter value -2.2122 means that migrants have the probability to send remittances to households with less land areas. The important findings for this research, that factors driving to send remittances to peasant households is intensely associated to the ownership of agricultural land. Because the land tenure level will determine the amount of paddy production. The more land leading to increase in cultivation and agricultural production.. Migrants will send remittances to less prosperous households, because of the small production capacity of paddy, due to the narrow land area. In other words inequality due more less access to land has driving Minang people to migrate. In contrast, in term of peasant household size, the number of school children and the level of income does not affect the desire Minangkabau migrants to send remittances. Those variables do not hold for the probability to sending remittances, but it is found by most authors for the level of remittances.

The condition of rural village infrastructure affects the probability of migrants sending remittances. The estimated value of -0.577 indicates that migrants from marginal regions have an opportunity to send remittances. Based on the odd ratio, it is seen that migrants from Sulit Air Village have the opportunity to send remittances 0.419 times less than migrants from Koto Baru and Sungai tarab villages. As previously described Sulit Air is located in the ridges and hills slopes, causing the villagers to have high mobility. The marginal condition of the village also encourages migrants to send remittances to their households left behind.

Variable the migrant characteristic that affects the probability of sending remittance is the gender dummy (male = 1, female = 0). The negative parameters indicate the probability of male migrants to send remittances 0.0372 percent less than female migrants. The results of this analysis fit the research of Lucas and Stark (1985) which states that for the same job women have a tendency to send remittances larger than men. A study by Osaki (2003) shows that female out-migrants are 1,2 times more likely than male to remit cash or goods. Due the odds ratio is relatively small, so the opportunity to send remittance by gender cannot be concluded only dominated by the female gender. Because some studies have also shown

that male migrants have a tendency to send remittances larger than women, given that more men work more than women (Okay, 2008) .

The Regional Minimum Wage (RMW) predictor variable has a negative relationship with the opportunity of migrant to send remittance, indicated by the estimated value of  $-1.1E-6$ . Based on the odds ratio, it is known that migrants living in areas with large UMR levels have an opportunity to send 1,827 remittances less than those living in areas with low RMW levels. RMW city of Jakarta in 2016 amounting to RP.3.100.000, is the greatest wage value compared to other destination UMR destination migrants. In theory, migrants living in areas with larger UMR have a tendency to send larger remittances. However, this study yielded the opposite finding. The high cost of living in the capital is thought to be the cause of this phenomenon.

Overall of the predictor variables, only 28 percent of the variables had a significant effect on the probability of migrants sending remittances. The limitations of the variable dimensions used in this study are thought to be the cause of the many insignificant variables. As described earlier, this study uses only general demographic variables. Whereas the opportunity for migrants to send remittances is not only influenced by the characteristics of families and migrants. Many other aspects have been empirically proven to contribute much to motivating migrants to send remittances. One of the well-known theories is the theory of altruism introduced by Stark and Bloom (1985) which states that responsibility for household left behind becomes a great motivation for migrants to send remittances.

In this context, we suggest that altruism is the most factors that encourage Minang migrants to sending money to family left behind. This is reinforced by the statement of Auda (1978) which states that migrant Minang has a high sense of responsibility towards family and hometown. Lucas and Stark (1985) argue that, if migrants are motivated by altruism, remittances should be positively related to the migrants' own income and negatively related to the family's income. According to previously of exposition, that remittances are sending to farm households with low levels of welfare. Unfortunately, this issue (altruism) did not be part in our study.

## **CONCLUSION**

The empirical results of this study reveals that Minangkabau's migrants from rural areas has been kept a 'culture of mobility' and fulfillment obligation to their family in rural areas. Formal channels such as bank and post office more preferred for Minang's migrants to sending money. We also find that decision to remit is affected by both households and migrants characteristics combined with home and host land conditions. Migrants have more the probability to send remittances to paddy farm households with less land and reside in marginal rural areas. On the migrant side, female migrants have a greater probability of sending remittances than male migrants. The standard cost of living in the destination areas also affects the migrant's drive to send remittances. If migrants expenditure increase, migrants impulsion to remit will decrease.

An important findings from this study is remittances are generally sending to paddy farm households with low levels of welfare and reside in marginal villages. Level of financial migrants determine behavior remittances. In order to determine the Minang's migrants motives of remittances transfers to rural origins more clearly, future research and more detailed information on households and migrants are needed.

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## **FACTORS THAT INFLUENCE ALLOCATION OF EMPLOYEE TIME TOWARDS PALM OIL PRODUCTIVITY FOR PLASMA FARMING IN THE DISTRICT OF MUSI BANYUASIN**

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### **ABSTRACT**

This study examines how plasma farmers allocate working time for oil palm activities, activities outside of oil palm and non-farm activities, and factors affecting the time allocation of oil palm farmers. South Sumatera, especially Musi Banyuasin Regency, has potential in the development of oil palm plantations. Oil palm is a cultivation plant whose maintenance is relatively easy, which induces farmers who are working with more than palm oil to increase their household income. In the case of palm oil farming development, oil palm farming activities are supported also with natural resources and oil palm crops can develop on land that has a diverse agricultural ecosystem. Oil palm farmers in this study were plasma farmers (farmers working with corporations as the core). The non-farming time allocation for palm oil is greater than the allocation of working time in oil palm farming. Factors influencing the allocation of working time of palm oil growers are influenced by income and age.

### **KEYWORDS**

Allocation, working time, productivity, farmers.

The price fluctuations for fresh fruit bunch (TBS) as well as changes in production and product price can be drivers of technological innovation in production; such innovation is undertaken to increase the efficiency of production factor use and/or increase crop productivity, in order to obtain maximum income while ensuring farmer income stability. Meanwhile, income derived from palm oil farming, non-palm oil farming, and outside palm farming is used to meet family needs, consisting of food and non-food consumption expenditures (Mingorria et al., 2014).

When linking the increase in the productivity of palm oil plantations with the use of factors of production conducted by smallholders, it can be seen how the use of production factors is used in the business activities undertaken by palm oil growers and how much profit is realized by each farmer conducting palm oil farming activities.

Musi Banyuasin Regency is one of the districts in South Sumatera Province, which has potential for the development of palm oil farming. Given a large number of household economies that depend on palm oil plantations, these conditions are attractive and relevant for a deeper review of how palm oil plantations are managed by smallholders, where household members in a farm household usually work together in a farming activity. In relation to the prospect and potential, there is an increasing number of farmers who rely on this commodity plantation, namely plasma farmers, as one of the main sources of livelihood for the fulfilment of life needs, in addition to other plantation crops such as rubber, coffee, and tea.

Lifianthi and Husin (2012), revealed that labor productivity can provide very high income when compared with other productive activities. However, plasma farmers are not so serious in managing their oil palm plantations. Farmers apparently work in oil palm farming as managers.

The amount of time allocated by family members in the farming activities is determined by the number of productive assets owned, such as land area or other productive capital. The greater the asset, the greater the number of working hours agreed to by the household members. Activities that absorb labour include fertilizing, weeding, and harvesting. In their free time, many household members allocate time for productive activities both in agricultural and other sectors that can provide additional family income (Fahmi, 2009; Hunt, 2000).

According to Utami (2011), the factors that affect the workforce are the total allocation of work time and the family workforce. If the total allocation of labour time on farming is less, family members will spend more time on other activities. Thus, the allocation of working time outside of farming is negatively related to the allocation of labour time in other activities.

Based on this fact, the authors are interested in examining the allocation of household working time of palm oil (plasma farmers) and the factors that affect the allocation of working time.

## METHODS OF RESEARCH

The sampling technique used was proportioned stratified random sampling, using a sample of 30 farmers. Sampling by only a few members of the population will represent the palm oil farmers in the village of Berlin Makmur in the Musi Banyuasin Regency. To reach our research objectives, we used a mathematical operational model that will be described in detail for each objective.

To determine the plasma worker's time allocation by calculating farmers' working time allocation from the household activity of the palm oil plantation and other activities, the mathematical calculation is as follows:

$$\text{Total JK} = \text{JO} \times \text{HK} \times \text{JK} \quad (1)$$

$$\text{HOK} = \frac{\text{JK Total}}{\text{JKS}} \quad (2)$$

Where: HOK = working day, JO = number of people, HK = day of work (Day), JK = working hours, and JKS = standard working hours (7 hours for farming and 8 hours exclusive of farming) (Department of Manpower and Transmigration, 2007).

To analyse the existence of other working time allocation factors, the number of family members, education, age, land area, and income from palm oil farming and other activities on farmer work time allocation was used for multiple linear regression equations, with the equation as follows (Gujarati, 2006):

$$\text{LnY}_{1(\text{plasma})} = \text{Ln}b_{01} + b_{11}\text{LnX}_{11} + b_{21}\text{LnX}_{21} + b_{31}\text{LnX}_{31} + b_{41}\text{LnX}_{41} + b_{51}\text{LnX}_{51} + b_{61}\text{LnX}_{61} + b_{71}\text{LnX}_{71} + e \quad (3)$$

Where: Y1 = allocation of working time of palm oil farming farmer (HOK); b01 = allocation of working time of palm oil farmers at other time of work allocation, number of family members, age, education, land area, and income of palm oil farming and other activity income equal to zero; X11 = allocation of other working time (HOK/year); X21 = number of family members (person); X31 = age (year); X41 = education (year); X51 = land area (ha); X61 = palm oil farming income (Rp/year); X71 = revenue other than palm oil (Rp/year); e = interference variable.

Hypothesis testing was done to understand the effect of observed variables on the allocation of working time for palm oil. This test was done by using the F test, with the formula as:

$$F_{\text{count}} = \frac{R^2/(k-1)}{(1-R^2)/(n-k)} \quad (4)$$

Where: k = number of parameters and n = number of samples.

Decision rule:

- If  $F_{\text{count}} < F_{\text{table}}$  ( $\alpha = 0.10$ ), then accept  $H_0$ , meaning that the independent variable has no significant effect on the dependent variable;
- If  $F_{\text{count}} > F_{\text{table}}$  ( $\alpha = 0.10$ ), then reject  $H_0$ , meaning that the independent variables significantly affect the independent variable.

While the influence of each independent variable on the dependent variable was determined by (partially) using the t-test, as follows:

$$t_{count} = \frac{b_i}{se(b_i)} \quad (5)$$

Where:  $b_i$  = partial regression coefficient and  $Se(b_i)$  = standard error.

Rules of decision:

- If  $t_{count} < t_{table}$  ( $\alpha = 0.10$ ), accept  $H_0$ , meaning that the independent variables have no significant effect on the dependent variable;
- If  $t_{count} > t_{table}$  ( $\alpha = 0.10$ ), reject  $H_0$ , meaning that the independent variables significantly affect the dependent variable.

## RESULTS AND DISCUSSION

*Analysis of Plasma Farmers' Work Time Allocation.* The main farming activity was done by plasma farmers in the village of Berlian Makmur. Most of the farmers have 2 hectares of palm oil plantation. Farming activities begin from planting until harvesting. The activities including fertilizing, pest and plant disease management, cutting, and harvesting. These activities are done to provide best results from palm TBS production, especially given the age of palm oil trees in this study, which is between 16 and 20 years old.

In this study, farmers that are implementing these activities are using family workers such as the husband, wife, and children. Some farmers also are using hired workers when their own age has become a factor or they do not have enough family labour. Averages for working time allocation of inside and outside palm oil farmers can be seen in Table 1.

Table 1 – Average Working Time per Year, Family Members and Non-Family Members, for Palm Oil (Plasma) Farmers

No.	Individuals	Work Time Allocation	Percentage (%)
a. HOK Family Members			
1.	Male	3.22	56.19
2.	Female	1.38	24.09
3.	Child	1.13	19.72
Total		5.73	100.00
b. HOK Non-Family Members			
1.	Male	58.17	86.06
2.	Female	9.42	13.94
3.	Child	0.00	0.00
Total		67.59	100.00

Based on Table 1, palm oil (plasma) farmers prefer to use non-family workers. Utilization of outside workers (hired workers) was 67.59 HOK on average per year. This labour was used for four activities (fertilizer application, pest and plant disease control, cutting, and harvesting), which was mostly done by adult males—58.17 HOK per year, compared with adult females—9.42 HOK per year. Female labor is as a worker assisting men's work in maintenance activities (such as fertilizing and controlling plant pests and diseases). This is expressed also by (Ellis, 1988) that female labor (wife), usually they work not only to assist the work of the husband, but also to participate in productive economic activities.

It is also revealed by Zahri (2005) that farmers who have the main business of oil palm allocate manpower to manage oil palm plantations very little and can be categorized as the occurrence of underemployment rate (available hours are not used optimally for activities). For harvesting all the plasma farmer activities were done using non-family labourers. This is because palm oil fruits must be quickly processed at the factory. Delays in the harvest process will cause palm oil fruits to become acidic so that they can no longer be processed. In addition, from this sample of plasma farmers, almost all preferred to use outside workers rather than family workers.

Lifianthi, et al (2014), stated that there is still a lot of free time that can be utilized by oil palm farmers. Therefore, farmers should seek employment outside of productive palm oil

farming and can contribute income to their households. There is still time to spare (from the potential of existing working days per year) which amounted to 359.93 working days.

The palm oil (plasma) farmer is doing other farming besides palm oil. Rubber is another commodity that farmers have, and it also requires both family and non-family labour. Farm activities involved with rubber plantations are similar to those of palm oil. These activities include fertilizing, pest and plant disease control, land cleaning, tapping, and production management after harvesting (coagulation of latex), which reaches 344.35 HOK per ha per year. Averages for time allocation can be seen in Table 2.

Time allocation is dominated by the head of family (husband), for which the average was 203.29 HOK per year compared with only 136.16 HOK on average for women and 4.90 HOK on average for children. This time was allocated mostly in tapping because it was done every day. This activity is also useful to maximize time allocation during waiting times in palm oil production. Governmental and other research has shown rubber tapping to be once every two days. In contrast, farmers are doing this every day because during the rainy season tapping is interrupted, and farmers try to prevent the mixing of rainfall and rubber latex, which can lead to reduced quality. Use of non-family workers for rubber farming averages 4.95 HOK per year.

Table 2 – Average Working Time per Year, Family Members and Non-Family Members, for Palm Oil (Plasma) Farmer Families in Rubber Farming

No.	Individuals	Work Time Allocation	Percentage (%)
a. HOK Family Members			
1.	Male	203.29	59.04
2.	Female	136.16	39.54
3.	Child	4.90	1.42
Total		344.35	100.00
b. HOK Non-Family Members			
1.	Male	4.95	100.00
2.	Female	0.00	0.00
3.	Child	0.00	0.00
Total		4.95	100.00

Palm oil (plasma) farmers also utilize their time with other productive activities. The total time allocation for these other activities is 134.22 HOK on average per year. Such activities are undertaken to increase total income and consist of small shop and electric shop work, portage, wood craftsmanship, truck driving, public transport driving, tailoring, midwifery, and others.

Table 3 – Average Working Time per Year of Plasma Farmers in Non-Farming Activities

No.	Individuals	Work Time Allocation	Percentage (%)
1.	Men	86.54	64.48
2.	Women	47.68	35.52
Total		134.22	100.00

*Analysis of Influencing Factors of Work Time Allocation for Plasma Farmers.* Factors that influence the working time allocation of farmers are working time allocation for rubber farming, working time allocation for non-farming activities, number of family members, age of the farmer, education, palm oil income, rubber income, and non-farming income. Because of a regression analysis, re-specification of the equation model yielded the desired results according to sign and could be economically analysed.

The multiple linear regression analysis used working time allocation in plasma farming activities as the dependent variable, and the independent variables were working time allocation in rubber farming, working time allocation in non-farming, number of family members, age of family head, education, palm oil income, rubber income, and non-farming income, as seen in Table 4.

Based on the regression analysis, two independent variables were found to have a significant influence: work time allocation for rubber farming and education. For working time

allocation in non-farming activities, the number of family members, age of farmer, palm oil income, rubber income, and non-farming income were not significantly influential.

In addition, the determination of coefficient value ( $R^2$ ) was 32.90 percent or 0.329, which means that 32.90 percent of the variation of factors influencing working time allocation in farmer activity could be explained by the variables, while the remaining 67.10 percent could be explained by other variables that were not included in the equation.

Table 4 – Factors Influencing Plasma Farmer Work Time Allocation

Variable	Parameter Value	t-statistic	significant
(Constant)	1.432	0.178	0.861
HOK Rubber (X1)	0.288	1.174	0.253**
HOK No Farming (X2)	0.000	-0.005	0.996
Number of Family Members (X3)	-0.074	-0.337	0.740
Age of Farmer (X4)	0.093	0.501	0.621
Education (X5)	0.335	2.640	0.015****
Income from Palm Farming (X6)	0.067	0.216	0.831
Income from Rubber Farming (X7)	-0.098	-0.366	0.718
Income from Non-Farming (X8)	0.043	0.894	0.382
R-Square	0.329		
F Statistic	1.285		
Durbin-Watson	2.243		

Note: \*\*\*\* = Significant in  $\alpha = 0.15$ ; \*\* = Significant in  $\alpha = 0.20$ .

The work time allocation variable in rubber farming shows this variable to have tangible influence on work time allocation in palm farming activities. The result showed that the regression coefficient of working time allocation in rubber farming was 0.288, which means that a 1 percent increase in working time allocation for rubber farming would lead to increasing working time allocation in palm farming in the amount of 0.288 percent. Working time allocation in rubber farming had a tangible influence on working time allocation in palm oil farming activity. This is because with an increase in work time allocation for rubber farming, farmers will allocate time owned for palm oil farming, particularly time allocation for fertilizer application, weed control, and maintenance.

Farmers will continue these activities because they are certain to contribute to the family income. Thus, farmers will consistently allocate their working time to activities such as harvesting, and they will then try to find the additional time for non-farming activities.

The education variable for the head of family shows that the regression coefficient of education is 0.335, which means that a 1 percent increase in the plasma farmer's education will increase the work time allocation in palm farming by 0.355 percent. This shows that the education variable of the plasma farmer family head has tangible influence toward the working time allocation variable in palm farming activities. The higher the plasma farmer's education, the more intensive and selective will be the work time allocation in palm farming activities.

By utilizing working time allocation in their palm farming for maintenance activities, plasma farmers could increase the productivity of TBS. The education level of plasma farmers has tangible influence on land management and cultivation, and thus plasma farmers could expect to obtain a profit from their farming.

## CONCLUSION AND SUGGESTIONS

In addition to oil palm farming, plasma farmers also allocate working time to conduct rubber farming activities. Farmers still have spare time, because the activities of oil palm farming do not require intensive care. The dominant activity undertaken besides farming is traders. Significant factors in the allocation of working time of plasma farmers are rubber work leisure time and education level.

The advice given that the plasma farmers have the potential to conduct oil palm farming properly, so they need guidance in cultivation activities. The allocation of working

time is still low for farming activities, but the available resources have great potential if properly managed so as to provide additional benefits to farmers.

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## INFLUENCE OF NANO-IRON FERTILIZER AND VERMICOMPOST SUPPLEMENT ON THE PHYSIOLOGICAL AND VEGETATIVE PARAMETERS OF BLACK RASPBERRY IN IRAN

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### ABSTRACT

Black Raspberry is one of the most important perennial fruit in Iran. Studies were conducted to determine the effect of nano-iron fertilizer and vermicompost on flower diameter and fruit weight, yield, acidity, sugar, vitamins C and iron content of *Rubus occidentalis*. For this, 3 levels of iron-nano fertilizer (0, 500, 1,000 mg L<sup>-1</sup>) and 4 levels of vermicompost (0, 100, 200 and 400 kg ha<sup>-1</sup>) were supplemented as balance fertilizer requirement of black *Rubus occidentalis* in Mazandaran province of Iran. The experiments was carried out as a factorial experiment based on randomized complete block design with 2 factors in 12 treatments, 3 replications and 36 experimental plots. The iron-nano fertilizer and vermicompost were incorporated into top 10 cm layer of soil, which was supplemented on the basis of chemical analysis calculated to equalize the recommended dose of nutrients. Iron-nano and vermicompost application significant increase fruit yield (45.73g) and fruit weight (11.05g) at levels of 1000 mg L<sup>-1</sup> of iron-nano fertilizer plus 100 kg ha<sup>-1</sup> of vermicompost.

### KEY WORDS

*Rubus occidentalis*, growth parameter, fruit features, fertilizer.

Black raspberry is one of the most important species of fruit plants in temperate climate zone. Black raspberries are mostly popular in Iran. The area of raspberry cultivation still increases and develops also the processing industry. The consumer usefulness and processing of fruits determined the taste and chemical composition (Rao et al., 2010). Black raspberries as well as blackberry fruits are abundant in dietary phytochemicals such as flavonols, phenolic acids, E, ellagitannins, vitamins C and folic acid and  $\beta$ -sitosterol (Boivin D. et al., 2007 & Bowen-Forbes, 2010)

An important component of sustainable organic agriculture is vermicompost fertilisers, which have been used in many countries. Vermicompost is rich in plant nutrients. Vermicompost is a microbiologically active organic material formed from the interactions between earthworms and microorganisms during the decomposition of organic material (Domínguez, 2004). Vermicompost is considered as a rich source of macro/micro elements, vitamins, enzymes and growth stimulating hormones which accelerate the growth of small fruit plants (Prabha et al., 2007). Vermicompost has some beneficial influences on horticultural and agronomic crops (Goswami et al., 2001; Roy et al., 2010).

Nano-fertilizers are new generation of the synthetic fertilizers which contain readily available nutrients in nano scale range. (DeRosa M. C et al., 2010). micronutrients, iron is essential for vegetative and reproductive index of small fruit plants. Iron is involved in the production of chlorophyll, photosynthesis, mitochondrial respiration, hormone biosynthesis (ethylene, gibberellic acid, jasmonic acid), production and scavenging of reactive oxygen species and osmoprotection (Hänsch and Mendel, 2009). Iron Nano-fertilizers can be easily absorbed by plants and they may exhibit prolonged effective duration of nutrient supply in soil or on plant (Rameshaiah and Jpallavi, 2015). Also several studies show that

exogenous application of some nanoparticle can significantly improve plant growth (Mandeh et al., 2012; Song et al., 2013).

The aim of the present study was to investigate the effects of different concentrations of Nano-iron fertilizer and Vermicompost on the vegetative and physiological traits of Black Raspberry (*Rubus occidentalis*).

## MATERIALS AND METHODS OF RESEARCH

This experiment was performed in a factorial experiment in the basis of a completely randomized design by 2 factors of iron nano-fertilizer with 3 levels (0, 500, 1000 mg/L) and Vermicompost in 4 levels (0, 100, 200 and 400 kg/ha) in 12 treatments and 3 replications. Noted that the size of each plot was a 4-liter plastic pot. Seedlings with 4 to 5 real leaves and disinfected were used. Control media was garden soil and for other levels mixture of garden soil and Vermicompost with specific levels were used. Foliar application with iron nano fertilizers was performed monthly. Measured traits included: Flower diameter in all flower stage, fruit sugar with a Manual refractometer (N-1 $\alpha$  Manufacturing Company ATAGO in Japan), fruit weight and size, fruit acidity (pH), vitamin C with the method of Diclofenal Indufenl (Ranagana, 1997) and leaf iron was evaluated by Atomic absorption. Data analysis was performed by SAS statistical software and means comparison by LSD test.

## RESULTS AND DISCUSSION

Variance analysis of the foliar application of iron nano fertilizer and vermicompost showed that the main effect of iron nano fertilizer and vermicompost and interaction effects of these two factors on fruit yield, sugar, fruit vitamin C and leaf iron was significant but fruit weight was just affected by interaction effects of experimental factors (Table 1). Means comparison of the main effects of iron nano fertilizer on fruit yields showed that the highest fruit yield was associated with 100 and 500 mg/L iron nano fertilizer (Table 1). Also, the main effect of vermicompost showed that the highest fruit yield related to 100 kg per ha vermicompost. Means comparison of interaction effects of these two factors showed that the highest fruit yield related to 1000mg/L iron nano fertilizer+100 kg/ha vermicompost treatment and the lowest was observed in control treatment. All treatments had acceptable performance than control, so superior treatment produced yield more than three times than control. Means comparison of interaction showed that the highest fruit weight of *Rubus occidentalis* was under 1000 mg/L iron nano fertilizer + 100 kg/ha vermicompost and the lowest was related to control treatment (Table 2). Differences between both mentioned treatments were about 42.8%. Means comparison of the main effect of iron nano fertilizer revealed that the highest fruit sugar was related to no application of nano fertilizer treatment and the lowest was related to applying 500 mg/L iron nano fertilizer. Also, means the comparison of the main effect of vermicompost showed that the highest fruit sugar related to 400 kg/ha vermicompost application and the lowest was observed in control treatment for vermicompost application. Comparison of the mean value of interaction revealed that the highest value for *Rubus occidentalis* fruit sugar content was obtained by applying without iron nano fertilizer with 400 kg/ha vermicompost and the lowest content observed in 500 mg/L iron nano fertilizer + 200 kg/ha vermicompost treatment (Table 2). Better treatment rather than control had 45% increment in sugar content. Means comparison the main effect of iron nano fertilizer showed that applying 500 and 100 mg/L iron nano fertilizer with producing four fruit had the most fruit number (Table 2). Means comparison pf interactions demonstrated that, the highest fruit numbers (5 fruits) belonged to applying 500 mg/L iron nano fertilizer+100kg/ha vermicompost treatment and the lowest number with 2 fruit was observed in control treatment (Table 2). The best treatment in comparison to control had bear 1.5-time increase in fruit number.

Means comparison of interactions also showed that the highest *Rubus occidentalis* flower diameter associated to applying 1000 mg/L iron nano fertilizer without vermicompost and the lowest was observed in control treatment (Table 2). Above mentioned treatment

increase 68.14% in flower diameter than control. According to this research, iron nano fertilizer effects on flower diameter was more than with or without applying vermicompost.

Comparison of the main effects of vermicompost also revealed that the highest fruit acidity related to no applying of vermicompost treatment and the lowest was observed in applying 200 kg/ha vermicompost (Table 2). In addition, means the comparison of interaction showed that the highest amount of pH obtained in control treatment and the lowest value was in zero iron nano fertilizer with 100 kg/ha vermicompost (Table 2). These results confirmed that using vermicompost decreased fruit acidity. Control treatment had 35% pH increase than recent treatment. Means comparison of main effects of iron nano fertilizer application showed that the highest vitamin C content of *Rubus occidentalis* belongs to 100 mg/L iron nano fertilizer and the lowest was earned in without applying of this treatment. Comparison the main effects of vermicompost application on vitamin C also showed that the highest amount of vitamin C was earned in applying 400 kg/ha vermicompost. Means comparison of interaction showed that highest value for vitamin C belong to applying 1000mg/L iron nano fertilizer +400kg/ha vermicompost and the lowest was in zero iron nano fertilizer application with 100 kg/ha vermicompost. The best treatment produced 30.5% increment in vitamin C than control. Comparison the main effects of iron nano fertilizer showed that the most iron content of leaf associated with applying 500 and 1000 mg/L iron nano fertilizer and the lowest was in zero iron nano fertilizer application treatments. Also, the main effect comparison of vermicompost showed that the highest leaf iron obtained by applying 200 and 400 kg vermicompost per ha and the lowest was earned in no vermicompost application. Means comparison of interaction showed that the highest iron content of leaf belonged to 1000 mg/L iron nano fertilizer + 200 kg/ha vermicompost and 500 mg/L iron nano fertilizer +200 kg/ha vermicompost and the lowest iron content was in control treatment (Table 2). Our treatments had 45% increase than control. Above mentioned treatments increased iron content 4 times than control.

Table 1 – Variance analysis of iron nano fertilizer and vermicompost effects on measured traits

Mean square									
S.O	df	Leaf iron	Vitamin C	Fruit acidity (pH)	Flower diameter	Fruit number	Fruit sugar	Fruit weight	Fruit Yield
Nano fertilizer (N)	2	18328**	22.15**	0.001ns	0.286ns	4**	4.72*	0.0338ns	268*
Vermicompost (V)	3	172831**	65.15**	1.001**	0.034ns	0.972ns	4.41**	2.167ns	129**
N×V	6	16107**	3.07**	0.169**	0.851**	2.19*	4.05**	5.38*	275**
Error	24	2385.773	0.608	0.01	0.161	0.76	0.909	1.793	58.181
CV (%)		11.742	3.285	2.571	13.446	23.615	13.418	15.949	23.661

Table 2 – Means comparison of interaction effects of iron nano fertilizer and vermicompost on measured traits

Treatments	Fruit yield (g.plant)	Fruit weight (mg/100g)	Fruit sugar (%)	Fruit number (number)	Flower diameter (cm)	Acidity (pH)	Vitamin C (mg/100 g)	Leaf iron (ppm)
N0V0	15/00d	7/23d	6/53cde	2/02e	2/21d	4/683a	23/28f	158e
N0V1	22/22cd	9/12abc	5/93de	2/73de	3/08bc	3/523g	24/15cd	241d
N0V2	32/21bc	8/02abcd	8/17abc	4/00abcd	3/31ab	3/617g	19/78g	273d
N0V3	34/03abc	9/63a	9/70a	3/38bcde	2/55cd	4/071cd	25/18b	323cd
N1V0	26/11cd	9/29abcd	5/96de	3/00cde	2/81bcd	4/253b	21/67ef	357cd
N1V1	38/16ab	8/903abcd	7/10bcde	5/00a	3/21ab	3/788ef	24/02bc	443b
N1V2	38/01ab	11/01ab	5/66e	4/00abcd	2/96bcd	3/651fg	22/09def	574a
N1V3	30/03bc	7/55bcd	6/86cde	4/00abcd	3/266ab	4/126bc	27/81a	523ab
N2V0	40/26ab	8/60abcd	6/10de	4/66ab	3/80a	4/046cd	21/64ef	445b
N2V1	45/73a	11/05a	9/63ab	5/32abc	3/85bcd	4/036de	28/15a	448b
N2V2	22/13cd	7/00cd	7/48bcd	3/31bcde	2/48cd	3/646fg	22/68cde	577a
N2V3	31/02bc	8/63abcd	7/34bcd	3/68abcd	2/97bc	4/263b	28/18a	523ab

N0= without iron nano fertilizer, N1: 500 mg/L iron nano fertilizer, N2: 1000mg/L iron nano fertilizer, V0: without vermicompost, V1: 100 kg.ha vermicompost, V2: 200 kg.ha vermicompost, V3: 400 kg.ha vermicompost.

Singh et., al (2008) reported that the lowest pH in strawberry fruit observed in vermicompost medium that confirm our results. So expected that during after harvest period, fruit acidity decrease (Sereno et al, 2003). In another research on blackberry observed that

heavier and larger fruits were earned by higher content iron treatment (and sometimes other essential elements)(Wang. et.al, 2000) Supplying iron and other essential elements for plants, photosynthesis and assimilation increase and fruit size and weight become further in red raspberry (Mazur S.P et.al. 2014). Bacha et., al (1995) evaluated the foliar application of Zinc, iron, and manganese in different times on quality and quantity traits of grape seed and resulted that, while increasing crop yield, weight, size and other seed characteristic increased significantly. This increment could be due to the availability of iron and another essential nutrient, which increased photosynthesis and dry matter accumulation, and also fruit size and weight (Bassil et.al., 2012). Gutiérrez-Miceli , et.al (2007) also reported that medium including compost increase soluble solid matters of fruits. It seems that increasing vermicompost to culture bed induced potassium content and since this element play key role in various carbohydrate biosynthesis (sucrose, starch, and glucose), therefore had a critical role on plant growth, development and quality (Singh, R et.al, 2008 ) which confirm our results. Sing et al (2008) also claimed that strawberry fruit cultured in vermicompost included bed, had higher soluble dry matter which is inconsistent with the results of this research. Another experiment which conducted by Kim H.-S.et.,al (2011) within several years on black raspberry (*Rubus coreanus* Miquel) product resulted that using iron increase fruit vitamin C significantly.

### CONCLUSION

Our results demonstrated that applying iron nano fertilizer solely increase fruit sugar content, fruit number, vitamin C, leaf iron and fruit yield significantly. But vermicompost, which it's valuable property is different enzyme, microorganisms and hormones performance, induce yield increase due to containing enzymes such as protease, amylase, lipase, Cellulase, and ketinase which plays key roles in soil organic matter decomposition and availability of plant essential nutrients and produce better growth condition for *Rubus occidentalis*. Results of interaction effects showed that 1000 mg/L iron nano fertilizer with 100 kg/ha, vermicompost produced the best yield in all treatments. So it could be stated that interaction effects of two studied factors showed increase yield and *Rubus occidentalis* fruit characteristic improvement.

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## BIOECONOMIC ANALYSIS OF HAIRTAIL FISH RESOURCES (TRICHIURUS SP.) IN THE WATERS OF KEBUMEN REGENCY

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### ABSTRACT

Hairtail Fish (*Trichiurus sp.*) is one of the potential export commodities in the international market. The worldwide export value of hairtail fish had increased by 128% within the period of 2011-2015. In 2015, it increased by US \$15.5 million from the previous year. Great market opportunities to meet market needs lead to increasing fishery resource utilization. Uncontrolled resource exploitation threatens the sustainability of fishery resources. Solutions that can be done to overcome uncontrolled resource exploitation are to lower the effort rate and increase the fishing productivity. Fishing productivity can be improved with the development and innovation of fishing gears and accurate information on hairtail fishing and spawning seasons and zones.

### KEY WORDS

Hairtail fish, waters, international market, utilization rate.

The waters of Kebumen Regency are included in the Fishing Management Area (WPP) 573. According to Decree of the Ministry of Marine Affairs and Fisheries Number 47 of 2016, some fishery resources in WPP 573 are over-exploited, such as reef fish, penaeid shrimp, crab, and squid with utilization rates of 136%, 136%, 105%, and 140% respectively. Meanwhile, the other resources are fully-exploited, such as small pelagic fish, big pelagic fish, demersal fish, lobster, and swimming crab (*Portunus pelagicus*) with utilization rates of 91%, 73%, 96%, 54%, and 64%.

There are 10 dominant demersal fish species caught in WPP 573, covering hairtail (23.2%), red snapper (16%), ornate ponyfish (12.8%), seabass/ barramundi (9.9%), pompano (9.8%), threadfin bream (9.3%), croaker (6.3%), black pomfret (4.9%), sea catfish (4.8%), goatfish (3.3%) (Fisheries Research Center, 2014). Of the ten fish species, hairtail fish is the most dominant fish caught by 23.2%.

The international market opportunities for hairtail fish resources are large enough. The value of Indonesian hairtail fish export to the world experienced an increase of 128% during 2011 – 2015. From 2014 to 2015, the hairtail fish export value increased from US \$12 million to US \$27.5 million. The main destinations of Indonesian hairtail fish export are Vietnam, China, and Korea (the Ministry of Trade, 2016)

Several studies on the utilization of hairtail fish resources in southern Java Island (WPP 573) have shown a great opportunity for the improvement of hairtail fish utilization. Dian Putri Utami *et al.* (2012) stated that the fishing effort of hairtail fish in Parigi Waters, Ciamis Regency can still be increased up to 13,312 trips per year.

The magnitude of the international market potential leads to increased fishing efforts. On the other side, increased uncontrolled fishing efforts are feared to threaten the sustainability of hairtail fish resources. This research aimed to analyze the CPUE, MSY, MEY, OAE and utilization rate of hairtail fish resources in the Waters of Kebumen Regency. Actual information on the utilization status of hairtail fish resources in the Waters of Kebumen Regency is expected to be used as inputs in determining sustainable hairtail fishing management strategies in Kebumen Regency

## MATERIALS AND METHODS OF RESEARCH

The materials referred to in this research covered all fishing efforts to bring the hairtail fish catch landed in all Fish Auction Place (*TPI*) in Kebumen Regency during 2008-2017. The fishing gears used by fishermen in Kebumen Regency to catch hairtail fish were Drift Gillnet, Fixed Gillnet, Hook and line, and Beach Net. The type of boats used by these fishermen was gross tonnage (GT) with a temple motor drive of 15 horsepower (HP). The location of this research was the waters of Kebumen Regency.

This research was conducted using a descriptive method with a case study. Descriptive method is a method of studying the status of a group of men, objects, conditions, systems of thought or a class of thought in the present with the aim to obtain a systematic, factual, and accurate description and relationship between the investigated phenomena (Nazir, 2009).

Data used in this research consisted of primary and secondary data. The primary data were obtained directly from the community or fishermen through a questionnaire method reinforced and supported by observations and interviews. Meanwhile, the secondary data were collected from the literature of related institutions, in this case referring to the Office of Marine Affairs and Fisheries of Kebumen Regency and the Office of Marine Affairs and Fisheries of Central Java Province.

In this research, the data analysis was conducted in the following steps:

*Calculating Catch Per Unit Effort (CPUE)*. According to Nojja *et al* (2014), the value of CPUE is calculated to determine the abundance and utilization rate of fishery resources in certain areas. The hairtail fish CPUE of each fishing gear is calculated using the following formula:

$$CPUE_t = \frac{Catch_t}{Effort_t}$$

Where:  $CPUE_t$ : Catch Per Unit Effort in year  $t$  (kg/ trip);  $Catch_t$ : Production in year  $t$  (kg);  $Effort_t$ : Fishing Effort in year  $t$  (trip).

*Calculating Fishing Power Index (FPI)*. The highest value of CPUE is the standard CPUE. Each fishing gear has different capabilities in catching hairtail fish, so it needs to be standardized. Standardization of fishing gears will result in the value of Fishing Power Index (FPI). The fishing gear with the highest FPI value can be used as the standard or reference. In general, the fishing gear with the highest CPUE value has FPI value of 1. The FPI value of other fishing gears can be calculated by dividing the CPUE value of the fishing gear with the standard CPUE of the fishing gear. The formula mathematically is presented as follows:

$$CPUE_s = \frac{C_s}{E_s}$$

$$FPI_s = \frac{CPUE_s}{CPUE_s}$$

$$CPUE_i = \frac{C_i}{E_i}$$

$$FPI_i = \frac{CPUE_i}{CPUE_s}$$

Where:

$CPUE_s$ : Catch Per Unit Effort of Standard Fishing Gear;

$CPUE_i$ : Catch Per Unit Effort of Fishing Gear Type  $i$ ;

$C_s$ : Total Catch of Standard Fishing Gear;

$C_i$ : Total Catch of Standard Fishing Gear Type  $i$ ;

$E_s$ : Total Effort of Standard Fishing Gear;

$E_i$ : Total Effort of Fishing Gear Type  $i$ ;

FPIs: Fishing Power Index of Standard Fishing Gear;

FPIi: Fishing Power Index of Fishing Gear Type i.

*Calculating MSY, MEY, and OAE.* Hairtail fish potential can be predicted by analyzing the catch and fishing effort. According to Spare and Venema (1999), one of the methods that can be used to predict the potential of this resource is Schaefer's production surplus model. The Gordon-Schaefer model-based bioeconomic analysis was developed by Schaefer using the logistic growth function developed by Gordon. There are three conditions of equilibrium in the Gordon-Schaefer model, covering MSY, MEY, and OAE (Dian Wijayanto, 2008). The detailed formula is presented in the following table:

Table 1 – Gordon-Schaefer Equilibrium Formula

	MSY	MEY	OAE
Catch (C)	$a^2/4b$	$aE_{MEY} - b(E_{MEY})^2$	$aE_{OAE} - b(E_{OAE})^2$
Effort (E)	$a/2b$	$(pa-c)/(2pb)$	$(pa-c)/(pb)$
Total Revenue (TR)	$C_{MSY} * p$	$C_{MEY} * p$	$C_{OAE} * p$
Total Cost (TC)	$c * E_{MSY}$	$c * C_{MEY}$	$c * C_{OAE}$
Profit	$TR_{MSY} - TC_{MSY}$	$TR_{MEY} - TC_{MEY}$	$TR_{OAE} - TC_{OAE}$

Source: Wijayanto, 2008.

*Utilization Rate.* Utilization rate is used to determine the utilization status of resources. The formula of utilization rate is as follows:

$$TP_C = \frac{C_i}{C_{MSY}} \times 100\%$$

Where:

$TP_C$  = Utilization Rate (%);

$C_i$  = Catch in year  $i$  (kg);

$C_{MSY}$  = Sustainable Maximum Catch (kg).

Meanwhile, the Effort Rate is determined using the formula as follows:

$$TP_E = \frac{E_i}{E_{MSY}} \times 100\%$$

Where:

$TP_E$  = Effort Rate (%);

$E_i$  = Effort in year  $i$  (kg);

$E_{MSY}$  = Sustainable Maximum Effort (kg).

## RESULTS AND DISCUSSION

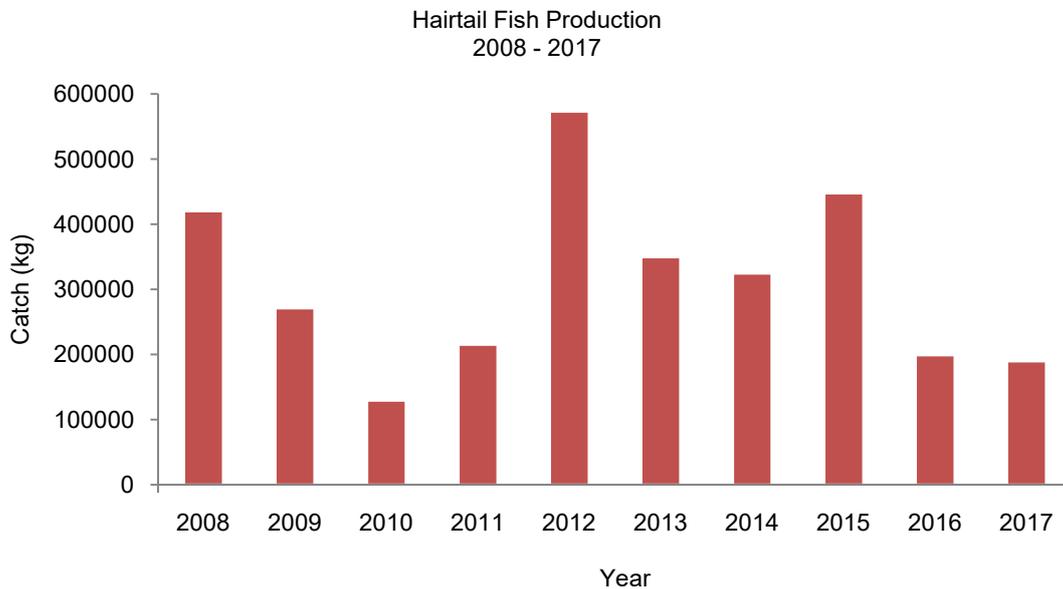
The highest production of hairtail fish was 569.1 tons in 2012 while the lowest production of hairtail fish was 125.7 tons in 2010. As seen in Table 2 below, the hairtail fish production was dominantly caught using Drift Gillnet.

As presented in Table 2, the average production of hairtail fish per year during 2008 – 2017 was 308.04 tons. Of the total average production per year, 266.62 tons of the hairtail fish production was caught using Drift Gilnett. Moreover, the average production of hairtail fish caught using Beach net amounted to 21.65 tons per year while that caught using Fixed Gillnet (Set Net) was 13.16 tons per year. The rest 6.61 tons (per year) were caught using Hook and line. Overall, the production of hairtail fish in Kebumen Regency Waters highly fluctuated. The highest production was 569.1 tons in 2012 and the lowest production amounted to 125.7 tons in 2010.

Table 2 – Production of Hairtail Fish in Kebumen Regency Waters During 2008- 2017

No	Year	Production (ton)				Amount (ton)
		<i>Drift Gillnet</i>	<i>Fixed Gillnet/ Set Net</i>	Hook and line	Beach-Net	
1	2008	356.1	60.1			416.2
2	2009	146.9	8.2		112.1	267.2
3	2010	54.5	23.7		47.5	125.7
4	2011	165.5	3.2	4.2	38.2	211.1
5	2012	535.9	10.3	4.2	18.7	569.1
6	2013	305.4	5.4	34.6		345.4
7	2014	298.1	7.3	15.2		320.6
8	2015	425.3	10.6	7.9		443.8
9	2016	193.9	1.4			195.3
10	2017	184.6	1.4			186.0
Total		2,666.2	131.6	66.1	216.5	3,080.4
Average		266.62	13.16	6.61	21.65	308.04

Source: Research (2018).



Source: Research (2018)

Figure 1 – Histogram of Hairtail Fish Production in Kebumen Regency Waters Within the Period of 2008-2017

*CPUE (Catch per Unit Effort)*. CPUE can be used to determine the abundance and utilization rate of a fishery resource (Rahmawati *et al.*, 2013). Based on observations during this research, there were four fishing gears used to catch hairtail fish, namely *Drift Gillnet*, *Fixed Gillnet (Set Net)*, *Beach Net*, and *Hook and line*. During 2008 – 2017, not all the fishing gears were applied throughout the years. In 2008, 2016, and 2017, the production of hairtail fish came from the application of drift gillnet and fixed gillnet. In 2009 and 2010, three fishing gears were applied to catch hairtail fish, covering drift gillnet, fixed gillnet, and beach net. As for the production of hairtail fish in 2011 and 2012, it was obtained with the use of the four fishing gears. Meanwhile, in 2013, 2014 and 2015, the production of hairtail fish was yielded from the application of drift gillnet, fixed gillnet (set net), and hook and line. The fishing gears that were always used for catching hairtail fish were drift gillnet and fixed gillnet. Table 3 shows that the production, number of trips, CPUE, FPI and Standard Effort of Hairtail Fish Catching in Kebumen Regency during 2008 – 2017.

Table 3 – Production, Trip, CPUE, FPI, and Utilization Effort of Hairtail Fish in Kebumen Regency Waters during 2008-2017

Year	Fishing Gear Type	Number of Trips	Production (kg)	CPUE (kg/Trip)	FPI	Standard Effort (Trip)
2008	Drift Gillnet	36,476	356,124	9.76	1.0000	36,476
	Fixed Gillnet	29,494	60,076	2.04	0.2086	6,153
	Total	65,970	416,200			42,629
2009	Drift Gillnet	2,461	146,900	59.69	1.0000	2,461
	Fixed Gillnet	1,326	8,200	6.18	0.1036	137
	Beach net	2,550	112,100	43.96		1,878
	Total	6,337	267,200			4,476
2010	Drift Gillnet	9,875	54,500	5.52	1.0000	9,875
	Fixed Gillnet	7,642	23,700	3.10	0.5619	4,294
	Beach net	9,957	47,500	4.77	0.8644	8,607
	Total	27,474	125,700			22,776
2011	Drift Gillnet	2,461	165,500	67.25	1.0000	2,461
	Fixed Gillnet	1,326	3,210	2.42	0.0360	48
	Hook and line	1,262	4,200	3.33	0.0495	62
	Beach net	2,550	38,200	14.98	0.2228	568
	Total	7,599	211,110			3,139
2012	Drift Gillnet	9,875	535,900	54.27	1.0000	9,875
	Fixed Gillnet	7,642	10,321	1.35	0.0249	190
	Hook and line	4,222	4,200	0.99	0.0183	77
	Beach net	9,957	18,700	1.88	0.0346	345
	Total	31,696	569,121			10,487
2013	Drift Gillnet	50,863	305,400	6.00	0.5997	30,505
	Fixed Gillnet	3,542	5,400	1.52	0.1523	539
	Hook and line	3,456	34,600	10.01	1.0000	3,456
	Total	57,861	345,400			34,500
2014	Drift Gillnet	46,860	298,100	6.36	0.2557	11,983
	Fixed Gillnet	6,138	7,310	1.19	0.0479	294
	Hook and line	611	15,200	24.88	1.0000	611
	Total	53,609	320,610			12,888
2015	Drift Gillnet	37,240	425,342	11.42	1.0000	37,240
	Fixed Gillnet	4,552	10,564	2.32	0.2032	925
	Hook and line	1,549	7,910	5.11	0.4471	693
	Total	43,341	443,817			38,857
2016	Drift Gillnet	13,745	193,931	14.11	1.0000	13,745
	Fixed Gillnet	2,013	1,421	0.71	0.0500	101
	Total	15,758	195,352			13,846
2017	Drift Gillnet	39,721	184,567	4.65	1.0000	39,721
	Fixed Gillnet	1,005	1,421	1.41	0.3043	306
	Total	40,726	185,988			40,027

Source: Research (2018).

The number of trips from 2008 to 2017 very fluctuated. The smallest number of trips was 6,337 trips in 2009 while the largest number of trips was 65,970 trips in 2008. After standardization, the smallest number of standard trips was 3,139 trips in 2011 and the largest one was 42,629 trips in 2008. The lowest value of standard CPUE reached 4.65 kg/ trip in 2017 and the highest value was 67.25 kg/ trip in 2011.

Various studies have shown a negative correlation between CPUE and Effort. Patria, *et al.* (2014) stated that there is a negative correlation between the CPUE and Effort of shrimp catching in Cilacap Regency. This indicates that the higher effort of shrimp catching will decrease the CPUE value.

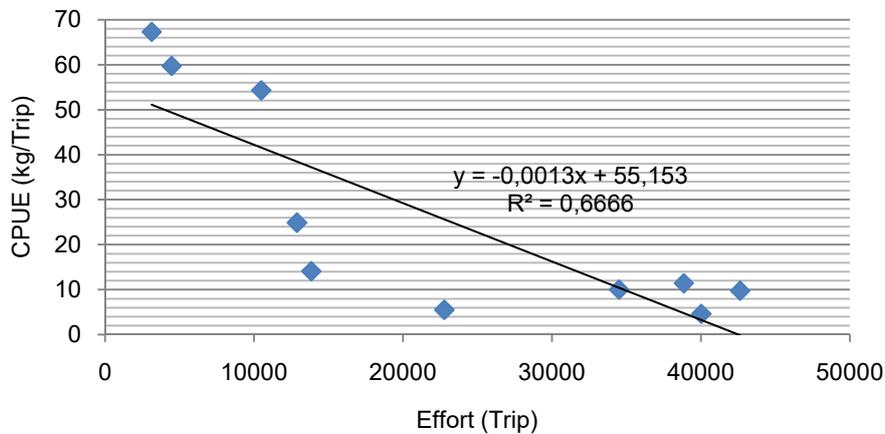
Table 4 – Correlation between Effort and CPUE

Year	Total Production (kg)	Standard Effort (trip)	Standard CPUE (kg/trip)
2008	416.2	42,629	9.76
2009	267.2	4,476	59.69
2010	125.7	22,776	5.52
2011	211.1	3,139	67.25
2012	569.1	10,487	54.27
2013	345.4	34,500	10.01
2014	320.6	12,888	24.88
2015	443.8	38,857	11.42
2016	195.3	13,846	14.11
2017	186.0	40,027	4.65

Source: Research (2018).

**Correlation between CPUE and Effort.** Figure 2 below shows that the correlation between the CPUE and Effort was negative. It means that every increase in the fishing effort would decrease the catch per unit effort (CPUE). Based on the graph of the correlation between the CPUE and Effort of hairtail fish in Kebumen Regency Waters during 2008 – 2017, the linear equation obtained was  $y = 55.15 - 0.001x$  with  $R^2 = 0.666$ , meaning that the intercept value (a) was 55.15 and the slope value (b) was 0.001. This equation shows that:

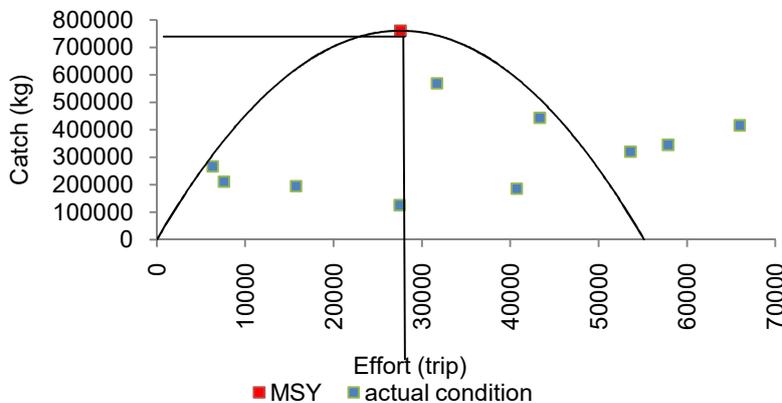
- Any addition of 1 trip of Effort would cause the CPUE value to decrease by 0.001 kg/trip and any reduction of 1 trip of Effort would increase the CPUE value by 0.001 kg/trip;
- The determination coefficient ( $R^2$ ) of 0.666 or 66.6% indicates that the 66.6% of the CPUE value was influenced by the Effort value while the rest 33.4% was influenced by other factors;
- The correlation coefficient (R) of 0.82 indicates a close correlation between the CPUE and Effort.



Source: Research (2018)

Figure 2 – Correlation Between CPUE and Effort of Hairtail Fish Within the Period of 2008-2017

**MSY, MEY, and OAE.** MSY is a reference for fishery resources management in an area that is still likely to be improved. By knowing MSY, the utilization rate of fishery resources will be maintained so that the resource stock will always be available at a safe level. According to Widodo and Suadi (2006), MSY is the highest or maximum catch that can be yielded year by year by a fishery resource.



Source: Research (2018)

Figure 3 – MSY Curve of Hairtail Fishin Kebumen Regency Waters Within the Period of 2008-2017

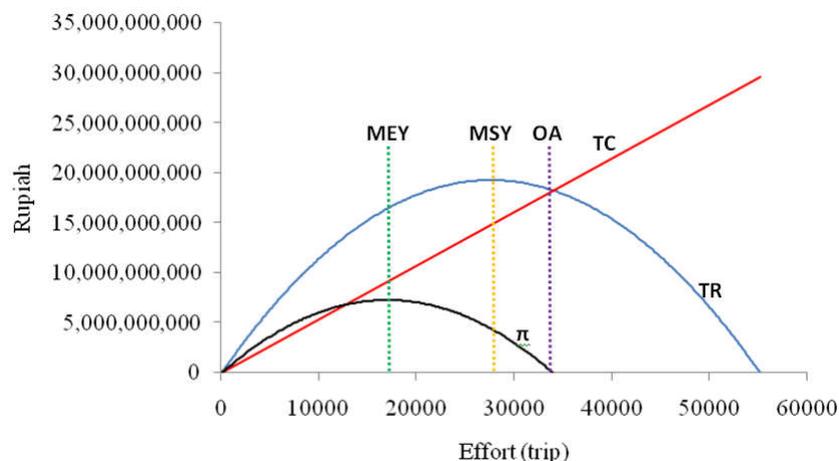
Based on the Schaefer model, the optimum effort ( $E_{MSY}$ ) of hairtail fish resources in Kebumen Regency Waters was 27,575 trips/ year. Meanwhile, the sustainable or maximum catch ( $C_{MSY}$ ) was 760,380 kg/ year. Viewed from the resulted sustainable catch value, it can be said that the actual catches of hairtail fish in Kebumen Regency Waters within the period of 2008 – 2017 have not reached the maximum catch ( $C_{MSY}$ ) but the efforts made have exceeded the maximum effort ( $E_{MSY}$ ).

Table 5 – Calculation Results of MSY, MEY, and OAE of Hairtail Fish in Kebumen Regency Waters within the Period 2008 – 2017

12	MSY	MEY	OAE
Catch (C)	760.380 kg/year	648.311 kg/year	719.388 kg/year
Effort (E)	27.575 trip/year	16.988 trip/year	33.977 trip/year
Total Revenue (TR)	IDR 19.304.543.308	Rp. 16.459.337.395	Rp. 18.263.845.552
Total Cost (TC)	IDR 14.822.334.600	Rp. 9.131.922.776	Rp. 182.63.845.552
Profit ( $\pi$ )	IDR 4.482.208.708	Rp. 7.327.414.620	Rp. 0

Source: Research Results (2018).

Table 3 shows that the use of Drift Gillnet resulted in the highest average CPUE value. Therefore, this fishing gear was further analyzed for its economic profit. After determining the average economic profit, it was obtained that the price of hairtail fish was IDR 25,388 per kg and the price per trip was IDR 537,528.00. The economic profit under MSY condition was IDR 4,482,208,708.00. Meanwhile, under MEY condition, it was obtained that the maximum catch ( $C_{MEY}$ ) was 648,311 kg/ year with the effort ( $E_{MEY}$ ) of 16,988 trips/ year, resulting in the economic profit of IDR 7,327,411,620.00. Furthermore, under OAE condition, the maximum catch ( $C_{OAE}$ ) was 719,388 kg/ year with the effort ( $E_{OAE}$ ) of 33,977 trips/ year, The graph of the MSY, MEY, OAE, TR, TC and Profit results is presented in Figure 4 below.



Source: Research Results (2018)

Figure 4 – MSY, MEY, OAE, TR, TC and Profit Curves of Hairtail Fish in Kebumen Regency Waters within the Period of 2008 - 2017

**Utilization Rate.** The utilization rate of hairtail fish for the last 10 years has very fluctuated. The average value of  $TP_C$  from 2008 to 2017 was 40.51%. The highest  $TP_C$  value occurred in 2012 amounted to 74.85% while the lowest  $TP_C$  value was 16.53% in 2010. The average value of  $TP_E$  was 127.06%. The highest  $TP_E$  value was 239.24% in 2008 while the lowest  $TP_E$  value was 22.98% in 2009.

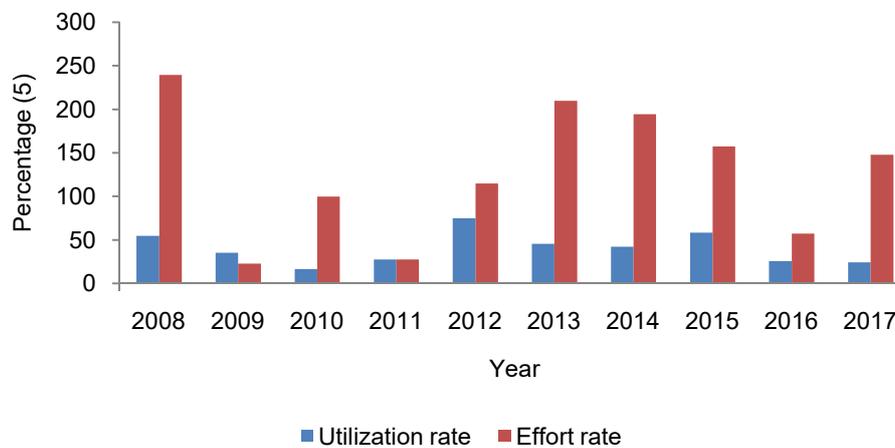
Within the period of 2008 – 2017, the utilization rate ( $TP_C$ ) was still below 100%. However, the production can still be improved. In contrast, the average effort rate ( $TP_E$ ) was more than 100%. Until 2011, there had been an attempt to lower the effort rate per year, but the effort went back up to an effort rate of more than 100% in 2012.  $TP_E$  values that exceed

$E_{MSY}$  can threaten resource sustainability. Reduction of  $TP_E$  value and increase in fishing gear effectiveness can be one solution that can be done to increase the production of hairtail fish by still concerning on the resource preservation.

Table 6 – Utilization Rate of Hairtail Fish in Kebumen Regency during 2008-2017

Year	Production (kg)	$C_{MSY}$ (kg)	$TP_C$ (%)	Effort (trip)	$E_{MSY}$ (trip)	$TP_E$ (%)
2008	416,200	760,380	54.74	65,970	27,575	239.24
2009	267,200	760,380	35.14	6,337	27,575	22.98
2010	125,700	760,380	16.53	27,474	27,575	99.63
2011	211,110	760,380	27.76	7,599	27,575	27.56
2012	569,121	760,380	74.85	31,696	27,575	114.94
2013	345,400	760,380	45.42	57,861	27,575	209.83
2014	320,610	760,380	42.16	53,609	27,575	194.41
2015	443,816	760,380	58.37	43,341	27,575	157.17
2016	195,351	760,380	25.69	15,758	27,575	57.15
2017	185,988	760,380	24.46	40,726	27,575	147.69
Rata-rata			40.51			127.06

Source: Research Results (2018).



Source: Research Results (2018)

Figure 5 – Utilization Rate of Hairtail Fish in Kebumen Regency Waters Within the Period of 2008-2017

## CONCLUSION AND SUGGESTIONS

The results of this research have led us to conclude that:

- The  $C_{MSY}$  value was 760,308 kg/ year and the  $E_{MSY}$  value was 25,575 trips/ year with the economic profit of IDR 4,482,208,708.00;
- The  $C_{MEY}$  value was 648,311 kg/ year and the  $E_{MEY}$  value was 16,988 trips/ year with the economic profit of IDR 7,327,414,620.00;
- The  $C_{OAE}$  value was 719,388 kg/ year and the  $E_{OAE}$  value was 33,977 trips/ year;
- The average  $TP_C$  value was 40.51% per year and the  $TP_E$  value was 127.06% per year. Both of these values indicate that the resource utilization is not effective because the effort rate is more than 100% yet the production is still far below 100%.

Taken together, the results of this research would seem to suggest that:

- There should be a limitation for the fishing effort rate per year by limiting the number of trips per year;
- There should be development and innovation of hairtail fishing gears so that the fishing effectiveness can increase;
- There should be precise and accurate information about fishing seasons and zones so as to increase the fishing productivity per year.

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## **ANALYSIS OF FISH AUCTION EFFICIENCY IN KENDAL DISTRICT, INDONESIA**

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### **ABSTRACT**

Establishment and development of fishing port facilities can be done by improving the efficiency and optimizing the fish auction as a functional facility. The efficiency of fish auction is affected by a number of factors including the management of fish auction, facilities provided in fish auction, and auction activity. This study was conducted to identify the available facilities and analyze the level of efficiency to be later compared to the efficiency of fish auction in Kendal District. This study was administered in July 2018 to five fish auctions in Kendal District which were Karangasari Fish Auction, Bandengan Fish Auction, Tanggul Malang Fish Auction, Sendang Sikucing Fish Auction, and Tawang Fish Auction. This study employed a descriptive method and samples were selected using the purposive sampling technique. The efficiency of Fish Auction was measured using DEA banxia frontier analysis 4.3. The result of the analysis showed that five Fish Auctions Karangasari Fish Auction, Bandengan Fish Auction, Tanggul Malang Fish Auction, Sendang Sikucing Fish Auction, and Tawang Fish Auction reached scores of 100%. Related to the efficiency, output value or auction transaction value was found to be the factor that had the strongest influence on the score.

### **KEY WORDS**

Efficiency, fish auction, data envelopment analysis, economy.

The north coast of Kendal District belongs to the coastal area in Central Java province. There were seven sub-district are parts of the coastal area that spreads up to 42 kilometres long. Kendal district ranked 8<sup>th</sup> among 17 other coastal areas in Central Java in the terms of the extent of the sea area. This fact implies that coastal areas in Kendal have the potentials to be further developed (Apriliani, 2014).

The fishing territory of Kendal District covers the north Java Sea that spreads up to 42.2 kilometres, covering 7 subdistricts including: Kaliwungu Subdistrict, Brangson Subdistrict, Kendal City Subdistrict, Patebon Subdistrict, Cepiring Subdistrict, Kangung Subdistrict, Rowosari Subdistrict. Kendal City has 5 fish auction centers which are: Tawang Fish Auction and Sendang Sikucing Fish Auction in Rowosari Subdistrict, Bandengan Fish Auction and Karangasari Fish Auction in Kendal City Subdistrict, and Tanggul Malang Fish Auction in Patebon Subdistrict (Central Bureau of Statistics, 2017).

Fish Auction Place is where fish are sold and this place becomes a factor that can drive and improve the business, and increase fishermen's welfare (Wiyono, 2005). The performance efficiency of a fish auction site can not be separated from its facilities and infrastructure. The Government has arranged a set of requirements of a fish auction site in the Decree of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia Number 52A / KEPMEN-KP / 2013 on the Control of Quality Assurance System and Fishery Product Security in Production, Processing and Distribution Process. There are ten requirements related to the quality of the fish auction building up to the standard means or tools to support fish auction activities which can be used as a reference in measuring the efficiency of a fish auction site and to identify the aspects that need improvement.

There are several factors that influence the efficiency of a fish auction including the management of the fish auction site, facilities, and the auction activity itself. Failure in fulfilling any of the requirement might give negative influence on the efficiency of a fish

auction. Hence, a thorough study should be conducted to measure the performance and efficiency of fish auctions to identify which factors that still have to be improved.

This study analyzed the performance and efficiency of fish auctions in Kendal District including Karang Sari Fish Auction, Bandengan Fish Auction, Tanggul Malang Fish Auction, Sendang Sikucing Fish Auction, and Tawang Fish Auction. The objectives of this study include:

1. Identifying the available facilities in fish auction sites in Kendal District;
2. Analyzing fish auction sites in Kendal District;
3. Comparing the efficiency of fish auction sites in Kendal District.

## **MATERIALS AND METHODS OF RESEARCH**

This study was conducted using a descriptive method through direct observation done to observe various aspects in order to obtain accurate description of the empirical condition of fish auctions. In this study, as a decision maker, the researcher analyzed the condition and problems that occurred in fish auctions. According to Supranto (2003), the descriptive method is an explorative method that allows researchers to describe certain object within certain period of time which results can be used as considerations in decision making.

Primary data and secondary data were analyzed in this study. Primary data were collected through observation and documentation. Observations were conducted to obtain primary data related to the system that applied in fish auctions. The secondary data of this study were retrieved from fish auction sites and the Department of Marine and Fisheries of Kendal District.

Observation, literature review, interview and documentation were administered towards fish auction sites to collect the intended data.

The samples of this study were selected using a purposive sampling method. Munir (2011) stated that purposive sampling method is a sampling method that allows researchers to select samples based on certain characteristics. The respondents of this research were fishermen, fishmongers, and the heads of fish auctions.

The method employed to analyze the quality facilities in fish auction was in accordance with the Decree of the Minister of Marine and Fisheries of Indonesia Number 52A/KEPMEN-KP/2013 on the Control of Quality Assurance System and Fishery Product Security in Production, Processing and Distribution Process consisting of these following criteria.

- Well-protected with easy-to-clean walls;
- Waterproof floor that is easy to clean, completed with sanitary channels and hygienic liquid waste system;
- Proper lighting that allows the officers to monitor the activities;
- Prohibition on vehicles that smoke out and animals from entering the fish market/grocery;
- Regular cleaning at least once after auction activities over;
- Completed with important warnings such as no smoking, no spitting, no food and beverage signs that should be put in strategic places;
- Adequate clean water supply;
- Product storages that are clean, stainless, watertight and easy-to-clean;
- Shelter waste treatment.

The analysis of fish auction efficiency was done using DEA (Data Envelopment Analyst) method. According to Susilowati and Ikhwan (2004), the analytical technique can be used to analyze the efficiency level of fish auction management through non-parametric DEA (Data Envelopment Analysis) approach, which is a linear-programming based technique. The concept of DEA is to measure the relative efficiency scores of certain economic activity units (UKE) involving other inputs and UKE within the same type of input and output. In DEA, the relative efficiency of UKE is defined as the weighted output / weighted input ratio.

Analysis was administered to a number of input factors that affect the output of fish auction sites in the form of fish transaction value (Rp). These input factors include the size of

the fish auction floor area (m<sup>2</sup>), the number of personnels (person), the number of auctioneer (person), the number of sellers (person), the number of scales, the number of fishermen (person), the number of fishing tools and the length of the dock (m). A fish auction is said to be efficient if it reaches a hundred percent score. Therefore, factors that affect the efficiency of fish auction include the value of input and output variables.

The obtained data were then calculated using Baxia Frontier Analysis software by counting the efficiency score from each Economic Activity Unit (UKE) or the fish auction. If the score is equal to 100%, then the fish auction is considered efficient, vice versa. According Paramita et.al (2006), to enhance the efficiency of a fish auction, improvement should be administered to the existing input - output based on the potential improvement value obtained in DEA in reference with other fish auctions which have been considered efficient.

## RESULTS AND DISCUSSION

*General Overview of the Location.* According to the Central Bureau of Statistics (2017), Kendal District is one of 35 districts / cities within the Province of Central Java which geographical position lies between 109° 40' - 110° 18' East Longitude and 6° 32' - 7° 24' South Latitude. The southern part of Kendal District is bordered by Java Sea. Its southern part is adjacent to Semarang city, south of Temanggung District and the west by Batang District.

The topography of Kendal Regency includes ocean, lowland and highland which have enough potential resources to be explored, including fisheries. This study is expected to provide a significant contribution for the development of Kendal District.

*The Condition of Capture Fisheries.* Kendal District has five capture fisheries centers as seen from the presence of fish auction sites in every fish dock areas in some sub-district along the coast line. Fish auction is the center of fish capture by local fishermen and entrant fishermen. The five fish auction are:

1. Fish Auction Karang Sari in Sub-district of Kendal City;
2. Fish Auction Bandengan in Sub-district of Kendal City;
3. Fish Auction Tanggul Malang in Patebon Sub-district;
4. Fish Auction Sendang Sikucing in Rowosari Sub-district;
5. Fish Auction Tawang in Rowosari Sub-district.

Aspects that relate to fish auction in Kendal District are regulated under the Regional Regulation Number 10 of 2010 on the Management and Retribution of Fish Auction Sites. Before the enactment of the regulation, fish auctions in Kendal were directly under the management of the Province, particularly the Department of Marine and Fisheries of Central Java. Later in 2010, the management of fish auction sites started to be managed by the regional government. Fish auctions are currently under the management of the Department of Marine and Fisheries of Kendal District.

Generally, the five fish auctions in Kendal District share similar characteristics. The auction sites are where fishermen sell their fish captures and other fishing activities.

The common fish sold in fish auctions of Kendal include anchovies, mackerel, pony fish, sardines, and squid. The capture fish sold in five fish auctions in Kendal in the past five years presented in Figures 1-2.

The production capacity of fish capture in Kendal District from 2013 – 2017 tend to increase. The lowest production occurred in 2013 as much as 1.822.807 kg which later increased in 2014. The highest production occurred in 2017 reaching up to 3.525.101 kg. Tawang Fish Auction and Sendang Kucing Fish auction had the highest amount of fish production. Demersal fish that are often found in Kendal District include beltfish (*Trichiurus sp*), stingray (*Trigon sp*), and spiny turbot *Psettodes sp*). While pelagic fish that are often found there are anchovy (*Stolephorus sp*), Spanish mackerel (*Scomberomorus sp*), tuna (*Auxis sp*), and mugil (*Valamugil sp*).

Tawang Fish Auction is a capture fishery center dominated by the use of Purse seine waring and Arad fishing boats. While the other four fish auctions namely Sendang Sikucing,

Malang, Bandengan and Karang Sari fish auctions were dominated by fishermen who operated outboard motors under 10 GT and employed fishing equipment such as shrimp nets, Gill Net, Dogol and Rampus Net.

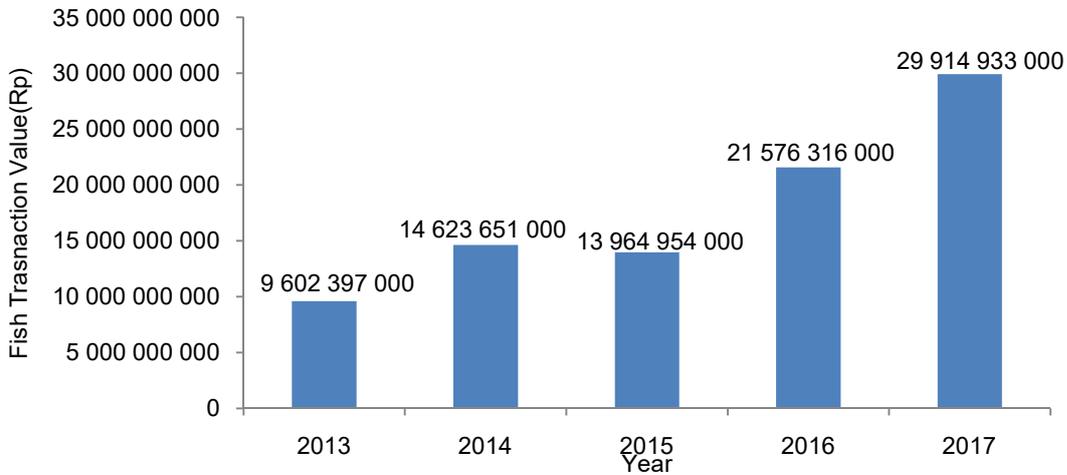


Figure 1 – The Chart of Fish Transaction Value in Fish Auctions in Kendal District

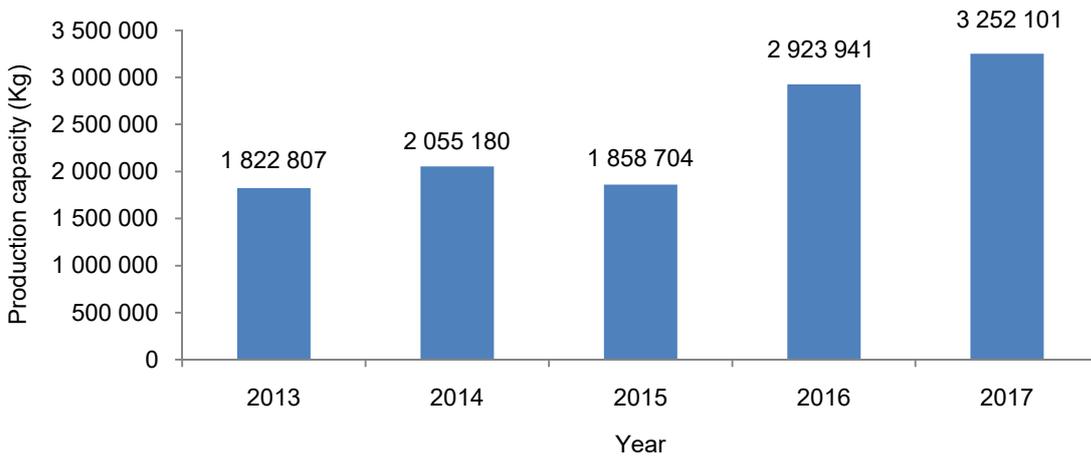


Figure 2 – The Chart of Production Capacity of Fish Auctions in Kendal District

The analysis of facilities and infrastructure at this fish auction site was done based on the Decree of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia Number 52A / KEPMEN-KP / 2013 on Control of Quality Assurance System and Fishery Product Security in Production, Processing and Distribution Process.

Table 1 – The Analysis of Facilities in Fish Auctions in Kendal District

Indicator	The Condition of Fish Auctions				
	Karang Sari	Bandengan	Tanggul Malang	Sendang Sikucing	Tawang
1	√	√	√	√	√
2	+	+	+	+	+
3	+	+	+	+	+
4	√	√	√	√	√
5	√	√	√	√	√
6	+	+	+	+	+
7	-	-	-	-	-
8	+	+	+	+	+
9	-	-	-	-	-
10	-	-	-	-	-

Source: Research Data 2018.

Notes: √: Facility is available in a good condition as described by the indicator; +: Facility is available in a poor condition as described by the indicator; -: Facility is not available.

These indicators were used to define whether the facilities and infrastructure had met the criteria. The following Table 1 is the description of the analysis of facilities and infrastructure in fish auctions.

Indicators:

- Well-protected building with easy-to-clean walls;
- Waterproof and easy-to-clean and easy-to-sanitize floor completed with good drainage system and hygienic liquid waste disposal system;
- Equipped with sanitary facilities such as washstand and enough number of toilettes;
- There should be hand-soap and disposable dryer in the washstand;
- Adequate lighting that enables officers to monitor the activities;
- The prohibition of smoky vehicle and animals from entering the fish market;
- Regular cleaning at least once after auction activities over;
- Completed with important warnings such as no smoking, no spitting, no food and beverage signs that should be put in strategic places;
- Adequate clean water supply;
- Product storages that are clean, stainless, watertight and easy-to-clean;
- The provision of shelter waste treatment.

Based on Table 1, the facilities and infrastructure in five fish auctions in Kendal Regency still suffer from some weaknesses. The description of infrastructure facilities in fish auctions in Kendal District is presented as follows:

- Well-protected building with easy-to-clean walls. The five fish auctions have good quality open building with high roof in the form of ceiling, asbestos, and roof tile, allowing the air in the building to be well-circulated. This type of building prevents stuffy air and fishy smell;
- The five fish auctions have waterproof floor and sewerage. The condition of the auction floor in the fish auction has been considered clean enough and no puddle was found in the channels. According to Murdianto (2003) the floor of auction building should be spacious with smooth but hard and dense and easily-to-dry surface;
- Every fish auction has been equipped with toilettes. However, sanitary facilities such as washstand was not yet available in every fish auction site;
- Sufficient lighting to facilitate the auction activities. Auction activity in TPI in Kendal District is done in the morning and afternoon. The open building allows sunlight to go through and lamps are turned on in the night;
- Vehicles that exclude smoke and animals might also affect the quality of fishery products, and they should be banned from entering the fish auction site. The presence of animals in fish auction greatly affects the quality of the catch. Therefore, animal should not enter the fish auction area;
- All fish auctions in Kendal District keep their sites clean as they are cleaned using freshwater everyday;
- Warning signs were not available;
- All fish auction have adequate clean water supply. The sites provide sufficient clean water to support auction activities such as for cleaning the catch and cleaning the building. However, none of those fish auction provides clean seawater;
- All of those fish auctions do not have clean, rust-proof, water-resistant and easy-to-clean container;
- Waste shelters were also not provided by those fish auctions.

The efficiency of fish auctions was analyzed using a program namely 'Software Banxia Frontier Analyst ". There were eight input variables put into the analysis including the floor area of the auction (m<sup>2</sup>), the number of auction personnels (person), number of auctioneer (person), number of sellers (person), number of scales (unit), number of fishermen (person) catch tools (unit), and length of dock (m). Meanwhile, the output factor was the production value (Rp).

Based on the results of the analysis, all five fish auctions obtained 100.00% (Karangsari Fish Auction, Bandengan Fish Auction, Malang Fish Auction, Sendik Sikucing

Fish Auction and Tawang Fish Auction). Within this condition, the value between the target and the potential value was 0% improvement since the input has been in accordance with the expected output.

### CONCLUSION AND SUGGESTIONS

Some of the existing facilities and infrastructure at the fish auction sites in Kendal Regency are in good condition since complete and adequate facilities have been established. The efficiency level of fish auctions in Kendal District based on result of calculation using DEA baxia frontier analysis 4.3 showed 100% score (Karangsari Fish Auction, Bandengan Fish Auction, Malang Fish Auction, Sendik Sikucing Fish Auction and Tawang Fish Auction. Within this condition, the value between the target and the potential value was 0% improvement since the input has been in accordance with the expected output.

#### *Suggestions:*

- It is necessary to improve and equip the infrastructure and facilities in fish auctions to support auction activities. It is suggested that the floors are made of ceramics, and the sites should be equipped with clean water taps, drains and trash bin to maintain the cleanliness of the sites;
- It is suggested that more sellers participate in the auction in order to keep the price competitive;
- Other factors that contribute to the efficiency of fish auctions should also be improved.

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## TYPE COMPOSITION OF EEL SEED (*ANGUILLA* SPP.) IN DUMOGA CREEK, BOLAANG MONGONDOW

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### ABSTRACT

Dumoga River is one of the rivers in Bolaang Mongondow Regency disemboque to the Sulawesi Sea which becomes the entrance of glass eel from the sea. Glass eel that enters the river consists of several species. The purpose of this study was to study the species composition of glass eel that migrates to the creek of the Dumoga River. Glass eels were collected at the creek from 20th of April 2018, to 30th of May 2018 at 00:00 to 04:00. In a period of 40 days, there were 2,251 glass eels collected and consist of 3 species namely *Anguilla marmorata* (49.13%), *Anguilla bicolor pacifica* (37.94%), and *Anguilla* spp. (12.93%). Glass eels are stored in formalin for morphometric and meristic measurements. Morphometric was done by calculating the AD value ( $DA = 100 (LD-LA) LT^{-1}$ ) and the tail pigmentation structure. Meristic was done by calculating the eyelid spine. The result showed that the value of AD obtained ranged from (0-2.87) grouped in the type of *bicolor pacifica*, (14.90% - 16.14%), grouped in the type *A. marmorata* and (6.85% 7.21%) grouped in the *Anguilla* sp.

### KEY WORDS

Glass eel, Dumoga River, *Anguilla bicolor pacifica*, *Anguilla marmorata*, *Anguilla* sp.

Eel fish (*Anguilla* spp.) has a unique variety aspect of biology that become a mystery until today. The fish has a catadromous lifecycle pattern that starts their lives at the sea, migrates into freshwater to grow up and will migrate back into the sea for spawning (Tesch et al., 2003). Therefore, the migration of the eel larvae to the river is always through the creek. The eels' larva migrates from the spawning sites in the deep-sea area to the river that disemboque to the deep sea, including the Dumoga River.

There are nine species/subspecies in Indonesia of the twenty-two species/subspecies of eels found in the world, *Anguilla celebesensis*, *A. interioris*, *A. nebulosa nebulosa*, *A. marmorata*, *A. borneensis*, *A. bicolor bicolor*, *A. bicolor pacifica*, *A. obscura* and *A. megastoma* (Sugeha and Suharti, 2008). Identification of eel fish species found on the Dumoga River has been done previously by Novianti (2007) and Fahmi (2015). There are four species found, namely *A. marmorata*, *A. bicolor pacifica*, *A. celebesensis* and *Anguilla* spp.

Dumoga River becomes one of the potential sites of eel fish because it is close to the spawning location. The spawning sites of *A. borneensis* and *A. celebesensis* are located in the high seas of Sulawesi and Tomini Bay (Central Sulawesi) because they lay more in the deep sea close to their juvenile habitats (Aoyama et al., 2003; Ishikawa et al., 2004), while spawning sites of *A. marmorata* and *A. bicolor pacifica* are located in the western part of the North Pacific (Miller et al., 2002; Sugeha and Arai, 2010; Arai, 2014).

Yet, it has a lack of scientific information about the migration of eel larvae entering to the mouth of the Dumoga. Thus, the typical composition of eel larvae that migrate to the mouth of the Dumoga River is also unknown. This study aims to identify the type and abundance of glass eel phase eel larvae that enter the mouth of the Dumoga River.

### METHODS OF RESEARCH

The study was conducted on April 23 - May 26, 2018. The sample collection of glass eel larvae phase was conducted at the mouth of Dumoga River, Bolaang Mongondow District

(Coordinate 0.922556° E – 124.090733° E) at 00.00 - 04.00 ICST. Glass eel of fisherman catch is identified at Freshwater Aquaculture Laboratory (BPBAT) Tatelu.

The materials used in this study consisted of 95% alcohol, 75% formalin and glass eel larvae phase. The eels' larvae is collected at the edges of the river by shifting using 60 - 100 cm sized-net. The collection of the eel larvae is carried out by sweeping the entire area (transects along 20 meters and 1 meter wide) by shifting for 10 times back and forth. Thus, the sample area of 200 m<sup>2</sup> is obtained.

The eels' larva obtained then fed into the formalin for morphological analysis. Morphometric measurements and tail pigmentation determinations were performed using a digital caliper with an accuracy of 0.01 mm under a stereomicroscope equipped with a digital camera and a computer for shooting. The determination of glass eel type based on morphometric refers to Elis (1982) in Reveillac et al., (2009), are anal length (AL), dorsal length (DL) and total length (TL), ano-dorsal value (AD) with the following equation:

$$A/D \% = \frac{(LD - LA)}{LT} \times 100$$

## RESULTS OF STUDY

Based on the morphological measurement, the total length of the glass eel at Dumoga River creek is divided into three groups: group with total length of 49.3 mm; 58.29 mm; and 73.31 mm. In this study, it is obtained the value of AD which is divided into 3 groups namely 0% - 2.87%; 14.90% - 16.14%; and 6.85% - 7.21%. Referring to the grouping of eels based on AD values, it is suspected that the type of eel that enters the mouth of the Dumoga River is *Anguilla marmorata*, *Anguilla bicolor pacifica*, and which has not been identified as *Anguilla* sp.

The data presented in Tables 1 and 2 show an association between the number of ano-dorsal vertebrae and the ano-dorsal length. Watanabe (2003) in the diagram of the phylogenetic tree explains that the total vertebra of *A. bicolor* is 105-111 while the number obtained in this study is 111. Meanwhile, the type *A. marmorata* is 103-110. In this study, it is obtained the value of 105. The total number of vertebrates' type of *Anguilla* sp. is 100-106. The calculation has obtained the value of 104 (Table 2).

Table 1 – Morphometric measurements of eel in glass eel phase

Species	TL (mm)	DL (mm)	AL (mm)	Ano-dorsal (%)
<i>A. marmorata</i>	49.3	21.4	13.72	15.57
	(44.50 - 54.10)	(18.05 - 24.75)	(11.42 - 16.02)	(14.90 - 16.14)
<i>A. bicolor pacifica</i>	58.29	24.93	24.24	1.18
	(48.02 - 68.55)	(18.66 - 31.20)	(18.66 - 29.82)	(0 - 2.87)
<i>Anguilla</i> sp.	73.31	31.3	26.1	7.09
	(50.65 - 95.96)	(19.35 - 43.24)	(15.88 - 36.32)	(6.85 - 7.21)

Table 2 – Meristic measurements of eel in glass eel phase

Species	Total of spine	Pre-dorsal spine	Pre-anal spine	Ano-dorsal spine
<i>A. marmorata</i>	105 (104-106)	18 (17-19)	37 (36-39)	18 (18-20)
<i>A. bicolor pacifica</i>	111 (108-112)	34 (34-36)	36 (32-39)	1 (0-3)
<i>Anguilla</i> sp.	104 (100-106)	28 (27-29)	32 (30-33)	7 (6-12)

The observations were also made on the structure of tail pigmentation. The tail pigment of the eel larvae reaching the tip with a slightly rounded tail shape is categorized as *Anguilla marmorata* eel type. The pigment in *Anguilla bicolor pacifica* is shaped like a broom/brush.

While in *Anguilla* sp., the shape of the tailbone is more similar to *Anguilla marmorata* with broom-shaped pigment as in *Anguilla bicolor pacifica*, but more pale and less dense.

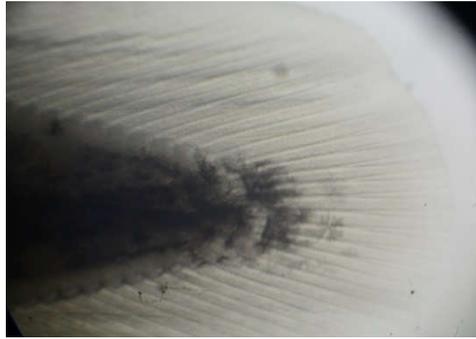


Figure 1 – Pigmentation of eel tail of *Anguilla marmorata*



Figure 2 – Eel pigmentation of *Anguilla bicolor pacifica*



Figure 3 – Pigmentation structure in eel tail of *Anguilla* sp.

Comparison of pre-anal and pre-dorsal distances also characterizes differentiation between species of eels. Figure 4 shows the long-fin type of *Anguilla marmorata* because the pre-anal distance is shorter than pre-dorsal. While the fin-type on *Anguilla bicolor pacifica* type can be seen in Figure 5.

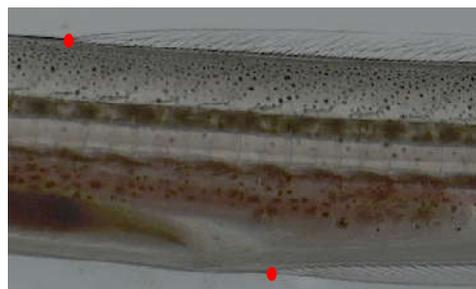


Figure 4 – Long fin characterization of *Anguilla marmorata*

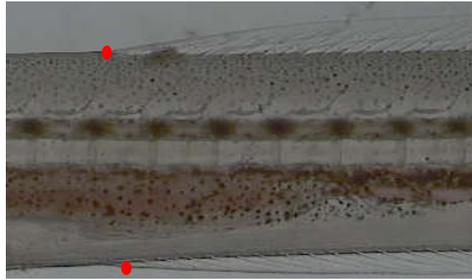


Figure 5 – Characterization of short fin on *Anguilla bicolor pacifica*

The eel phase observed during 40 days of research were 21251 tails. A total of 49.13% were thought to be *Anguilla marmorata*, 37.94% were *Anguilla bicolor pacifica*, and 12.93% were *Anguilla*.

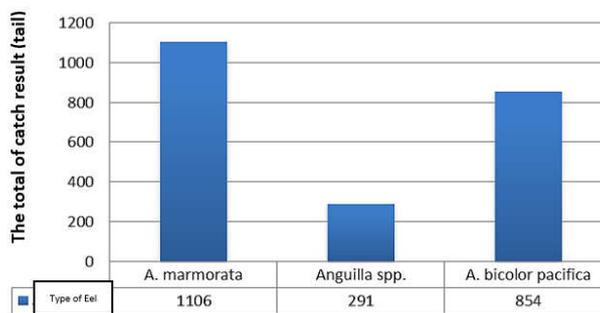


Figure 5 – Amount of eel catch at Dumoga River creek

Table 3 – The abundance of eel species

No	Type of Eel	K (Individual)	KR (%)
1	<i>A. marmorata</i>	1106	49.13
2	<i>Anguilla spp.</i>	291	12.93
3	<i>A. bicolor pacifica</i>	854	37.94
Total		2251	

The waters quality data of Dumoga river creek during the research can be seen in Table 4. The data shows that the waters of Dumoga river are ideal waters for the environment of eel fish.

Table 4 – Water quality measurement results

Repetition	Temperature (°C)	DO (mg/L)	NH <sub>3</sub> (µg/L)	PO <sub>4</sub> <sup>3-</sup> (mg/L)	pH
1	26	6	0.18	1.7	7
2	26	6	0.2	1.7	6.8
3	26	6	0.21	1.7	6.5
4	26	6	0.18	1.7	7
Average	26	6	0.19	1.7	6.8

### DISCUSSION OF RESULTS

During the 40-day sampling, the glass eels collected from the creek of the Dumoga River are dominated by *A. marmorata* and *A. bicolor pacifica*. This is in accordance with the statement of Ndobe et al., (2010) that *A. marmorata* and *A. bicolor* are suitable as seeds for cultivation of eels since the two species are found in large quantities varied with no clear seasonal and yearly patterns. In addition to *A. marmorata* and *A. bicolor pacifica*, it is also found a type of glass eel with low or very low AD value of *Anguilla sp.* The following

paragraphs will discuss the distribution of three species found at the mouth of the Dumoga River.

*The Distribution of Anguilla bicolor pacifica.* Type *A. bicolor* is divided into two subspecies namely *A. bicolor bicolor* and *A. bicolor pacifica*. Allopathic isolation (geographical isolation) between two oceans may have split *A. bicolor* into two subspecies. *A. bicolor pacifica* is widely distributed but less abundant. According to Wouthuyzen et al., (2009) the spawning area of *A. bicolor pacifica* occurs in the North Sulawesi Sea. Arai et al., (1999) states that glass eel *A. bicolor pacifica* can only be sampled in January, March, April, October, and December. The spawning area of *A. bicolor pacifica* appears to be unidentified. However, the current species distribution map by Aoyama (2009) and Fahmi et al. (2102) shows that both *A. marmorata* and *A. bicolor pacifica* are carried from the Sulawesi Sea.

Analysis of the population structure of *A. bicolor pacifica* shows no significant genetic differences in the distribution of the South Pacific Ocean (Minegishi et al., 2012). The wide distribution of *A. bicolor pacifica* in the northeast of Indonesia may be due to the dispersive glass eel transport throughout eastern Indonesia. The dynamics of the water flow in eastern Indonesia are heavily influenced by the Indonesia River Flow, where these currents enter the Indonesian waters from the Pacific, flowing into the Indian Ocean via the western route of the Makassar Strait, then exit through the Lombok Strait. In this condition, the current can flow eastward into the Banda Sea. The saltier and denser waters of the South Pacific pass through the Banda Sea, where this mass of water will be mixed (Gardon, 2005). This current flow affects the local climate and helps the distribution of planktonic eggs and larvae.

*The Distribution of Anguilla marmorata.* The spawning areas that supply glass eels taken from the Dumoga River are not known with certainty. The existence of glass eel *A. marmorata* in the Dumoga River is part of the Japan-Sulawesi panmictic population based on genetic analysis by Minegishi et al., (2008), and originated from the spawning area of the North East Pacific Ocean proposed by Miller et al. (2002); (Righton et al., 2012). The spawning area of *A. marmorata* is found in the northern part of Sulawesi waters (Aoyama et al., 2003; Wouthuyzen et al., 2009) after the capture of a small glass eel between mid-August and late October. Seed of *A. marmorata* can be found almost year-round at the mouth of the Poigar river, Sulawesi (Arai et al., 1999). *A. marmorata* has also been found, on the west coast of Papua. This shows the possibility of other spawning areas in eastern Indonesia other than in northern Sulawesi so that in this study glass eel is dominated by *A. marmorata*.

Based on the biological aspects of *A. marmorata* it is known that the current dynamics pattern is due to the effects of water entering from the North Pacific and the South Pacific. In addition, these waters cross the Wallacea line, which affects the pattern of species spread. There are some deep waters in eastern Indonesia that allow spawning, such as the Arafura Sea, Makassar Strait, Flores Sea, Sulawesi Sea, Tomini Bay and Bone Bay. Therefore, more research is needed on the structure of population *A. marmorata* in Indonesian waters, especially the eastern part of Indonesia.

Analysis of the population structure of *A. bicolor pacifica* showed no significant genetic differences in the distribution of the South Pacific Ocean (Minegishi et al., 2012). The wide distribution of *A. bicolor pacifica* in the northeast of Indonesia may be due to the dispersive glass eel transport throughout eastern Indonesia. The dynamics of the water flow in eastern Indonesia are heavily influenced by the Indonesia River Flow, where these currents enter the Indonesian waters from the Pacific, flowing into the Indian Ocean via the western route of the Makassar Strait, then exit through the Lombok Strait. In this condition, the current can flow eastward into the Banda Sea. The more salty and denser waters of the South Pacific pass through the Banda Sea, where this mass of water will be mixed (Gardon, 2005). This current flow affects the local climate and helps the distribution of planktonic eggs and larvae.

*Distribution of Anguilla sp.* The other types of eel (*Anguilla sp.*) in this research have an ADV range 6-7. However, its genetic is certainly not known yet. There are three species of tropical glass eel known to have anodorsal vertebrae between 6 and 12, which are *A. celebesensis* and *A. borneensis* (7-10 ADV). The glass eel from *A. celebesensis* and *A. borneensis* have been identified in the Makassar Strait (Wouthuyzen et al., 2009). The

available information indicates that the spawning area of *A. borneensis* is likely to be in or close to Makassar Strait.

*A. celebesensis* is one of the endemic tropical eel species in Sulawesi. The glass eel species are collected in two different seasons and in two different regions (Sulawesi Sea and Tomini Bay). Glass eel in Tomini Bay was discovered in May, while *leptocephalus* in the Sulawesi Sea was discovered in February (Aoyama et al., 2003; Wouthuyzen et al., 2009). However, in a research conducted in April-May, this endemic species was still found in the Dumoga estuary since the spawning and growth area of *A. celebesensis* are considered to be in Tomini Bay. Therefore, it indicates that the migration distance of *A. celebesensis* is the shortest one of the genus *Anguilla* since the approximate migration distance is 80 km.

In addition to the Sulawesi Sea, the spawning area of *A. celebesensis* is also located in Tomini Bay (Aoyama et al., 2003). At least, the larvae can be carried out from the bay by the water flow that will eventually join the Indonesian Throughflow and enter the Makassar Strait. This suggests that eels, such as *A. marmorata* and *A. celebesensis* may have more than one spawning area.

The other *A. borneensis* endemic tropical species is taken from Celebes Sea (Aoyama et al., 2003). *A. borneensis* growth habitat is limited to the eastern Borneo and the Celebes Sea. In this research, *A. borneensis* specimen is allegedly found since the research location has a direct contact with the Celebes Sea and Makassar Strait. The migration distance of *A. borneensis* glass eel is at least 450-650 km from the spawning area (Aoyama et al., 2003).

The tropical eel has a unique distribution and migration patterns such as short migration distance, short metamorphosis duration, spawning throughout the year and some of them spread widely, while some others spread closely. The spreading behavior pattern is an important factor in the separation of eel types, because, in *leptocephalus* stadia, the eel will swim passively following the flow pattern. However, the re-migration of the eel depends largely on its ability and oceanographic condition.

The occurrence of abundance variation (absolute and relative) is caused by the combination of several factors discussed by Kuroki et al., (2012). Factors that may affect the uptake of each glass eel species are affected by the survival rate, the time and spawning result as well as the transport of glass eel larvae following the ocean flow as a glass eel and the metamorphosis process into glass eel stage.

Righton et al., (2012) state that the eel migration may be affected by factors related to climate. The survival and migration route of glass eel larvae can be affected by multi-decade trends in ocean circulation and pattern changes affected by the climate. There is a temporal pattern in taking the glass eels in the Dumoga River over a period of years or even decades that cannot be detected based on the short duration of the data. It is also possible that the pattern changes or will change due to the global shift in climate and ocean circulation.

Seen from the biodiversity perspective, the existence of *Anguilla* sp. species in small quantity with ADV of 6-12 are still considered important to ensure that glass eels survive during the migration. Therefore, it is suggested to let the glass eel of ADV group of 6-12 go and return it to the wild. The spot observation and distribution variability of ADV numbers reinforce the opinion that there may be more than one species with ADV ranges of 6-12 taken from the Dumoga estuary. Furthermore, the difference in glass eel size is due to the presence of two (or more) species and/or the existence of glass eels from different ages (from different spawning activities or even laying spots) taken at the same time.

Three species taken from the Dumoga estuary with ADV numbers in the range of 6-12 are important from biodiversity and biogeography perspective in order to identify the species that actually exist. Identification of glass eels based on DNA from one or more recent species has been developed by Fahmi et al., (2013). Seasonal and annual variability needs to be observed in the recruitment. The sample selection should include full ADV range and fat least few months (ideally over a period of one or more years) to ensure complete identification of existing species.

## CONCLUSION

During the research period, three species of Dumoga estuary have been collected. The species composition is dominated by *Anguilla marmorata* and *Anguilla bicolor pacifica*, both of which are commercially valuable. In addition, a species that cannot be accurately identified using ADV and tail pigmentation method was found. However, from the aspects of conservation and biodiversity, it is considered very important. A genetic analysis method is required to identify this species in order to know the whole composition of glass eel species collected from the Dumoga River.

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## **EFFECT OF YOUNG COCONUT WATER AND EGG YOLK EXTENDER RATIO AND LENGTH OF STORAGE AT LOW TEMPERATURE ON SPERM MOTILITY AND VIABILITY OF BALI BULL**

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### **ABSTRACT**

The objective of this study was to determine the effect of the different ratio of young coconut water and egg yolk extender and length of storage at low temperature on sperm motility and viability of Bali bull. The method used was an experiment in the completely randomized factorial design. The first factor was young coconut water and egg yolk ratio which consisted of 5 treatments, including P0 (control) = Tris aminomethane, P1 = 85% of young coconut water + 15% of egg yolk, P2 = 80% of young coconut water + 20% of egg yolk, P3 = 75% of young coconut water + 25% of egg yolk, P4 = 70% of young coconut water + 30% of egg yolk. The second factor was the length of storage at a low temperature which consisted of 3 treatments, including 1 day, 2 days and 3 days. All treatments were replicated 10 times. Variable measured was sperm motility and viability. Results showed that the sperm motility of Bali bull in P0 (control) after 3 days of storage was 38.00%, which was significantly different ( $P < 0.05$ ) compared to P1 (21.50%), P2 (24.50%), P3 (28.00%), and compared to P4 (33.50%). Results also showed that sperm viability of Bali bull in P0 after 3 days of storage, which was in the amount of 65.06%, was significantly greater ( $P < 0.05$ ) than P1 (55.64%), P2 (58.42%), and P3 (60.91%), but did not significantly different ( $P > 0.05$ ) compared to P4 (63.54%). The conclusion of this study is that the use of extender which composed of 70% of young coconut water + 30% of egg yolk could maintain the sperm motility and viability of Bali bull.

### **KEY WORDS**

Coconut water, egg yolk, length of storage, sperm motility, Bali bull.

Bali cattle breeding are caused by the limited number of superior males and the occurrence of cross-breeding with different breeds or lines as well as uncontrolled breeding in nature, resulting in frequent inbreeding. Therefore, reproductive biotechnology manipulation is needed to maintain the purity of the Bali cattle. One of the manipulations is through artificial insemination (Hastuti, 2008). To support the success of artificial insemination, it is necessary to improve the semen quality using semen extenders to increase the volume, to protect the spermatozoa against cold shock, to supply nutrient sources, to prevent the germs growth, and to maintain osmotic pressure and electrolyte balance (Hadi, 2002).

Egg yolk contains lipoproteins and lecithin which maintains and protects spermatozoa from cold shock. To meet the needs of simple carbohydrates as the energy sources in semen extenders, young coconut water can be used because it contains carbon elements in the form of simple carbohydrates such as glucose, sucrose, and fructose and nitrogen elements in the form of proteins composed of amino acids such as aline, arginine, alanine, and serine (Zakiah, 2009).

Semen extenders should be able to demonstrate the ability to minimize the sperm motility impairment rate to eventually extend the length of storage time. Not all semen extenders exhibit the same ability to maintain spermatozoa. Therefore, it is necessary to

identify the effect of semen extenders and length of storage on the motility and viability of Bali bull fresh semen.

## MATERIALS AND METHODS OF RESEARCH

This research was conducted in Artificial Insemination Center (*Balai Besar Inseminasi Buatan*, BBIB) Singosari. The materials used in this research were the fresh semen of 5 Bali bulls with age ranging from 3 - 5 years in Artificial Insemination Center Singosari. Semen was collected twice a week using an artificial vagina. The bulls were placed in individual cages and clinically healthy.

The method used in this study was the experimental laboratory. Semen was stored at cold temperatures with young coconut water and egg yolk extenders. The treatments conducted in this study were 5 treatments with 10 replications.

The design for this research was the Completely Randomized Factorial Design with two factors. The first factor was the young coconut water and egg yolk extender ratio. Treatment (T) consisted of P0 = Tris aminomethane, P1 = 85% coconut water + 15% egg yolk, P2 = 80% coconut water + 20% egg yolk, P3 = 75% coconut water + 25% egg yolk, and P4 = 70% coconut water + 30% egg yolk. The second factor was the length of storage (L) which consisted of 1-day, 2-day, and 3-day storage. The semen used in this study had 50-55% motility and was divided into 5 parts with the same volume.

*Preparation of extenders.* Coconut water from young (green) coconuts was poured into an Erlenmeyer flask and filtered using filter paper. Then, coconut water pH was measured with litmus paper before mixing the extenders, resulting in coconut water pH of 6.4. It was necessary to neutralize the coconut water pH before preparation of extenders. Coconut water was inactivated for 20 minutes using a thermo-string at the temperature of 170°C, while the water temperature in the control remained stable at 56°C. After the inactivation, 0.6 grams of NaHCO<sub>3</sub> was added into 500 ml of young coconut water and homogenized for 10 minutes. The young coconut water pH increased to 7.0. Young coconut water was poured into the measuring cup according to the required volume. Egg from the free-range chicken was prepared and egg yolk was separated from egg white with filter paper. Egg yolk was then added to the young coconut water according to each treatment. After mixing the young coconut water with egg yolk, penicillin 1000 IU and 1 mg of streptomycin were added to each ml of extenders.

*Independent and Dependent Variables.* The independent variable was the different ratio of young coconut water and egg yolk and length of storage. The dependent variable was the sperm motility and viability of Bali bull.

*Data Analysis.* Data were analyzed using the ANOVA of SPSS software for windows ver. 23.0 to determine the effect of each treatment on the sperm quality. If there was a significant difference, it was tested further with Duncan's Multiple Range Test (DMRT) to determine the difference between treatments.

## RESULTS AND DISCUSSION

*Fresh semen characteristics of Bali bull.* The observation results of fresh semen macroscopic and microscopic analysis obtained the average characteristic of Bali Bull fresh semen. Table 1 below presents the results.

*Sperm Individual Motility Percentage.* Motility is one important factor because motility is a parameter for the semen quality. Motility also determines spermatozoa to penetrate the cervix to the ovum, so fertilization can occur (Carla et al., 2008). The observation results of the sperm individual motility percentage of Bali bull fresh semen during the study are presented in Table 2.

Observation data in Table 2 showed that the highest average value of fresh sperm motility was at the 1-day storage and at P0 (Control) of 48.00%. The lowest motility was at the 3-day storage and at P1 treatment of 21.50%. The results of the analysis of variance indicated that the longer storage time decreased the motility percentage. The data of the

analysis of variance showed interaction ( $P < 0.05$ ) between extender ratio and length of storage on the sperm motility of Bali bull.

Table 1 – The Mean Value of Fresh Semen Analysis

Parameter	Mean
Volume (ml)	6.1±0.61
Color	Yellowish white
Aroma	Distinctive
pH	6.5±0.31
Mass motility	++
Individual motility (%)	55.00±1.58
Viability (%)	75.38±3.07
Abnormality (%)	8.66±0.52
Membrane integrity (%)	74.37±3.34
Concentration ( $10^6$ )/ml	830.4±81.38

Source: processed primary data (2018).

Table 2 – The Effect of Length of Storage in Cold Temperature on Sperm Motility

Day	Treatment	Individual Motility (%)
1	P0	48.00±2.58 <sup>a</sup>
	P1	32.00±3.49 <sup>d</sup>
	P2	35.00±5.27 <sup>d</sup>
	P3	38.50±3.37 <sup>c</sup>
	P4	43.50±3.37 <sup>b</sup>
2	P0	43.00±2.58 <sup>a</sup>
	P1	26.50±2.41 <sup>e</sup>
	P2	29.50±3.68 <sup>d</sup>
	P3	33.00±2.58 <sup>c</sup>
	P4	38.00±2.58 <sup>b</sup>
3	P0	38.00±2.58 <sup>a</sup>
	P1	21.50±2.41 <sup>e</sup>
	P2	24.50±3.68 <sup>d</sup>
	P3	28.00±2.58 <sup>c</sup>
	P4	33.00±2.58 <sup>b</sup>

Notes: P0 (Control) Tris Amino methane, P1 (85% CW + 15% EY), P2 (80% CW + 20% EY), P3 (75% CW + 25% EY), P4 (70 CW + 30% EY). Values with different superscripts within the row differ significantly ( $P < 0.05$ ).

The result of Duncan Test analysis showed that the percentage of young coconut water and egg yolk extender ratio on 2-day storage at P0 (Control) treatment of 43.00% was significantly different to P1 of 26.50%, P2 of 29.50%, P3 of 33.00%, and P4 of 38.00%. The 3-day storage on P0 (Control) treatment of 38.00% was significantly different to P1 of 21.50%, P2 of 24.50%, P3 of 28.00%, and P4 of 33.00%. The results of the significance difference test indicated that the combination of the extender ratio and the length of storage gave the best response on P4 treatment (70% CW + 30% EY). It can be concluded that the use of 70% young coconut water and 30% egg yolk extender ratio can be used as a substitution of tris amino methane extenders.

The analysis results of observation data above showed that the longer storage time decreased the motility percentage value. Hine et al. (2014) state the cow sperm motility percentage is affected by the sperm age and the amount of energy available in semen. The older spermatozoa cause the increasing damaged spermatozoa which thereby decreases the motility value. Arifianti and Purwantara (2010) assert the sperm motility percentage is associated with the sperm plasma membrane integrity. If the plasma membrane in the middle part of the spermatozoa is damaged, the aspartate aminotransferase (AspAT) enzyme, which is the main mitochondrial enzyme in ATP production, is dispensed in the cell and mixed with the extenders. The absence of AspAT interferes with ATP production and inhibits the sperm motility.

The length of storage affects the sperm pH. The concentration of lactic acid increases with the length of storage which causes the decreasing extender pH, resulting in sperm

damage and decrease in the sperm motility percentage (Hine et al., 2014). Increased concentration of lactic acid can disrupt metabolic processes due to increased lipid peroxidation of sperm membrane and increase the permeability of cell membrane, making the cells become damaged and die quickly (Zakiah, 2009).

Coconut water contains carbohydrate compounds acted as reducing sugars, i.e. glucose and fructose, which serve as the energy source for spermatozoa (Hine et al., 2014). Arifiantini et al. (2005) state that in addition to being the energy source, coconut water is also a carbohydrate source, especially fructose which has a dual role as the energy source and extracellular cryoprotectant for spermatozoa against cold shock at 3-5°C. Sulabda et al. (2010) affirm that the use of young coconut water as the bull sperm extenders can provide physical and chemical supplies to maintain sperm fertility and viability.

Egg yolk contains glucose, proteins, and water- and fat-soluble vitamins which have good viscosity for spermatozoa (Hastuti, 2008). Phospholipids, cholesterol, and Low-Density Lipoproteins (LDL) in the egg yolk protect the spermatozoa against cold shock during the cooling process (Amirta et al., 2007). The combination of carbohydrates with phospholipids and LDL contained in the egg yolk is the potential substrate in supporting the sperm motility and viability (Hine et al., 2014).

**Viability Percentage.** The observation results of the Bali bull fresh semen viability after the treatment of coconut water and egg yolk extender ratio and length of storage are presented in Table 3.

Table 3 – Bali Bull Fresh Semen Viability

Day	Treatment	Sperm Viability (%)
1	P0	70.52±3.83 <sup>a</sup>
	P1	61.93±4.83 <sup>d</sup>
	P2	64.31±4.71 <sup>cd</sup>
	P3	66.21±4.41 <sup>bc</sup>
	P4	68.75±4.13 <sup>ab</sup>
2	P0	67.62±3.74 <sup>a</sup>
	P1	58.81±4.67 <sup>d</sup>
	P2	61.49±4.52 <sup>bc</sup>
	P3	63.78±4.31 <sup>b</sup>
	P4	66.02±3.99 <sup>a</sup>
3	P0	65.07±3.77 <sup>a</sup>
	P1	55.65±4.52 <sup>d</sup>
	P2	58.43±4.03 <sup>cd</sup>
	P3	60.92±3.88 <sup>bc</sup>
	P4	63.55±3.80 <sup>ab</sup>

Notes: P0 (Control) Tris Aminomethane, P1 (85% CW + 15% EY), P2 (80% CW + 20% EY), P3 (75% CW + 25% EY), P4 (70 CW + 30% EY). Values with different superscripts within the row differ significantly ( $P < 0.05$ ).

The results of the observation data above showed that the highest average viability value of the extender ratio was obtained at the P0 (Control) treatment with the 1-day storage of 70.52%. The lowest viability percentage value was obtained at the P1 treatment (85% CW + 15% EY) with the 3-day storage of 55.65%. The observation data showed that the longer storage time decreased the viability value. This was presumably because the storage time of sperm cells was associated with the pH value of the extender medium. The longer storage time decreased the medium pH because the concentration of lactic acids increased in the medium. Decreased pH causes physical and biochemical damage to sperm cells and reduces the viability percentage value (Hine et al., 2014).

The result of variance analysis with Duncan's Test showed that there was no significant interaction ( $P > 0.05$ ) between extender ratio and length of storage on the sperm viability percentage value of Bali bull fresh semen. Duncan's significance difference test showed that the viability percentage value of the extender ratio at the 2-day storage on P0 (control) treatment of 67.62% was significantly different to the P1 treatment of 58.81%, P2 of 61.49%, and P3 of 63.78%, but not significantly different to the P4 treatment of 66.02%. The 3-day storage on P0 (control) treatment of 65.07% was significantly different to the P1 treatment of

55.65%, P2 of 58.43%, and P3 of 60.92%, but not significantly different to the P4 treatment of 63.55%. This indicated that 70% coconut water and 30% egg yolk extender combination could be used as the sperm cell extenders because the results showed almost similar percentage of viability value to that of P0 (control) treatment. This is in line with the Duchá et al.'s (2012) research that the best viability value of cow spermatozoa during storage is obtained from spermatozoa stored in above 20% egg yolk-based extenders. Lipoproteins and lecithin in egg yolk can maintain the cow sperm viability percentage value.

The results of variance indicated the Bali bull sperm viability percentage value. Observation data showed that the longer storage time decreased the sperm viability percentage value. Mardian et al. (2017) suggest that the length of storage for the sperm cells may decrease viability and motility value due to the increased lactic acid as the result of cell metabolic processes during storage. The increased lactic acid becomes toxic, causing the sperm death. It is in line with Rizal's (2009) research that the longer storage time decreases the food availability in the medium, resulting in the decreased sperm viability value. The viability percentage declines due to cold temperatures during storage, reduced energy availability in extenders, decreased pH because of increased lactic acid from sperm metabolism, and the presence of plasma membrane and acrosome damage (Pareira et al., 2010).

### CONCLUSION

From the research results, it can be concluded that the extender ratio of 70% coconut water and 30% egg yolk was able to maintain the sperm viability percentage to survive on storage temperature of 5°C on the third day.

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## OPERATIONAL STRATEGIES FOR START-UP BUSINESS OF PEKING-DUCKS POULTRY INTEGRATED TO ECO-GREEN

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### ABSTRACT

The level of community's consumption in fowl meat especially duck is increasing as the trend of consuming varied duck meat in the restaurant is increasing as well. Duck husbandry business managed by PT Prima Duckindo with the concept of Eco-Green becomes a profitable business and becomes an example with the method of a dry, economical, and eco-green housing. Peking duck husbandry with an integrated, economical, and eco-green intensive system uses *Azolla microphyla* plant and marsh fleabane leaf flour as the feed supplement and the use of other germ plasm. Peking duck husbandry with eco-green concept applies six husbandry managements which are: Eco-green Housing Farm Management; Breeding Management; Hatchery Management; Growing Management; Feeding Management; *Azolla microphyla* plant management and marsh fleabane plant management; Processing Management; Marketing Management.

### KEY WORDS

Operational strategies, business, eco-green, poultry.

According to the data from Indonesian Central Bureau of Statistics (BPS), the province of Banten as the operational business region of peking ducks has 11,955,243 million residents or 4.66% of Indonesian citizens in 2015 (254.9 million citizens). The numbers of male citizens were 6,097,184 while female citizens were 5,858,059 (BPS of Banten Province). Based on the projection of BPS, the numbers of Banten citizens could reach 13.1 million people or 4.85% of the total 271.0 million people of Indonesian citizens in 2020. Later in 2035, it is predicted that the numbers of Banten citizens would reach 16.0 million people or 5.24% of 305.6 million citizens of Indonesia. By the fact of the growth of the citizen population in Banten each year, it makes Banten a potential market which is big enough for the development of peking ducks business in the future.

Federation of Indonesian Poultry Society (FMPI) stated that the average consumption of meat among Indonesian citizens was 15 kg/capita/year from the total production or availability of 3.75 million tons. From that average consumption, broiler chickens fulfilled 9 kg/capita/year of the average meat consumption (2.25 million tons availability), cows and buffalos fulfilled 2.2 kg/capita/year (550 thousand tons availability), chicken stocks and laying chickens 1 kg/capita/year (250 thousand tons availability), local chickens 1 kg/capita/year (250 thousand tons availability), pigs 1 kg/capita/year, goats and sheep 0.5 kg/capita/year (125 thousand tons availability), ducks 0.2 kg/capita/year, and the other kind of meats 0.1 kg/capita/year (25 thousand tons availability). The level of animal protein consumption is still lower than the population of Indonesia with 254 million people. The needs of animal protein would significantly increase in the later time.

The contribution from the availability of duck meats is still low 0.2 kg/capita/year (50 thousand tons availability). This became an opportunity for business agents who intended to develop the potentiality of ducks to fulfill the needs of meats per kg/capita/year in the country. Nowadays, the reality among people appeared that duck meats were preferable than chicken meats since it is tastier and tender (Kompang, 2009). In line with the improvement of society's prosperity and the variety of ducks cuisine, the shift of consumption pattern and

trend among people has occurred (Ketaren, 2007). This phenomenon could be seen from the spreading of restaurants and food tents which offered duck meats as their main course.

The productivity of duck poultry could be improved by the implementation of government's policy to support the development of poultry production system or the establishment of technology innovation which was suitable for the poultrymen. The innovation of technology should reach not only poultry productivity, but also the treatment for poultry's health state and the poultry-products processing which is safe and halal. The implementation of government's policy to develop reliable poultrymen supported by universities was highly necessary to increase the contribution of duck meats in fulfilling the needs of foods from animals (Budiraharjo, 2009). Duck poultry was necessary to be innovated in terms of its management of traditional preservation which was supposed to be shifted, from the expensive and polluting modern-preservation into intensive, efficient, and eco-green preservation by implementing partnership system which was similar to its core. There were several factors affected ducks preservation such as the quality of the breeds, proper procedures of preservation, quality and the method of feeding, practical research and technology, good business system and financial analysis, adequate experience in preserving the ducks, strict biosecurity system, and marketing of the poultry products (Sukminiarti et al., 2007).

*Peking Ducks Poultry with Eco-Green Integrated Concept.* Intensive, integrated, economical, and eco-green peking ducks poultry utilized *Azolla Microphylla* and *Plucheacea folium* flour as the supplement of the food alongside the utilization of another germ plasm. *Azolla Microphylla* as the fito-remediation which recycled poultry waste water into clean water so that it reduced excessive water exploitation and smell pollution from the manure. The development of the poultry by strategic partnership was aimed to recruit traditional poultrymen to move into intensive poultry eco-green system and to become strategic partner for peking ducks poultry-company with mutually beneficial relationship in improving poultry productivity by a good management, assuring the availability of Day Old Duck (DOD) breed, food supplement *Azolla Microphylla* and *Plucheacea folium* flour to produce organic-equivalent meats and marketing of poultry products which were competitive in price and beneficial. By this partnership pattern, a bigger network strength would be formed to protect poultry partners from cartel threats from bigger poultry association which often disadvantaged or even eliminated the business of smaller poultrymen. The threats were in the form of market price of poultry products which was too low, the scarcity of DOD, and the high price of poultry food. The partnership pattern could significantly improve the productivity of poultry products to fulfill the needs of duck meats in the province of Banten and its surrounding regions.

Peking ducks poultry with eco-green concept implemented six steps of poultry management: 1) Eco-Green Housing and Farm Management, 2) Breeding Management, 3) Hatchery Management, 4) Growing Management, 5) Feeding Management, 6) *Azolla Microphylla* and *Plucheacea folium* Management, 7) Processing Management, and 8) Marketing Management.



Figure 1 – *Azolla Microphylla*



Figure 2 – *Plucheacea folium*

**Business Market Opportunity of Peking Ducks.** Consumption rate of the society towards poultry meats, especially ducks, was increasing alongside the trend of duck meats cuisine in many restaurants so that the needs of duck meats kept increasing. When the consumption of duck meats was increasing, ducks population in the province of Banten kept decreasing from year to year since there was no increase on ducks productivity by the poultry business agents. In 2012, ducks population in Banten consisted of 2,458,727 heads, it decreased by 16.78% in 2013 became 2,046,079, in 2014 decreased by 0.14% became 2,043,189 heads (BPS Banten). Referring to the data from BPS and Livestock Office of Banten, the needs of duck meats in Banten and its surrounding regions was predicted to experience deficiency for about 1,800 tons each year. It was concerned that in the future, Banten kept experiencing deficiency in availability and population which would cause fulfillment from other countries such as Thailand, Malaysia, and Vietnam, due to Asean Economic Community. As an example, frozen duck meats had entered Indonesia through Batam harbor in April to August 2015 to fulfill the deficiency of ducks needs in Indonesia. If this continued to happen, frozen duck meats would be easily entered Banten due to the urgent needs. Those conditions created an opportunity to peking ducks business to fulfill the needs of duck meats in Banten.

**Operational Strategies:**

**Operational Framework.** Prima Duckindo Inc. had a framework for the implementation of operational strategies which had to be accomplished to run duck poultry business. The operational framework was divided into two parts: pre-operation and during operation management. Pre-operation was the result of Quantitative Strategic Planning Matrix (QPSM) analysis as the tool which allowed the strategy maker to evaluate alternative strategy objectively and holistically, based on identified internal and external factors key of success (David et al., 2009). The legal permit and project management to establish the poultry was categorized into pre-operation activity.



Figure 3 – Operational Framework of Prima Duckindo Inc.

In operational stage, Prima Duckindo Inc. selected Lean Six Sigma as industrial management for poultry. Ducks preservation by using intensive system in which the ducks were raised in a closed housing with ventilation adjusted to the climate and temperature of

the room so that it comforted the ducks. Therefore, the production of commercial duck meats was a special business core which needed huge investment and precise time management.

*Pre-operation.* Management operational framework of Prima Duckindo Inc. which was carried out in pre-operation stage was QSPM. This analysis resulted an analysis to build integrated poultry starting from breeding, hatchery, growing, and processing farm as the operational objectives of the company. There were also several permits and rules that had to be implemented to ensure the sustainability of the company. Last but not least, there should be project management to organize integrated poultry.

Organizations made an effort to earn profit. Profit itself was not a single concept, however, it was originated from many implications such as: P = Process excellence, R = Resource management, O = Oriented to a goal, F = Financially strong, I = Innovative to stay ahead of competition, and T = Timely deployment of strategies. Most of traditional organizations defined profit as earning money without implementing appropriate operation. The effective method to this matter was Six Sigma and Lean Manufacturing originated from Toyota Production System (TPS), which were combined into Lean Six Sigma (LSS) (George and George, 2003).

In order to realize LSS management system, mapping for targets and operational objectives should be carried out comprehensively as a spirit of Kaizen (continuous improvement) (Chen and Shady, 2010). Industries and business environment reached competitive point to survive in market place. By following global economy, it demonstrated that just being good was not adequate, therefore, organizations were supposed to work hard to show their superiority to be able to survive in market place.

Table 1 – Operational objectives strategies of Prima Duckindo Inc.

P	Process excellence	An effective and efficient process. This needed consistent and continuous improvement with smaller variations.
R	Resources management	Systematic procedures to collect, keep, take, and validate required data for organizations include human resources and its activities, and the characteristics of organization units.
I	Innovative	Comfortable atmosphere in creating innovation for each division.
M	Muscular of financial	Stable financial condition in its operation to be efficient in every division.
A	Associate to a goal	Togetherness and awareness to achieve a goal as a team.
D	Deploy at right time	The spirit to implement the strategies at the right amount of time.

*Source: Researcher's data.*

Establishing a company in Indonesia was not too difficult since there has been rules to regulate it. Besides, coordination between departments of the government in reformation and digital era made the processes and procedures of permits easier and more transparent. The government continued to facilitate the procedures of starting a business. The numbers of enterprises in Indonesia was smaller than another neighboring country. Establishing a new company or enterprise would give plus point by creating more work opportunities and stirring local economy. One of the government initiatives was facilitating the establishment of Incorporated (Inc.). The steps of permits and regulations carried out by Prima Duckindo Inc. consisted of: Company Establishment Permit, Disturbance Laws Permit, Waste Permit, Poultry Enterprise Permit and Poultry Partnership Regulations.

Starting an enterprise activity required thorough planning so that the implementation would run well and precise in time. Prima Duckindo Inc. had a plan of running the enterprise which was named project management. Project management included establishing all building facilities, operational process, and selling. Prima Duckindo Inc. created a series of activities categorized as pre-operation activities. The implementation of the project was aimed to make the task scheduled and finished on time. Those activities were arranged in an activity program with detailed time in Gantt chart project management (Stevenson and Hojati, 2007).

*Operational.* Table 2 was arranged to prepare operational strategies by examining product superiority of Prima Duckindo Inc.

Table 2 – The superiority of duck meats products from Prima Duckindo Inc.

No.	Detailed Information
1	Lower price. The market price was 40,000 Rupiahs/kg. The price of Prima Duckindo Inc. was 39,000 Rupiahs/kg. The tolerance was minus 2.5%.
2	No fishy smell. The duck meats of Prima Duckindo Inc. had no fishy smell since the fat layers between the skin and the meat were eliminated by the feeding of 1% <i>Plucheacea folium</i> .
3	Low cholesterol. The cholesterol was low according to the explanation above.
4	Tastier meat. The food which contained plant protein was good for the ducks.
5	Eco-friendly. Prima Duckindo Inc. put the priority on the responsibility to the environment, not only about money.

The selection of Lean Six Sigma (LSS) management system became the superiority of the company compared to another poultry company (Snee, 2010). Achievement on the good quality of the product and industrial hygiene were essential to earn profit and achieve operational spirit by Process excellence which was combined with Eco-green model. In preparing the operation for integrated peking ducks poultry, Prima Duckindo Inc. planned and calculated the facility of the equipment, utility, production plan, capacity projection, and food availability.

*Lean Six Sigma.* Lean Six Sigma was a continuous improvement methodology which was combined with DMAIC (Define, Measure, Analyze, Improve, and Control) process and statistics analysis tool Six Sigma. It was then further combined to lean manufacture to significantly eliminate 8 waste as loses in value stream, tried to make the loses to zero. Lean Six Sigma was a process aimed to 6σ (sigma) process (De Mast and Lokkerbol, 2012).

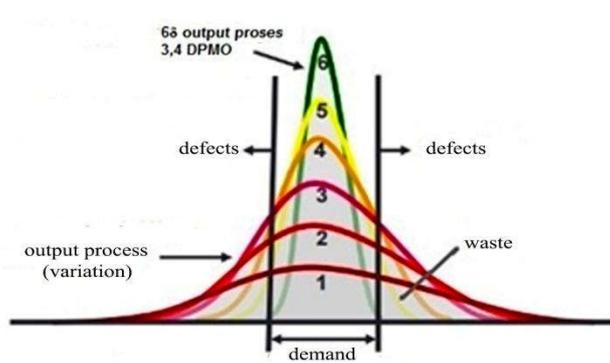


Figure 4 – Sigma and waste representation in normal distribution

Table 3 – Stages in six sigma

Sigma Stage	DPMO	Cpk	% Yield
6σ	3,4	2,0	99,99966
5σ	233	1,67	99,98
4σ	6.210	1,33	99,38
3σ	66.807	1,00	93,3
2σ	308.537	0,67	69
1σ	690.000	0,33	31

Six sigma was a process in which 3, 4 defects occurred per one million opportunity/ Defects per Million Opportunities (DPMO). Two important steps in Lean Six Sigma to calculate variation were mean and standard deviation (Lucas, 2002). One of the important measurement in Lean Six Sigma was Sigma or standard deviation. Sigma was utilized as

metric to calculate variation in the process. The tighter the variation, the better the quality of the process. A process was considered as six sigma if six standard deviations were appropriate to each mean process and customer specification. This was equivalent to  $Cpk = 2.0$ .

The main principal of lean was improvement in the below-line through waste elimination in value stream and as identified by the customers. Value-added activities included the activities which the customer agreed to pay. Activities without added value were considered as a waste. The things which the customer agreed to pay were considered as added value to the products, services, or units. The activities included the process of creating finished products from raw materials. Non value-added activities consisted of 8 type of waste, which was called DOWNTIME: Defects, Over-production, Waiting, Non-utilized Resources/Talent, Transportation, Inventory, Motion, and Excess Processing (Sim-Tang, 2006).

**Define.** Define was the step to determine the problem and give limitation to the improvement activities. In this step, production process and value chain identification to customer value were carried out by using SIPOC (Supplier-Input-Process-Output-Customer). In the poultry of Prima Duckindo Inc., there were a throughput and improvement to be understood since those were very important to understand the process of ducks poultry. SIPOC would help the owners or investors and stakeholders or the owner of Prima Duckindo Inc. to determine the limitations to make. Supply chain was a global network utilized to deliver products (goods and/or services) from raw materials to the customer through an information stream, physical distribution, and cash flow (Parkash and Kaushik, 2011).

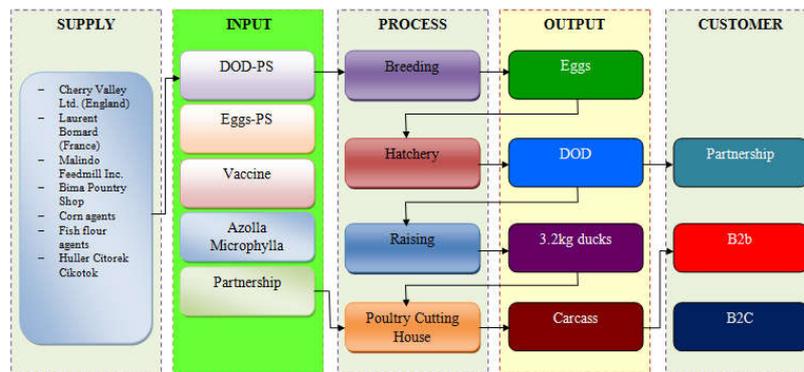


Figure 5 – SIPOC Diagram of Prima Duckindo Inc.

Supply Chain Management in Prima Duckindo Inc. designed the poultry with thorough planning by using biosecurity control system, good AMDAL, and monitoring of the supply chain activities to produce net value, establishing competitive infrastructure, making the most use of logistics, synchronizing the supply and demand, and measuring performance globally.

**Measure.** This step was aimed to measure the whole production process by measuring standard time of each activity process. This was done by making value stream mapping, presenting seven waste along value stream, determining critical of waste towards the most influencing waste using Diagram Pareto and determining DPMO and sigma level on waste defect (Ravichandran, 2007).

VSM was one of the effective lean tools to eliminate waste, mapping the flow of the materials, providing information in production system, identifying long-term vision and developing plans to achieve targets (Martin and Osterling, 2014). VSM was defined as the mapping of both value-added and non-value-added activities which were needed for production process from raw materials into final products. In utilizing VSM, a production system was not seen from a single side, however, it was seen as a whole production system. VSM was useful to execute on-going improvement system. In short, main objective of VSM was to identify all waste in production stream and eliminate them.

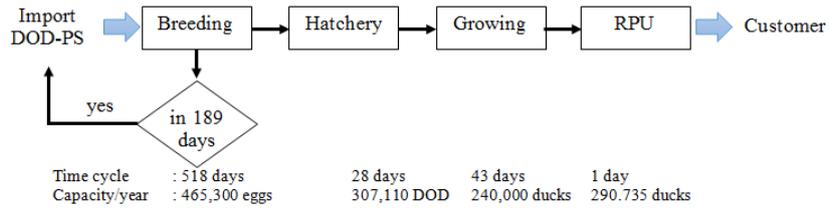


Figure 6 – Value stream mapping

The planning of production process stream for integrated peking ducks poultry in Prima Duckindo Inc. was arranged as on Figure 7.

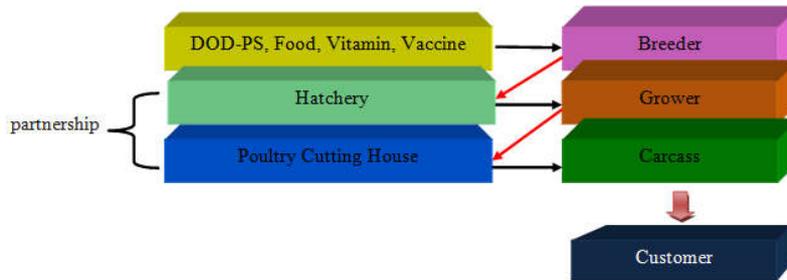


Figure 7 – Diagram of production process stream poultry in Prima Duckindo Inc.



Figure 8 – Visual process stream in the poultry (Source: Researcher’s data)

Table 4 – Explanation of process stream

Symbol	Explanation
D	The process of DOD-Parent stock entering to Breeding house after it was ordered from the suppliers.
BH	The process of egg collecting from the breeder which would be stored in Hatchery. Those eggs were hatched and would become DOD-Final Stock
HG	The process of preservation from DOD-Final stock in Hatchery to Grower house to be raised into ducks.
M1	Delivery of DOD-Final stock to the partners of Prima Duckindo Inc. to be raised into ducks.
GR	Harvesting of ducks from Grower to Processing Farm to be made into fresh carcass.
M2	Delivering harvested ducks from partners to Processing Farm of Prima Duckindo Inc.
K	Distribution process of fresh carcass from Processing farm to the consumers.

Process capability was utilized to evaluate the capability of performance in a company or organization to produce goods or service based on the calculation from control chart. The following presented an example to calculate process capability from the weight of the egg in Hatchery 60 – 70 gram as the standard to produce DOD weight 55 gram.

A process was defined as a series of activities which turned input into output. The process changed from time to time. Determining whether a change occurred was an

important point for improvement (Kane, 1986). Run chart was utilized to determine whether central tendency from a process experienced a change. There was no need to use complex calculation or particular software, we could analyzed the value on axis Y and time on axis X. Run chart was utilized alternately with term-series graphics. In some cases, run chart was similar to control diagram which was utilized in process control statistics, but it did not present the limit of process control.

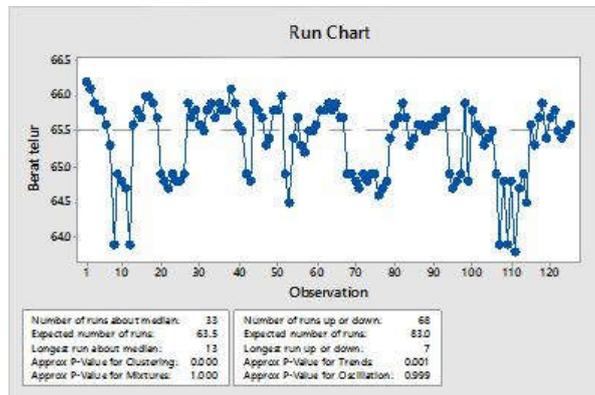


Figure 9 – Run chart for the weight of eggs (Source: Researcher’s data)

Run chart could be utilized to study the observation of trend or pattern during certain period of time and focused on important changes in the process. Run chart could determine whether a process had general causes or variation of specific causes. This was essential since a process always existed in one of these 4 phases: ideal, limit threshold, chaos threshold. and chaos. If a process stood in ideal phase, it showed stability and target of performance from time to time. This process could be predicted and the result would fulfill customers’ expectation. In chaos threshold, the process could not be predicted, but the final result was still able to fulfill customers’ expectation. However, in chaos phase, the process would not be able to be predicted and the final result would not fulfill customers’ expectation.

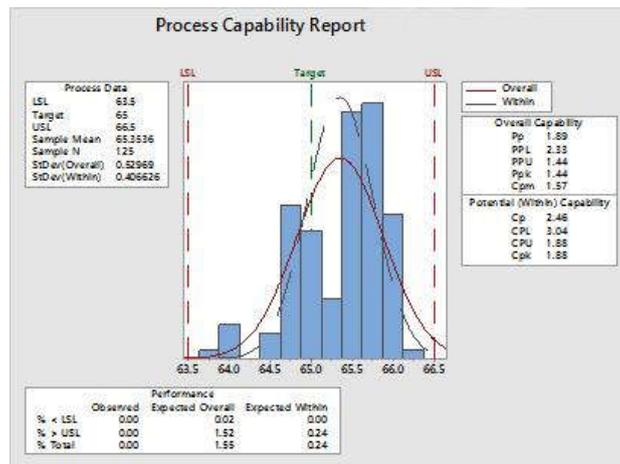


Figure 10 – Process Capability for the weight of eggs (Source: Researcher’s data)

Process capability (Cp) could be categorized as:

- if  $C_p > 1.33$ : the process was satisfying;
- if  $C_p > 1.80$ : very good process control;
- if  $1 < C_p < 1.30$ : process should be monitored & variation should be reduced;
- if  $C_p < 1$ : improvement process was crucial and must be done soon.

**Analyze.** In this step, several analyses were carried out to look for the causes of the problems, one of which was by using Pareto Diagram. In its implication, Pareto Diagram was

highly useful in determining and identifying the priority of the problems to be solved. The problem which often occurred was our main priority to do something.

Pareto Diagram was one of six sigma tools which was frequently utilized in quality control. Basically, Pareto Diagram was bar graphics which presented the problems based on the total numbers of the occurrence (Tague, 2005). The order started from the most frequent problem to the least frequent one. In the graphics, it was showed by the highest bar (left) and lowest bar (right).

One of the analyses carried out in this step was finding the highest production cost in Breeder division.

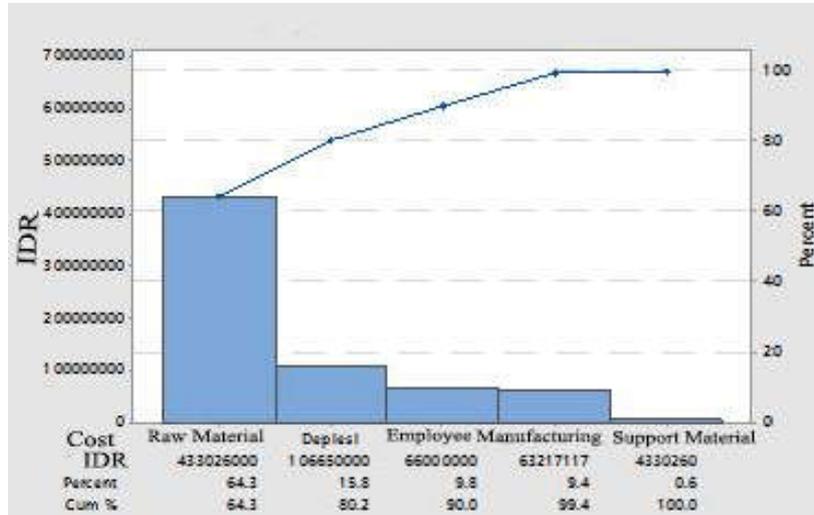


Figure 11 – Pareto Diagram of Breeder's production cost in 2018

In the food storage inside raw materials warehouse, Prima Duckindo Inc. always implemented a system called first in first out (FIFO). This system resulted with no decreasing quality of the food, therefore, the health of the ducks was guaranteed and the weight was appropriate with the standard. To minimize storage and food supply cost, Prima Duckindo Inc. implemented Economic Order Quantity (EOQ) system to spend the cost in the form of food or food storage so that the cost for another facility could be minimized and the cost could be used for another aspect.

The need of raw materials in 2018 was presented in the following graphics:

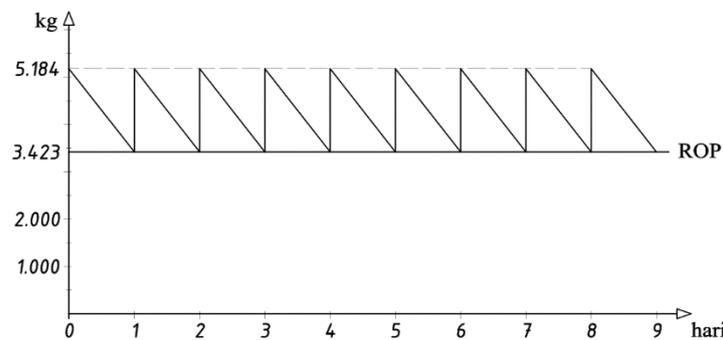


Figure 12 – Graphics of the needs of the food in 2018 (Source: Researcher's data)

Based on the analysis on this step, the highest production cost in Breeder division was raw materials. Almost 64.3% of total production cost was spent to fulfill the needs of raw materials.

Generally, production plan is a plan in which a series of production activities would occur from input, processing, and output. Production plan to be implemented by Prima Duckindo is the production of peking ducks would be adjusted to the condition of integrated housing system, starting from providing breeder. Preservation of breeder in breeder house

would require 72 weeks (approximately 1.5 years). When it comes time for laying, the breeder’s eggs would be collected every 3 days. Those eggs then would be hatched in hatchery division for 30 days. DOD ducks would be produced from hatchery division to be raised in both internal or partnership grower division for maximum 45 days to reach 3.2 kg of weight. Once in 3 days, would be produced ducks with standard weight from one of grower houses. Those ducks would be processed in processing farm (RPU) into carcass to be stored in cooling area so that it keeps fresh. Production capacity to be implemented by Prima Duckindo for 5 years would be carried out by increasing 30% capacity per year starting from the second year to fulfill market demands.

Table 5 – Plan of food supply for 5 years ahead

No	Description	Year				
		2018	2019	2020	2021	2022
1	Breeder	72.171	126.846	161.109	207.401	270.824
2	Grower	338.39	924.611	1.195.517	1.449.358	1.582.387
3	Total needs of food	410.561	1.051.457	1.356.626	1.656.759	1.853.211
4	Food warehouse cost	2.160.000	2.160.000	2.160.000	2.160.000	2.160.000
5	Storage cost	5,30	2,10	1,60	1,40	1,20
6	Order cost	20	20	20	20	20
7	Needs/day	1.141	2.921	3769	4603	5148
8	Reorder Point	3.423	8763	11307	13809	15444
9	Q*(kg)	1.761	4476	5824	6881	7860
10	N	234	235	233	241	236

Table 6 – 7W’s Approach and Technique

Category Of Waste	Type Of Waste	Waste Reduction Approach	Method	Focus Points	Principal Worksheets	Desired Result
People	Processing Motion Waiting	Workplace Management	Standard Work Workplace Organization Kaizen 20 Keys	Layout Labeling Tools/Parts Arrangement Work Instructions Efficiency Takt Time Skills Training Shift Meetings Cell/Area Teams Visual Displays	Standard Work Sheet (SWS) Time Observation Form (TOF) Standard Work Combination Sheet (SWCS) Work Load Balancing Sheet (WLBS) Kaizen Target Sheet (KTS) Kaizen Action Sheet (KAS)	Highly Efficient, Safe Work Areas With High Output
Quantity	Inventory Moving Things Making Too Much	Just-in-time	Leveling Kanban Quick Setup Preventive Maintenance	Work Balance WIP Location/Amount Kanban Location Kanban Types Lot Sizes Changeover Analysis PM Analysis	SWS SWCS WLBS Kanbans Table of Production Capacity By Process (TPCP) PM Scheduling Sheet (PMSS)	What You Need, When You Need It
Quality	Fixing Defects	Error Proofing Autonomation	Detection Warning Prediction Jidoka	Appropriate Automated Assistance Modifications Successive Checks Check Sheets Templates, Etc. Cross Training	SWCS Error Proofing Action Sheet (EPAS) Error Proofing “To Do” List (EPL) Skill Versatility Visual Display	Good Quality

*Improve.* Improve was a phase in DMAIC cycle to fix the problems occurred in define, measure, and analyze phase according to the data. The next step was giving recommendation of improvement then followed by selecting priority of improvement recommendation by using failure mode and effect analysis (FMEA). Improvement

recommendations included alternative feeding to reduce the cost for food. The answer of this problem was by giving *Azolla Microphylla* as feeding alternative. Improvement in the field was carried out to determine which waste would be the priority to be fixed. Improvement suggestion to minimize waste from production process was carried out by using seven kinds of wasting as in Table 6.

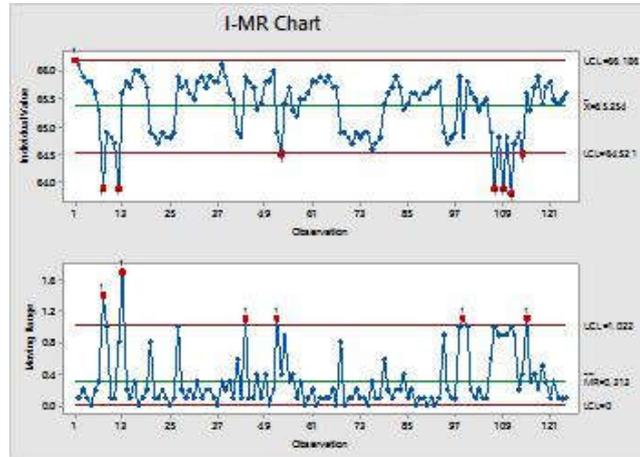


Figure 13 – Control chart of egg's weight

**Control.** In this step, integrated poultry industry Prima Duckindo Inc. implemented continuous improvement by Control Plan method, Risk Assessment and FMEA. The method required operational standard in the field which highly influenced process stability, therefore, a working instruction should be established. One of the causes of DOD weight which was below the standard after being processed in hatchery was the egg's weight below standard. Therefore, Control Chart for egg's weight was needed to do early control of hatching process so that high risks of non-ideal weight would not occur when DOD were delivered to the next process.

## CONCLUSION

Ducks poultry business managed by Prima Duckindo Inc. with Eco-Green concept became a beneficial business and model poultry with dry house, economical, and eco-friendly. There were several superiority from the concept of poultry owned by the company, as an example, duck meat products were tastier with adequate nutrition and low cholesterol. The existence of Prima Duckindo Inc. gave positive impacts towards society economy and added the supply of meats to Indonesian citizens which still experienced deficiency of duck meats.

Prima Duckindo Inc. as a company that obey the government regulation, in establishing the poultry company, followed the regulations in the province of Banten, acquiring poultry business permit, and prioritize the preservation of the environment. Before establishing ducks poultry-company, the management team had carried out several analyses from some factors such as politics, government and laws, social and culture, demography, and natural environment. From the aspect of business, the analyses such as technology and competitive strength had been done.

By those analyses that had been done, in developing the poultry, a reliable operational management was required. Operational framework of Prima Duckindo in pre-operational stage was the result of QSPM analysis as operational objectives of the company. In the beginning of the planning activities, the company implemented project management system with its Gantt Chart. Prima Duckindo was categorized as integrated poultry company, from its breeding, hatch, growing, processing until became carcass. To achieve those objectives, therefore, operational strategies mapping was carried out comprehensively with continuous

improvement (kaizen) since nowadays, being good was not enough, so that the company had to be the market leader which was preceded by being cost leader.

Minimizing operational cost was focused on the food cost by utilizing *Azolla Microphylla* and implementing eco-green system to produce good quality products and maintain the environment. To increase the production which was in line with marketing demands, partnership system was implemented as many as possible according to the capacity of DOD output from hatchery division. Determining the location for the poultry site was by using Location Factor rafting (LFR) so that the result would be objective. Based on that analysis, the location was decided in the regency of Tangerang, Kampung Blok Kelapa RT 01/01 Serdang Wetan, Sub-district of Legok.

In order to fully understand the process of ducks poultry, SIPOC analysis would assist investors and stakeholders to determine particular limitation so that structured acts which were essential for the poultry management could be formed. Production process stream planning implemented by Prima Duckindo Inc. included: DOD-PS, food, vaccine, vitamin, breeding, hatch, growing, processing, carcass, and customer.

Strategies implemented for operational activities so that the supply of raw materials did not in deficiency or surplus and to ensure the efficiency in expenses, Prima Duckindo Inc. utilized supply management system by EOQ and ROP concept. To achieve the objectives or goals as the set target, each of the stage in the process implemented systems with PFMEA, Control Plan (QCPC), Control Chart/SPC, and Risk Assessment methods.

## SUGGESTIONS

Business Plan Project established by Prima Duckindo Inc. could be utilized as a model for another poultry business or ducks poultry which still utilized traditional concept. For the management in developing the company, ducks poultry-company needed innovation to develop more effective and efficient technology to produce better quality of poultry products.

Business Plan Project by Prima Duckindo Inc. could be utilized as reference for postgraduate students as materials for final projects of business. For the government, the business plan could be developed as a business which increase the prosperity of the society. The business could be a reference for the citizens or enterprise owners who intended to establish duck poultry-company.

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## **BEEF MARKET INTEGRATION IN EAST NUSA TENGGARA OF INDONESIA**

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### **ABSTRACT**

East Nusa Tenggara Province is a cattle producer that is sent to Jakarta. When fluctuations in beef prices are relatively large, there is a tendency that price trend at the producer level in East Nusa Tenggara Province does not follow the price at the consumer level in Jakarta. This study uses monthly price data for 2014-2017 at the producer and consumer level in East Nusa Tenggara and prices in Jakarta. The results of the study showed that a large change in the market price of beef in Jakarta is followed by a small change in consumer prices in the city of Kupang. While the price of beef producers in Kupang district is not determined by the price of meat in Jakarta but follows changes in the price of meat in the Kupang city. This means that changes in beef prices in Jakarta are always followed by changes in the price of beef in Kupang but with relatively small price changes so that the chance of cattle in Kupang District to be sent to Jakarta is getting bigger.

### **KEY WORDS**

Prices, producer, consumer, Jakarta.

The demand for beef in Indonesia every year continues to increase along with the increase in income and population growth but not followed by an increase in production. The prognosis of beef demand throughout 2017 reached 604,966 tons while the domestic meat production target was only 354,770 tons or 58.64%, meaning that there was a deficiency of 41.36% of the need (Ministry of Agriculture RI, 2017). This results in the need for beef to be imported every year.

The need for beef in Indonesia is one of which comes from the Province of East Nusa Tenggara. East Nusa Tenggara Province, as one of the 4th largest province in Indonesia beef cattle province, sends out NTT as many as 50,000 to 70,000 where every year, wherein 2017 it reached 60,360 or around 2.43% of domestic beef needs and as much as 49,790 tails (82.49%) came from the mainland of Timor, especially Kupang District; (Pusdatin Ministry of Agriculture RI, 2017 and NTT Agriculture Office, 2017).

According to NTT's Livestock Service data (2017), NTT province has the opportunity to increase cattle production if there are price incentives that encourage farmers to increase production. The incentive for beef prices depends a lot on price increases that often occur in the increase in beef prices in Indonesia due to lack of supply.

Beef price movements in Indonesia tend to depend on increased demand for beef, especially on religious events. Increased beef price movements in the consumer market should be followed by price increases in the producer market. If there is a price increase at the producer level, it is expected to be a price incentive for producers to increase production. But often the price increase in consumers is not directly transmitted or not integrated into the producer market. The pattern of livestock business is still extensively traditional and the lack of access to market information is an internal obstacle. Whereas, the condition of transportation infrastructure and the distance between distant markets, as well as government policies limiting the quota of sending cattle out of NTT, are external barriers. According to Goletti; et al, (1994) in Anindita & Baladina (2017), several factors that influence market integration are marketing infrastructure (transportation and storage facilities); public

intervention; production imbalances between regions and the presence of shock supply (natural disasters or extraordinary events). These four factors are still an obstacle to the integration of cattle markets in Kupang and NTT generally.

The concept of marketing efficiency is closely related to the concept of market integration (Sharp & Uebele, 2013). The an operational definition of market integration is known as the Law of One Price, meaning that the same product is sold at relatively the same price in various markets and is only distinguished by transportation costs (Monke & Petzel 1984; Crucini, et al, 2010) or other services. Based on this understanding, identification of market integration can be done by analyzing the inter-market price relationship.

A the market is said to be integrated if there is a price change in one market so it will be forwarded to other markets quickly, it can be caused because the market information system is running well. According to Asmarantaka (2009), market integration is a measure that shows the extent to which price changes that occur in the reference market will cause changes in the market of followers. While market integration occurs according to Baffes & Gardner; (2003) if there is equal market information, it is sufficient, directly channeled quickly to other markets and has a positive relationship between prices in different markets. So that an integrated market will provide justice to all market participants in carrying out their activities.

## METHODS OF RESEARCH

*Data Stationary Test.* According to Makridakis et al. (1999), a series of observations are said to be stationary if the process does not change with time. This stationary data test uses Augmented Dickey-Fuller (ADF) at the same level (level or different) until stationary data is obtained, ie the variance is not too large and has a tendency to approach its mean value (Enders, 1995).

Widarjono (2013) explained that the ADF test function is to see whether there is a trend in the movement of data to be tested. The ADF test in this study is as follows:

$$\Delta P_t = \alpha_0 + \gamma_1 P_{t-1} + \beta_1 \sum_{i=1}^m \Delta P_{t-1} + \varepsilon_{it} \quad (1)$$

Where:

- $P_t$  = The price of beef in each market in period t;
- $P_{t-1}$  = Price of beef in each market in the previous period;
- $\Delta P_t = P_t - P_{t-1}$ ;
- $\Delta P_{t-1} = P_{t-1} - \Delta P_{(t-1)-1}$ ;
- m = amount of lag;
- $\alpha_0$  = intercept;
- $\alpha, \beta, \gamma$  = Parameter coefficient;
- $\varepsilon_t$  = Error term.

Hypothesis testing:

$H_0: \gamma = 0$  Time series data is not stationary;

$H_1: \gamma < 0$  time series data is stationary.

Test rules:

- If ADF statistics > ADF is critical then rejecting  $H_0$  means that the time series data does not contain the unit root means that the data is not stationary;
- If ADF statistics  $\leq$  ADF is critical then accept  $H_0$  means the time series data contains the unit root means that the data is stationary.

*Determination of Optimal Lag.* Optimal lag length is needed to see the effect of each variable on other variables in the VAR model. The value of the lag of a variable can affect other variables because it takes time for a variable to respond to the movement of other variables. Determination of optimal lag length using Akaike Information Criteria (AIC).

**Cointegration Test.** Cointegration Test is carried out if the price variables studied are not integrated at the level. This test uses Johansen's Cointegration Test, to find out whether there is integration or not.

**Granger's Causality Test.** Granger's causality test is used to see short-term causality of each variable that has root and cointegrate (Sulistiana; 2017).

**Vector Error Correction Model (VECM) Test.** The VECM model is used to overcome the data stationary, where this model will gradually correct the imbalance, deviating through short-term partial adjustments (Enders, 1995; and Gujarati, 2004). The VAR / VECM model in this study is as follows:

$$\Delta PKab_t = \alpha_0 + \sum_{i=1}^p \alpha_i \Delta PKab_{t-1} + \sum_{i=1}^p \beta_i \Delta PKot_{t-1} + \sum_{i=1}^p \gamma_i \Delta PJkt_{t-1} + \varepsilon_{1t} \quad (2)$$

$$\Delta PKot_t = \delta_0 + \sum_{i=1}^p \delta_i \Delta PKab_{t-1} + \sum_{i=1}^p \sigma_i \Delta PKot_{t-1} + \sum_{i=1}^p \phi_i \Delta PJkt_{t-1} + \varepsilon_{2t} \quad (3)$$

$$\Delta PJkt_t = \theta_0 + \sum_{i=1}^p \theta_i \Delta PKab_{t-1} + \sum_{i=1}^p \omega_i \Delta PKot_{t-1} + \sum_{i=1}^p \varphi_i \Delta PJkt_{t-1} + \varepsilon_{3t} \quad (4)$$

Where:  $\Delta PKab_t$  = The price of beef in the producer market of Kupang district in the period t (Rp/kg);  $\Delta PKab_{t-1}$  = The price of beef in the producer market of Kupang district in the previous period t (Rp/kg);  $\Delta PKot_t$  = The price of beef in the Kupang city market in the periode to t (Rp/kg);  $\Delta PKot_{t-1}$  = The price of beef in the Kupang city market in the previous to t (Rp/kg);  $\Delta PJkt_t$  = The price of beef in the Jakarta market in the period to t (Rp/kg);  $\Delta PJkt_{t-1}$  = The price of beef in the Jakarta market in the previous to t (Rp/kg);  $\alpha, \delta, \theta, \beta, \gamma, \sigma, \varphi, \omega, \phi$  = regression coefficient;  $\varepsilon_{it}$  = error term to - i, time to - t.

## RESULTS AND DISCUSSION

**Analysis of fluctuations in beef prices.** Based on the analysis of monthly beef price movements in 2012-2017 in Kupang district as a producer area, Kupang city as a consumer area and jakarta as a consumer center in Indonesia showed that the price trend of beef in the three market has increased. However, variations and patterns of price increases are not the same because price increases in Jakarta are immediately followed by price increases in Kupang city and Kupang districts, (Figure 1).

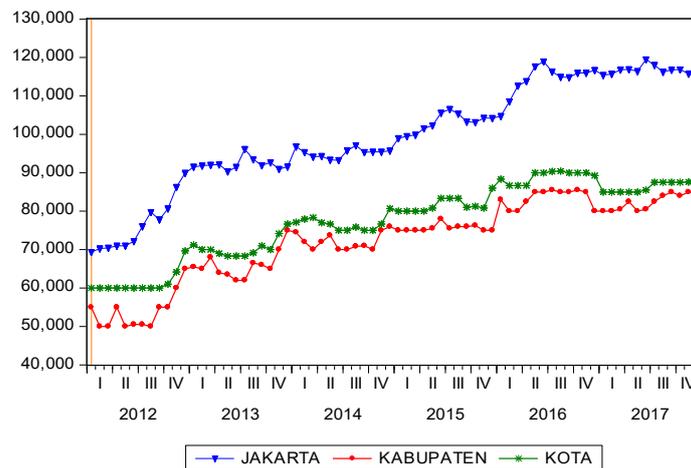


Figure 1 – Fluctuations in Monthly Prices of Beef in Kupang District, Kupang City and Jakarta, 2012-2017

The price swing pattern is not the same in all three markets, indicating that changes in price increases in Jakarta are not directly followed by prices in the Kupang city and also price increases in Kupang District and vice versa. This condition is allegedly due to the slow flow of information (asymmetric information) from the market in Jakarta to the Kupang city and the market in Kupang district, as well as infrastructure and commodity cycle constraints in the form of selling time and business patterns. According to Fakari, et al, (2013) in the study of

fluctuations and cycles of prices of agricultural commodities (corn) in Iran, finding that each commodity often has its own price movement cycle.

*Analysis of Market Integration of Beef.* The results of stationary data test time series prices at the level of the level indicate that the data on meat prices are not stationary. Then continued the ADF test at the first difference level. At this level the data has been stationary, shown in table 1, with the ADF statistic value  $<ADF_{critical}$ , with a confidence level ( $\alpha$ ) = 0.10.

Table 1 – Results of Stationary Data Test at Level Levels and, Levels of First Difference with ADF Test

Variable	Differenced	ADF Statistic	Critical Value			p-value	Description
			1%	5%	10%		
P_KABU	I(0)	-1.3090	-3.5256	-2.9030	-2.5889	0.6212	NS
	I(1)	-7.5480	-3.5285	-2.9042	-2.5896	0.0000**	S
P_KOTA	I(0)	-1.4659	-3.5357	-2.8330	-2.4897	0.5451	NS
	I(1)	-6.5222	-3.5270	-2.9036	-2.5892	0.0000**	S
P_JAKARTA	I(0)	-2.0996	-3.5446	-2.9124	-2.6564	0.2455	NS
	I(1)	-4.2451	-3.5316	-2.9055	-2.5903	0.0012**	S

Source: Secondary Data Processed, 2018 \*\* = ( $\alpha$ ) 0.05; and \* = ( $\alpha$ ) 0.10.

Description: I (0) = at Level I(1) = at first Difference.

TS = None Stationary S = Stationary.

*Determination of Optimal Lag.* The next step determines the optimal lag length, obtained the results are at lag 4 at the smallest AIC value of 53.24123\*, shown in Table 2. This means that in the optimal lag all the variables in the model influence each other, not only in the period currently but also the price variables are interrelated in the previous 4 periods. Determination of optimal lag to eliminate autocorrelation and heteroscedasticity.

Table 2 – Optimal Lag Determination Test Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1741.7950	NA	4.15e+19	53.68601	53.78637*	53.72561*
1	-1731.3850	19.53856	3.98e+19	53.64263	54.04405	53.80102
2	-1721.0190	18.49988	3.82e+19	53.60059	54.30308	53.87777
3	-1709.4960	19.50036	3.55e+19	53.52296	54.52652	53.91893
4	-1691.3400	29.04972*	2.70e+19*	53.24123*	54.54587	53.75599
5	-1688.8530	3.749518	3.35e+19	53.44163	55.04734	54.07519
6	-1680.8550	11.32036	3.53e+19	53.47246	55.37923	54.22481

Source: Secondary Data Processed, 2018.

The results of cointegration of beef prices in Kupang district and in the Kupang city and prices in the Jakarta city are presented in Tables 3, 4 and 5.

Table 3 – Cointegration Test between Markets in Kupang District and Kupang City Market

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	15.7351	15.4947	0.0460**	12.4338	14.2646	0.0954
At most 1	3.3013	3.8415	0.0692	3.3013	3.8415	0.0692

Source: Secondary Data Processed, 2018 \*\* = ( $\alpha$ ) 0,05 \* = ( $\alpha$ ) 0,10.

Table 4 – Cointegration Tests between Markets in Kupang City and Jakarta Market

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	11.36262	15.49471	0.1902	7.028929	14.26460	0.4857
At most 1	4.333691	3.841466	0.0374	4.333691	3.841466	0.0374

Source: Secondary Data Processed, 2018 \*\* = ( $\alpha$ ) 0,05 \* = ( $\alpha$ ) 0,10.

Table 3 shows that producer prices in kupang district are cointegrated in the long-term with the prices of consumers in kupang district with Trace Statistics > Critical values with Prob

<0.10 means that there is an integration of beef prices in the long run between the Kupang city market and the Kupang district market.

Table 4 shows the price of beef in Kupang city and in Jakarta. The data shows the Trace Statistics < Critical value, with Prob> 0.10, meaning that there is no integration. This means that changes in beef prices that occur in Jakarta are not followed by changes in the price of beef in the Kupang city.

The same thing occurred between the prices of beef in Kupang district does not follow the price of beef in Jakarta, as presented in table 5.

Table 5 – Cointegration Tests between Markets in Kupang District and Jakarta Market

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	12.4636	15.4947	0.1360	7.4363	14.2646	0.4389
At most 1	5.0273	3.8415	0.0249	5.0273	3.8415	0.0249

Source: Secondary Data Processed, 2018 \*\* = ( $\alpha$ ) 0,05 \* = ( $\alpha$ ) 0,10.

Based on the cointegration results, it can be concluded that the price of beef in kupang district does not follow the development of beef prices in Jakarta so that price information from Jakarta is not followed by price developments in kupang district so that there can be suspected attempts to increase the profit opportunity of sending beef to Jakarta by allowing prices of beef in Kupang is relatively low.

The results of the causality test, presented in Table 6, show that changes in beef price in Kupang city influence the beef price in Kupang district and Vice versa (two-way causality relationships). There is a two-way causality relationship between the beef price in Jakarta and Kupang District, where beef prices in Jakarta and Kupang district influence each other, but the price of meat in the city of Kupang does not affect the price of meat in Jakarta (one-way causality). This condition occurred allegedly because of asymmetric pricing information.

Table 6 – Granger Causality Test, Reciprocal Relationship between Market Levels

Null Hypothesis:	Obs	F-Statistic	Prob.
KUPANG CITY does not Granger Cause KUPANG DISTRICT	70	4.48767	0.0149**
KUPANG DISTRICT does not Granger Cause KUPANG CITY		2.43667	0.0954*
KUPANG DISTRICT does not Granger Cause JAKARTA	70	2.47917	0.0917*
JAKARTA does not Granger Cause KUPANG DISTRICT		4.86114	0.0108**
KUPANG CITY does not Granger Cause JAKARTA	70	1.85818	0.1641
JAKARTA does not Granger Cause KUPANG CITY		3.07562	0.0529*

Source: Secondary Data Processed, 2018 \*\* = ( $\alpha$ ) 0,05 \* = ( $\alpha$ ) 0,10.

The results of Weldesenbet's research (2013), found that price asymmetry leads to a lack of integrated markets. Whereas Malý's (2013) found that the increase in the price of beef in Czech between consumers and producers did not move proportionally. In other words, it did not have a direct relationship. So that, even though there is an increase in beef cattle production input prices in Kupang district it will not affect the price of beef, because beef prices are influenced by buyers in Jakarta. Svoboda & Kopecka, (2017), in their studies, found that an increase in the price of production inputs did not change the price of the product, this could cause producers of agricultural products to lose, which resulted in a decrease in long-term production.

The estimation results of the VECM model show that the price of beef in Kupang and Kupang cities and in Jakarta is determined by the price of beef in Jakarta in different periods. This can be seen from the price of beef in Kupang district influenced by the price of beef in Jakarta at lag (-2) and the price of beef in the city of Kupang influenced by the price of beef in Jakarta at lag (-2) and lag (-3). While the price of beef in Jakarta is influenced by the price of beef in Jakarta itself at lag (-3), presented in Table 7. This condition is in line with what is shown in figure 1 that the movement of beef prices between in Jakarta, Kupang city and,

Kupang regency has a trend which rises but the pattern of movement between the three markets is not always in the same direction.

Table 7–Results of the VECM Test between Beef Prices in Jakarta, Kupang City, and Kupang District

Error Correction:	D(P_JAKARTA)	D(P_KUPANG CITY)	D(P_KUPANG DISTRICT)
CointEq1 (ECT)	0.8707 (0.6467) [ 1.3463]	1.2289 (0.5105) [ 2.4071]**	-1.75020 (0.8393) [-2.0854]**
D(P_KUPANG DISTRICT (-1))	-0.5206 (0.5564) [-0.9355]	-0.9299 (0.4392) [-2.1172]**	0.5039 (0.7221) [ 0.6979]
D(P_KUPANG DISTRICT (-2))	-0.2468 (0.4400) [-0.5608]	-0.6332 (0.3473) [-1.8232]*	0.2224 (0.5710) [ 0.3895]
D(P_KUPANG DISTRICT (-3))	-0.1537 (0.2934) [-0.5236]	-0.2638 (0.2316) [-1.1390]	0.1837 (0.3808) [ 0.4823]
D(P_KUPANG DISTRICT (-4))	0.1112 (0.1558) [ 0.7139]	0.03802 (0.1229) [ 0.3092]	0.0831 (0.2021) [ 0.4113]
D(P_KUPANG CITY (-1))	0.7149 (0.569) [ 1.256]	0.5383 (0.4493) [ 1.1980]	-0.8419 (0.7387) [-1.1397]
D(P_KUPANG CITY (-2))	0.4890 (0.4255) [ 1.1491]	0.2715 (0.3359) [ 0.8073]	-0.7186 (0.5522) [-1.3013]
D(P_KUPANG CITY (-3))	0.1294 (0.3150) [ 0.4109]	-0.0612 (0.2486) [-0.2460]	-0.5245 (0.4087) [-1.2831]
D(P_KUPANG CITY (-4),2)	0.0983 (0.1817) [ 0.5407]	-0.1543 (0.1435) [-1.0756]	-0.2479 (0.2358) [-1.0512]
D(P_JAKARTA(-1))	-0.2482 (0.1571) [-1.5806]	0.2150 (0.1240) [ 1.73429]*	-0.2263 (0.2038) [-1.1102]
D(P_JAKARTA(-2))	-0.5717 (0.1626) [-3.51507]**	0.2687 (0.1284) [ 2.0928]**	-0.1764 (0.2110) [-0.8360]
D(P_JAKARTA(-3))	-0.03976 (0.1550) [-0.2566]	-0.0924 (0.1223) [-0.7553]	-0.3816 (0.2011) [-1.8977]*
D(P_JAKARTA(-4))	-0.11529 (0.1427) [-0.8082]	0.1356 (0.1126) [ 1.2039]	0.07942 (0.1851) [ 0.4290]
C	-25.2005 (238.3440) [-0.1057]	45.7600 (188.1390) [ 0.2432]	-42.6041 (309.2990) [-0.1377]

Source: Secondary data (processed), 2018 \*\*  $\alpha = 0.05$  and  $\alpha = 0.10$ .

The effect of beef prices in Jakarta toward the price of beef in Kupang district and, Kupang city has a different effect that can be determined from the negative and positive values of the lagged error correction values. The negative value of the lagged error correction value means that the prices in the two regions move away from each other. This showed that prices in Kupang District move against the prices in Jakarta. This happened because Kupang district is a production area; sale of cattle more because of cash needs compared to the reason for the increase in beef prices. In accordance with Zainuddin's opinion, (2015), that changes in beef prices do not directly affect meat demand, because of the nature of livestock in Indonesia does not respond to price changes. This can be expected to occur information asymmetry as one of the causes of beef price movements in Kupang district is not in line with Jakarta. Communication facilities, facilities for marketing, transportation, and market information services that do not support an efficient marketing system. The same case was explained by Kofi and Vijaya (2016) on rice price movements in

Ghana that the fallow market imperfection caused information asymmetry which resulted in rice prices in Ghana not being integrated. According to Kofi and Vijaya (2016), information asymmetry will result in rice prices not being integrated and what is often disadvantaged is on the part of the producers, so the role of government is very important by conducting interventions so that producers get reasonable prices, for example through basic pricing (Kinnucan & Forker, 1987).

Evidence of cases of government intervention in Poland, several times has succeeded in overcoming turmoil in beef prices and other agricultural commodities, (Borawski, *et al.*, 2018). There are three types of benefits from the government intervention on food commodity price stabilization policies according to Dawe (2001), namely (1) protecting farmers as producers from falling prices, (2) protecting lower middle class consumers with low income (poor consumers), and (3) creating more stable macroeconomic conditions.

## CONCLUSION AND RECOMMENDATIONS

Based on the discussion above, it can be concluded that cointegration occurs between the price of beef in Kupang district and Kupang city but the price of beef in Kupang district and Kupang city is not integrated with the price of beef in Jakarta. There is no short-term integration between the price of beef in Kupang District and in Kupang City. However, short-term integration occurs between the price of beef in Kupang district, Kupang city and Jakarta with beef prices in Jakarta but each of them have a different balance direction. The direction of the balance movement is the opposite between the price of beef in Kupang regency and the prices in Jakarta, while the price of beef in the city of Kupang and in Jakarta occurs the opposite. Therefore, in order to improve the market condition in the Province of East Nusa Tenggara, it is necessary to improve accurate, fast and transparent market information systems and services to market participants, especially producers and government intervention is needed to help producers in determining the reasonable beef price.

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## **COMPARING OLS AND QUANTILE REGRESSION ESTIMATION TECHNIQUES FOR PRODUCTION ANALYSIS: AN APPLICATION TO GHANAIAN MAIZE FARMS**

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### **ABSTRACT**

Relying on the mean approach in the estimation of the Cobb-Douglas production function may cloud the empirical linkage between farm specific inputs and outputs in production analysis. In order to address the issue, this paper introduces the quantile regression estimation method to modelling the Cobb-Douglas production function as an alternative to the least squares approach in maize production analysis. The quantile regression results are compared to the widely used ordinary least squares regression. Results of the OLS estimation find an insignificant linkage between labour and maize output as well as fertilizer and maize output. However, the quantile regression estimation reveals a significant positive link between labour and maize output as well as fertilizer and maize output. OLS underestimate and overestimate the true relationship between inputs and output depending on the position of the quantile. These results suggest that the quantile regression methods might provide a more suitable framework for exploring the input output relationship in production analysis than the least squares method when the coefficient of inputs varies significantly across the distribution of farm output.

### **KEY WORDS**

Production, function, quantile regression estimation, ordinary least squares estimation.

The use of the Cobb-Douglas (1928) econometric methodology has dominated the production analysis literature as a tool for estimating the relationship between inputs and outputs. This methodology relies on Ordinary Least Squares (OLS) to estimate the Cobb Douglas Model.

Previous studies (Bagi and Huang (1983), Battese and Coelli (1988), Bravo-Ureta and Rieger (1991), Onumah and Acquah (2010), Hoyo, Espino and Toribio (2004) estimating the relationship between inputs and output relies on OLS or Maximum Likelihood method to estimate the marginal effect of the specific input on the conditional mean function of the output. Some studies (Acquah (2016), Essilfie, Asiamah and Nimoh (2011), Kuwornu, Amoah and Wayo (2013)) estimating the relationship between farm specific inputs and maize output relied on OLS or Maximum Likelihood method to estimate the marginal effect of the farm specific input on the conditional mean function of the maize output. Such estimates ignore the potential heterogeneous patterns of the influence of the covariates in the conditional distribution and provides limited information on the relationship between the inputs and outputs.

Quantile regression approach has been developed as a robust alternative to the least square approach that does not ignore the potential heterogeneous patterns of the influence of the covariates in the conditional distribution. The quantile regression unlike the least squares method has the advantage of providing a detailed picture of the relationship between the covariates and the dependent variable. Applications of the quantile regression in linear modelling has been met with success and demonstrated in some studies (Koenker and Bassett (1978, 1982) and Buchinsky (1998).

Though the mean approach has been extensively used in empirical production analysis research, it does not provide a detailed picture of the relationship between inputs and outputs or alternatively clouds the empirical linkage between inputs and outputs. However, very little

research has been undertaken to demonstrate that empirical linkage between farm specific inputs and outputs can be clouded by the use of a mean approach.

A fundamental research question which remains unanswered is does the mean approach (OLS) provide limited information on the input-output relationship in maize production analysis? Alternatively, is the empirical linkage between input and output clouded by the use of the mean approach in maize production analysis? The foregoing discussion points to the fact that there is the need to employ methods that provide a detailed picture of the relationship between farm specific inputs and outputs.

Some studies (Acquah (2016), Essilfie, Asiamah and Nimoh (2011), Kuwornu, Amoah and Wayo (2013)) employed the Cobb Douglas production function to analyse the effect of farm specific factors on maize output in Ghana using least squares method or maximum likelihood estimation. These studies found insignificant relationship between fertilizer and farm output. Will an alternative approach such as the quantile regression lead to the same conclusion or find an insignificant relationship between fertilizer and farm output when applied to the data used in Acquah (2016)? Notably, the least squares approach provides limited information on the effects of input on output. Damiani and Ricci (2011) note that quantile regression method offers notable advantages over the least-squares method when the coefficient of inputs varies significantly across the distribution of firm productivity. They claim that estimation of the Cobb-Douglas production function using the mean approach may mask substantial heterogeneity in the effects of input variables on firm output.

The purpose of this paper is to support the claim that the mean approach (OLS) may cloud the empirical linkage between farm specific inputs and outputs, and in so doing, demonstrate the usefulness of the quantile regression approach in providing a detailed picture of the relationship between farm specific inputs and output in maize production analysis.

## MATERIALS AND METHODS OF RESEARCH

The present study is interested in comparing the OLS and Quantile regression models in the estimation of input output relationship. The study therefore uses the input output data used by Acquah (2016). The data consist of farm output and farm specific inputs (labour, land, equipment, agrochemical, fertilizer, and seeds) of 306 randomly selected maize farmers from the Ejura Sekyedumase District in Ashanti region of Ghana.

The Cobb-Douglas functional form of production functions is widely used to represent the relationship of an output to inputs and dates back to Von Thünen (1850), Wicksell (1923) and Wicksell (1934) but is credited to Cobb and Douglas (1928) and given by:

$$y = f(x) e^u = e^{\beta_0} x_1^{\beta_1} x_2^{\beta_2} e^u \quad (1)$$

$$\text{with } \beta_1 + \beta_2 = 1$$

Then the log model can be specified as:

$$\ln y = \beta_0 + \beta_1 \ln x_1 + \beta_2 \ln x_2 + u \quad (2)$$

The ordinary least squares (OLS) technique or the quantile regression model can be employed in the estimation of the Cobb-Douglas regression model.

*Estimation with Ordinary Least Squares (OLS).* Assuming a given data consist of explanatory and outcome variables and there exist a linear functional relationship between the outcome variable and the explanatory variable, then the general linear model can be of the matrix form:

$$y_i = X_i\beta + u_i \quad (3)$$

Where:  $y = (y_1, \dots, y_n)^T$ ,  $u = (u_1, \dots, u_n)^T$ ,  $\beta = (\beta_1, \dots, \beta_n)^T$  and

$$X = \begin{pmatrix} 1 & X_{11} & x_n \\ \dots & \dots & \dots \\ 1 & x_{n1} & x_{nn} \end{pmatrix}$$

Ordinary Least Squares (OLS) minimizes the square distances between the observed and the predicted dependent variable  $y$ :

$$S(\beta) = \sum_{i=1}^N (y_i - x_i^T \beta)^2 = (y - X\beta)^T (y - X\beta) \rightarrow \min_{\beta} \quad (4)$$

Differentiating with respect to  $\beta$ , setting it to zero, we find  $\hat{\beta}$  satisfies:

$$X^T X \hat{\beta} = X^T y \quad (5)$$

The OLS method of estimating  $\beta$  can be estimated by  $\hat{\beta}$  which is given by the explicit formula:

$$\hat{\beta} = (X^T X)^{-1} X^T y \quad (6)$$

The dependent variable can be predicted by:  $\hat{y} = x_i^T \hat{\beta}$  and the error term by  $\hat{u}_i = y_i - x_i^T \hat{\beta}$ .  $\hat{u}_i$  is the residual. The OLS assumes that the errors are normally distributed with a mean of zero, constant variance and are uncorrelated. Additionally, observations are independently and identically distributed (iid) and there is a linear functional relationship between dependent and explanatory variables.

*Quantile Regression Estimation.* Koenker and Bassett (1978, 1982) first introduced the quantile regression approach as robust alternative to the ordinary least squares regression. Estimating conditional quantiles at various points of the distribution of the dependent variable will allow us to trace out different marginal responses of the dependent variable to changes in the explanatory variables at these points.

Buchinsky (1998) asserts that two additional characteristics of the quantile regression are noteworthy. First, the classical properties of efficiency and minimum variance of the least squares estimator are obtained under the restrictive assumptions of independently and identically normally distributed (iid) errors. When the distribution of the errors is non normal, the quantile regression estimator may be more efficient than the least squares estimator.

Secondly, since the objective function for the quantile regression estimator is a weighted sum of absolute deviations, the parameter estimates are robust to outliers.

The quantile regression model can be written as:

$$y_{it} = X_{it}^1 \beta_q + u_{qit} \quad (7)$$

$$\text{with } Quant_q(y_{it} / x_{it}) = X_{it}^1 \beta_q$$

Where:  $y$  is the dependent variable,  $x$  is a vector of regressors,  $\beta$  is the vector of parameters to be estimated and  $u$  is a vector of residuals.  $Quant_q(y_{it} / x_{it})$  denotes the  $q$ -th conditional quantile of  $y$  given  $x$ . The  $q$ -th regression quantile,  $0 < q < 1$  solves the following problem.

$$Q(\beta_q) = \min_{\beta} \sum_{i=1}^n \left[ \left| y_{it} - x_{it} \beta_q \right| \right] = \min \left[ \sum_{i: y_{it} \geq x_i \beta} q \left| y_{it} - x_{it} \beta_q \right| + \sum_{i: y_{it} < x_i \beta} (1-q) \left| y_{it} - x_{it} \beta_q \right| \right] \quad (8)$$

**RESULTS AND DISCUSSION**

**Quantile Regression and Ordinary Least Squares for Estimation of Cobb-Douglas Model**

Ordinary Least Squares (OLS) estimation results of the Cobb-Douglas regression model presented in Table 1, reveals significant and positive relationship between land and equipment as explanatory variables and maize yield as the dependent variable. There is also a significant but negative relationship between the use of agrochemicals and seed as explanatory variables and maize yield as dependent variable. There is also a positive and insignificant relationship between labour and fertilizer as explanatory variables and maize yield as dependent variable.

Alternatively, quantile regression estimation results of the Cobb-Douglas model presented in Table 1, shows a significant positive relationship between labour and maize output at the 10<sup>th</sup>, 20<sup>th</sup> and 30<sup>th</sup> quantile. Again, the quantile regression show a significant positive relationship between fertilizer and maize output at the 20<sup>th</sup> and 50<sup>th</sup> quantile.

Table 1 – OLS and Quantile Regression Estimates

Variable	OLS	Quantile								
		0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
(Intercept)	5.259** * (0.321)	4.471** * (0.455)	4.358** * (0.321)	4.741** * (0.496)	5.431** * (0.462)	5.003** * (0.424)	5.426** * (0.426)	5.900** * (0.335)	5.748** * (0.469)	6.243** * (0.438)
log(Labour)	0.053 (0.046)	0.102 (0.062)	0.128** (0.044)	0.134 (0.069)	0.047 (0.064)	0.021 (0.061)	0.002 (0.065)	-0.016 (0.053)	-0.0002 (0.065)	-0.067 (0.054)
log(Land)	1.256** * (0.062)	1.253** * (0.084)	1.210** * (0.057)	1.237** * (0.073)	1.275** * (0.068)	1.309** * (0.072)	1.348** * (0.081)	1.255** * (0.061)	1.273** * (0.081)	1.347** * (0.055)
log(Equipment)	0.069 ** (0.024)	0.123** * (0.033)	0.086** * (0.025)	0.078* (0.034)	0.045 (0.032)	0.063* (0.031)	0.048 (0.029)	0.052* (0.025)	0.058 (0.035)	0.052 (0.029)
log(Agrochemicals)	-0.140* (0.065)	-0.175 (0.090)	-0.099 (0.062)	-0.128 (0.087)	-0.099 (0.083)	-0.137 (0.082)	-0.199* (0.079)	-0.122* (0.060)	-0.116 (0.093)	-0.166* (0.076)
log(Fertilizer)	0.051 (0.054)	0.057 (0.082)	0.096 (0.053)	0.068 (0.078)	0.017 (0.066)	0.138* (0.060)	0.098 (0.071)	0.043 (0.063)	0.018 (0.078)	0.032 (0.063)
log(Seed)	-0.151 (0.078)	-0.065 (0.107)	-0.144* (0.071)	-0.246* (0.104)	-0.245* (0.102)	-0.230* (0.103)	-0.204* (0.095)	-0.204* (0.084)	-0.088 (0.114)	-0.175 (0.108)
Returns to scale (RT)	1.140	1.300	1.300	1.143	1.041	1.163	1.093	1.007	1.146	1.024

Land remains positive and significant at all quantiles whilst equipment remains positive and significant at all quantiles except the 40<sup>th</sup> quantile. There is also a significant negative relationship between agrochemicals and maize output at the 10<sup>th</sup>, 50<sup>th</sup>, 60<sup>th</sup>, and 70<sup>th</sup> and 80<sup>th</sup> quantile and a significant negative relationship between seeds and maize output at the 20<sup>th</sup>, 30<sup>th</sup>, 40<sup>th</sup>, 50<sup>th</sup>, 60<sup>th</sup>, 70<sup>th</sup> and 90<sup>th</sup> quantile.

Noticeably, the positive but insignificant relationship between labour and maize outputs revealed by the OLS technique is not supported by the quantile regression. The quantile estimation reveals a totally different picture. As displayed in Table 1, there is a significant positive relationship between labour and maize output at lower quantiles. The results suggests that the mean approach of the OLS has clouded the role of labour on maize output at the different points. Notably, these results suggest that labour is an important determinant for maize farms with low output.

Again, results from the traditional OLS reveals positive and insignificant relationship between fertilizer and maize output. Whereas the quantile regression show a significant positive relationship between fertilizer and maize output at the 20<sup>th</sup> and 50<sup>th</sup> quantile. In

effect, fertilizer is an important determinant in maize farms with low or moderate output. These results are consistent with Abawiera and Dadson (2016), who noted that, maize farmers can increase their output by employing more resources (fertilizer and labour). Similarly, Essilfie, Asiamah, and Nimoh (2011) in an empirical analysis found labour to have a positive and significant effect on maize yield. Kuwornu, Amoah and Wayo (2013) also found that hired labour has a positive and significant effect on maize yield.

Results from the traditional OLS and quantile regression reveals significant positive relationship between maize output and explanatory variables (land, equipment) and a significant negative relationship between maize output and explanatory variables (agrochemical and seed). Like the OLS, the quantile regression results suggests that an increase in each of these variables (land, equipment) will lead to an increase in the output of maize. And an increase in each of these variables (agrochemical and seed) will lead to a decrease in maize output. Thus when the seeds used by farmers are higher than the recommended seed rate, yield will decline. This may lead to overcrowding which makes seedlings compete for nutrients, space and air. This result is consistent with the studies by Battese and Hassan (1999).

In addition, the quantile regression reveals a clearer representation depicting defined quantiles wherein each variable maintain a significant effect on maize output. For example, land remains positive and significant at all quantiles whilst equipment remains positive and significant at all quantiles except the 40<sup>th</sup> quantile. These results suggest that land is an important determinant of maize farm output regardless of the levels or distribution of maize outputs. Also equipment remains an important factor in maize production at all levels of output except the 40<sup>th</sup> quantile. There is a significant negative relationship between agrochemicals and maize output at the 10<sup>th</sup>, 50<sup>th</sup>, 60<sup>th</sup>, and 70<sup>th</sup> and 80<sup>th</sup> quantile. These results also show that agrochemicals significantly reduce the output of maize farmers with very low output and also for those with medium to high levels of output. Again, the significant negative relationship between maize output and seeds show that increases in seeds reduce maize output for farmers with low, moderate and high levels output. In effect, excessive use of agrochemicals and seeds could lead to a decline in yield. This result is consistent with the studies by Battese and Hassan (1999) who found yield to decline due to competition for nutrients by overcrowded seeds.

Generally, these results show that, the input-output relationship can be clouded by the mean approach. Furthermore, depending on the levels of production of the farmers' output, specific inputs could be important determinants or not. Hence the need to consider the effects of the covariates/inputs at the various levels or distribution of maize output remains imperative.

A comparison of the estimation result from the Cobb-Douglas model using the least squares method and the quantile regression approach indicates that the estimates obtained in the alternative methods are different. For example results from farm-level production analysis in Table 1 show that, the magnitude of each coefficient is different in each quantile as well as in the OLS estimation. Furthermore, not all statistically significant input variables in the quantile regression were statistically significant in the OLS regression. The difference between OLS and Quantile regression results in Table 1, suggests that OLS underestimate and overestimate the true relationship between inputs and output depending on the position of the quantile. These results are consistent with Vu, Holmes, Lim and Tran (2014) who demonstrated that the mean approach (OLS) can mask the differences in the effects of inputs on output in an export profitability relationship. Similarly, Damiani and Ricci (2011) note that the estimation of the Cobb-Douglas production function using the mean approach may mask substantial heterogeneity in the effects of input variables on firm output.

Using the OLS and quantile regression approaches, the productivity level of the maize farmers were studied by investigating their output elasticities and returns to scale. On the basis of the OLS and quantile regression, it is noted that if the farmers increase input (labour, equipment, agrochemicals, fertilizer and seed) by one percent, output changes by less than one percent, whilst if farmers increase input (land) by one percent, output increases by more than one percent. Prominently, land which is positive and significantly related to output had

the highest elasticity. This suggest that, increasing land used in maize production will lead to increases in maize output. The importance of land in production is also noted by Rahman, Wiboonpongse, Sriboonchitta and Chaovanapoonphol (2009).

Notably, both the OLS and the quantile regression estimation techniques suggest that the maize farmers were exhibiting increasing returns to scale. Thus output grows more than proportionately with any increase in input. This evidence is consistent with Wu, Devadoss and Lu (2003). This means that farmers could increase output by using more of the inputs that are significantly positively related to the output at various distribution of output.

### CONCLUSION

The main point of this paper is that empirical linkage between inputs and outputs in production analysis should not be based solely on the mean approach. This is because the empirical linkage between inputs and outputs can be clouded by the use of the mean approach. In order to address the issue this paper proposes a quantile regression estimation method to modelling the Cobb-Douglas production function as an alternative to the ordinary least squares estimation approach. A comparison of the result from the Cobb-Douglas model using the least squares method and the quantile regression approach indicates that the estimates obtained in the alternative methods differ. Notably, OLS underestimate and overestimate the true relationship between inputs and output depending on the position of the quantile.

On the basis of the quantile regression estimation, farm inputs such as labour and fertilizer had a significant positive effect on maize output whilst the OLS found an insignificant positive relationship between labour and fertilizer as explanatory variables and maize output as the dependent variable. On the basis of the OLS and quantile regression, land and equipment had significant positive effect on maize output, whilst agrochemicals and seed had a significant negative effect on output. Furthermore, the OLS and quantile regression suggest that the farmers were operating at an increasing returns to scale though the magnitude varied across quantiles. In summary, this paper has demonstrated that quantile regression offers an alternative and a more detailed picture of the relationship between inputs and outputs in a maize production analysis.

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## **THE INFLUENCE OF AGROCHEMICALS AND BIOLOGICALLY ACTIVE SUBSTANCES ON THE GROWTH AND DEVELOPMENT OF LEGUMINOUS PLANTS IN THE EARLY STAGES OF EVOLUTION**

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### **ABSTRACT**

The problem of regulating the growth and development of legumes with the help of physiologically active substances is currently one of the most urgent in modern biology. Interest in this group of compounds is due to a wide range of their effects on plants, the ability to regulate separately the stages of growth and development in order to mobilize the potential possibilities of the plant organism, and, consequently, to increase the yield and quality of agricultural products. A large set of chemical preparations (retardants, herbicides, growth stimulators, etc.), partially already used in agriculture or under testing, requires careful study of the characteristics of their action on plants, depending on the genotype and environmental factors.

### **KEY WORDS**

Legumes, biological active substances, growth, development, influence, pesticides.

Vegetable production is one of the main and most labor-intensive branches of agricultural production. This branch has an important role in supplying the population with food products of high biological value, containing a number of necessary components, minerals and vitamins. In modern conditions, crop yields can be increased on the basis of a high crop culture by scientifically based environmentally safe application of fertilizers and pesticides, widespread introduction of advanced technologies with minimal use of chemicals.

Legumes are one of the oldest cereals known to mankind. To legumes belong to peas, kidney beans, soybeans, chickpeas, lentils and beans. Depending on the variety and maturity, legumes include either vegetables or varieties of cereals in cooking and in trade practice. Legumes are distinguished by high taste and nutritional values. They contain 22 to 25% protein, 60 to 70% starch and 1.5 to 3% fat. Soybean seeds differ in the greatest calorific capacity, they contain up to 20% fat and 32% protein.

The yield of legumes is largely determined by the seed quality of seeds, the leading indicator of which is laboratory germination. Seed carriers of biological properties determine the quality and quantity of the crop produced to a decisive degree [5].

Seed germination is one of the most important and complex processes affecting the passage of all successive stages of development of organisms during vegetation of plants. It is characterized by intensive metabolism; stored nutrients undergo significant changes, turning into vital compounds for the body, which ensure normal growth and development of the seed bud.

One of the effective ways to preserve the beneficial properties of the legumes and to increase their yield is the use of biologics of growth-stimulating action to reduce interphase periods and increase the productivity and resistance of plants to unfavorable factors.

*Legumes and their national economic importance.* Legumes are one of the largest families of flowering plants, numbering about 18 thousand species. They are distributed almost over all the land of the globe accessible to flowering plants, and they are represented by the most diverse life forms - from huge trees and lianas to tiny desert plants [7]. Representatives of legumes can climb to the mountains up to 5 thousand meters of altitude, live in the Far North and in hot-arid deserts.

Legumes constitute a significant part of our flora, representing almost 10% of the species of flowering plants in Russia. These include such large genera as astragalus,

everlasting pea, deervetch, medick, sweet clover, sainfoin, locoweed, clover, vetch, etc. Among the legumes are many food crops of world significance. These include soybeans, beans, mung beans, peanuts, peas, chickpeas, lentils, English beans and many others [26]. All these useful plants man has been growing for many centuries, and in the wild they are often unknown. The nutritional value of legumes is determined by the very high content of protein, starch and fat in their seeds. A fairly large amount of protein is contained in pea seeds - up to 27%, and in lentil seeds it can reach 32%. Seeds of peanuts up to 60% consist of oil and up to 37% of protein. Legumes are quite capable of replenishing the lack of meat products. We are used to consider sunflower and hemp as the main oil-bearing crops, but much more oil is produced all over the world from peanuts. It is inferior only to cotton in this. Pulp beans of separate species, containing a large number of acids and sugars, are consumed as fruits, for example, fruits of Mediterranean carob [10]. Many tropical trees give valuable wood, painted in pink, red, dark brown and almost black tones.

A long history has the use of legumes in medicine. A number of plants, for example, Cassia and Japanese pagoda tree as medicinal products are of world importance. The thickets of Central Asian common licorice and Ural licorice have global significance [20]. The root extract is used in the medicinal and food industries. Some legumes are used for the preparation of balms, aromatic substances, gums.

The economic importance of legumes is very large, so they are cultivated in all countries of the world. Seeds of leguminous plants are rich in proteins, the content of which vary between 20-40% and exceeds, on average, twice the content of proteins in the grain of cereals. Proteins of legumes are mostly full in amino acid composition, the limiting acid is methionine.

Seeds of legumes are used for food, fodder and technical purposes. They are widely used for the preparation of soups, cereals, sauces, purees, coffee substitutes. Peas, kidney beans, lentils and beans are widely used in the canning industry. From peas and lentils can be also received cereals and flour. Flour is added to sausages and fodder concentrates. Seeds of soy and peanuts serve as good raw materials for obtaining valuable vegetable oil. Seeds of leguminous plants are a very valuable concentrated animal feed. They are used as the main components of mixed fodders [15].

Legumes give highly nutritious, protein-rich hay. Frequently they are sown with cereal grains (oats, barley), with cereal grasses (timothy grass, etc.) and are harvested during the flowering period. They give good green fodder, silage, haylage. Bean plants play an important role in the enrichment of the soil with nitrogen. On their roots, nodule bacteria develop that assimilate nitrogen from the air. Nitrogenous compounds remain in the soil with the roots odds after harvesting legumes [6, 24]. Of particular importance are legumes for countries in Asia, Central and South America, where the main food is rice, the grain of which is poor in protein. The lack of proteins in rice is compensated with proteins of leguminous plants.

*The classification of biologically active substances.* Biologically active substances (BAS) (from the Greek *Bios* - *life*, corresponds to the word «biological» and means a link to life processes, and also from the *Latin* - *Activeus* - *active*, ie a substance that has biological activity) is compounds that, due to their physical and chemical properties, have a certain specific activity and perform or affect, alter the catalytic (vitamins, enzymes, coenzymes), energy (lipids, carbohydrates), plastic (lipids, carbohydrates, proteins), regulate (peptides, hormones, hormone-like substances) or other function in the human body, animals or plants. The meaning of the phrase can vary significantly depending on the scope of use. In the scientific sense of the word (mental, neurophysiological, chemical processes) biologically active substances increase the activity of the basic vital processes of the organism [1].

In other words, biological action is physiological, bio-chemical, genetic and other changes that occur in the organism and living cells as a result of the action of biologically active substances [7]. For the purpose of classification, all biologically active substances are divided into endogenous and exogenous. Endogenous substances include chemical elements (potassium, hydrogen, oxygen, phosphorus, etc.), low-molecular compounds (ATP, ethanol, glucose, adrenaline, etc.) and high-molecular substances (RNA, DNA, proteins).

These compounds are part of the body, participate in the metabolic processes of substances and have a pronounced physiological (biological) activity. Exogenous are considered biologically active compounds (BAS), entering the body of plants, animals, humans in various ways [19].

Taking into account interaction with the organism, biologically active substances are divided into bioinert substances, which are practically not assimilated by the organism (hemicellulose, cellulose, organosilicon polymers, lignin, polycarbonate, etc.); biocompatible, which are slowly fermented or dissolved in the body (polyvinylpyrrolidone, polysaccharides, polyvinyl alcohol, polyacrylamide, water-soluble cellulose ethers, polyethylene oxide, etc.); bionosvemesimye, which cause irritation or necrosis of body tissue (some polyamides, polyanthracenes and many others); bioactive directional substances (vinyl polymers in combination with drugs).

All biologically active substances or individual elements that cause poisoning of animals or the normal functioning of individual body systems, depending on their intended purpose, are divided into a number of groups [18].

*Pesticides* (pestis - harmful, caedere – to kill). Pesticides are a means of controlling pests of plants and animals. The maintenance of modern highly productive agriculture is impossible without their application. Therefore, there is an increase in both the assortment and the volume of application of pesticides. Pesticides have not only toxicological, but also veterinary and sanitary importance, as some of them pollute environmental objects and accumulate in the tissues of animals, are released with milk and eggs, which leads to contamination by their remnants of food products of animal origin.

*Mycotoxins*. Mycotoxins include toxic substances (metabolites) formed by microscopic fungi (mold). Among them there are compounds possessing exceptionally high biological activity, acting extrogenically, carcinogenic, embryotoxic, gonadotoxic and teratogenic. Thus, LD of one of the fusarium metabolites from the genus *Fusarium*-T-2-toxin for white mice is 3.8 mg/kg, aflatoxin B is approximately the same toxicity. Currently, no other such compound is known to be used for plant protection or animals, with such high toxicity. LD carbofuran (furan), one of the most toxic pesticides used to treat beet seeds and not allowed to be used in animals, is 15 mg/kg, i.e. it is 4 times less toxic than T-2 toxins [12, 21].

In many countries of the world, extensive research is carried out on the isolation of mycotoxins, the study of their chemical structure, the determination of biological activity, the development of methods for determining in animals feed and tissues, the factors that influence the toxin formation process.

*Toxic metals and their compounds*. Among the metal compounds, mercury-, lead-, cadmium-containing substances and, to a lesser extent, chromium-, molybdenum-, zinc-containing compounds have the greatest sanitary and toxicological value.

*Nitrogen compounds*. Of the compounds of this group, nitrates (NO<sub>3</sub>), nitrites (NO<sub>2</sub>), nitrosamines and to some extent urea-carbamide [CO(NH<sub>2</sub>)<sub>2</sub>], have a sanitary-current-sicological significance, etc. Due to the extensive chemicalization of agriculture and the application of in the large scale of nitrogenous fertilizers, the sanitary and toxicological significance of nitrates and nitrites increases significantly, which can accumulate in significant amounts in fodder crops, especially in root crops, by adsorption from the soil [5, 26].

*The influence of biologically active substances on the growth and development of legumes*. An analysis of the trends in the chemicalization of world crop production shows that at the present time, the scientific and practical interest in regulators of plant growth and development is increasing. This is due to the fact that in recent years the understanding of the mechanism of action of many known growth regulators has deepened, new drugs of narrow-directed action have been created, for example activators and inhibitors of phytohormones, metabolism, photosynthesis, transpiration and other regulators.

Plant growth and development regulators are an extensive group of natural and synthetic organic compounds that, in small doses, actively influence the metabolism of higher plants. The stimulation of the plant's own immunity makes it possible to induce in plants

complex nonspecific resistance to many diseases of fungal, bacterial and viral origin and other unfavorable environmental factors (drought, temperature stress, etc.).

At this point, about 5000 compounds (of chemical, microbial and plant origin) with a regulatory effect have been discovered and studied to some extent, but in the world practice about 50 are used. This indicates that their extensive production application is just beginning. Indeed, the share of all industrial preparations of growth regulators in the world market of agrochemicals is currently about 10%. However, in terms of the expansion of production, sales and use, growth regulators outperform all other chemicals that are used in world agriculture. The mechanism of action of biological preparations is described in the literature, which consists in the activation of mycorrhizal and endomycorrhizal plant fungi. In the analysis of agronomists it is noted that regulators of plant growth and development contribute to an increase in the yield of agricultural crops by 15-30% using a smaller amount of mineral fertilizers, normalizing the mineral composition of plant biomass, and reducing crop losses from diseases.

The main distinguishing feature of the preparations of this group from other plant protection products is the ability to influence harmful organisms by stimulating the protective properties of plants incorporated in them during evolution. The use of this feature in crop production practice allows to realize the potential of integrated plant protection programs to the fullest extent, ensuring maximum environmentalization of agro-systems.

Plant growth regulators or stimulants (PGRs) are natural or synthetic substances that stimulate the growth and development of plants by accelerating the division of cells or their extension in length. Phytohormones - auxins, gibberellins, cytokinins, and synthetic ones - are their natural stimulators for plant growth. Plant growth regulators are successfully used to eliminate the periodicity of fruiting, acceleration of flowering and ripening of fruits. Experience shows that in order to obtain a high effect, growth regulators should be used at different stages of plant growth and development, especially since each preparation has its own «specialization». The culture of plant growth-stimulating drugs in private farms, unfortunately, is not yet available. This, apparently, is due to the lack of professional agrochemical knowledge among the population, since unlike private traders, all industrial farmers actively use growth stimulants.

The use of drugs that stimulate plant growth leads to an increase in yield by 20-30%. At the same time, in value terms, growth stimulants are the cheapest of all plant protection products sold. Plant growth regulators make it possible to strengthen or weaken the characteristics and properties of plants within the norm of the reaction determined by the genotype, heredity. They are an integral part of the complex chemization of plant growing. With their help, shortcomings of varieties and hybrids are compensated, which is why they are one of the important elements of modern technologies aimed at increasing the productivity of agricultural crops. Growth regulators include both natural and synthetic compounds that actively influence metabolism. The result of their application leads to visible changes in the growth and development of plants. The regulation of physiological processes by hormones or their synthetic analogs is very specific and cannot be accomplished by other means of influencing plants. Growth regulators have a wide range of effects on plants: accelerate maturation, increase productivity and improve the quality of crop yields, and also reduce the negative impact of unfavorable environmental factors.

At present, there are eight groups of phytohormones, five of which belong to the classical (auxins, gibberellins, cytokinins, abscisic acid, ethylene) and three are relatively recently discovered - brassinosteroids, jasmonic and salicylic acids. The discovery of a new phytohormone is a very rare event. Phytohormones are usually synthesized in plants in very small quantities from the products of photosynthesis and glycolysis. It should be noted that phytohormones participate in the regulation of metabolism at all stages of plant life - from the development of the embryo to the complete completion of the life cycle and death. They determine the nature of the growth and development of plants, the formation of new organs, habitus, flowering, aging of the vegetative parts, the transition to rest and escape from it. Phytohormones influence the growth and division of cells, the processes of adaptation to aging, the transport of matter, respiration, the synthesis of nucleic acids and proteins, and

many other processes. However, each group of these substances has its own specific features.

Representatives of classical phytohormones are auxins. They are widespread in plants. The most abundant are growing parts: the tips of the stem and root, young leaves, developing seeds and pollen. They are formed in the meristematic (educational) tissues of the stem or root, but in the tips of the stems they are synthesized more than in the roots. The supply of plants with auxins depends on their supply of water and nutrients. Auxins in plants are contained in very small quantities. However, these quantities of the hormone are quite enough to provide the most diverse processes of vital activity of the plant organism. Auxins regulate a number of growth and formative processes. They participate in the laying of vegetative buds and roots, in the germination of pollen, in the growth of the ovary and in the growth of fruits, in the formation and germination of seeds, affect the distribution of nutrients, prevent the loss of fruits and leaves.

The second group includes gibberellins, which are synthesized mainly in leaves and stimulate vegetative growth of the plant, activating the processes of cell stretching and division, accelerate the germination of seeds, initiate the flowering of certain plant groups under non-inductive conditions, promote the formation of parthenocarpic fruits, males, activate the activity of many, especially hydrolytic enzymes.

The third group is represented by cytokinins, which in plants are formed in the roots. Together with the current of water, they move around the cells and spread throughout the plant. They are present there in extremely small quantities, the developing seeds are the most abundant in them. Another surprising property of cytokinins is known - to delay the aging process. In addition to this property, they give impetus to the differentiation of tissues, intensify the effect of light on the growth of shoots and the laying of buds, accelerate the germination of seeds, interrupt the resting period of sleeping buds, tubers, arrest the apex dominance and stimulate the growth of the lateral (axillary) kidneys, cause the opening of stomata.

The gaseous substance ethylene possesses the same properties that help the plant balance well the stimulating and inhibiting processes. It is formed in the leaves of many plants, and is also isolated as a metabolite in flowers. The ethylene present in the plants inhibits cell division and contributes to the aging of the tissues, as a result of which leaves and generative organs fall off, induces fruit ripening. Processing plants with ethylene, you can accelerate the dropping of leaves, stimulate flowering and maturation, cause the appearance of roots and their reorientation, the formation of roots with a large number of sleeping buds, suppress the elongation of shoots and roots, change the ratio of female and male flowers towards the formation of women. Abscisic acid is often called a «restorer». This is due to the fact that, accumulating in the seeds of ripening fruits, in the skin of dormant tubers, in autumn buds of plants, it is able to suppress growth processes - germination of seeds and tubers, bud budding, root formation, stalk growth. However, the role of abscisic acid is reduced not only to inhibition of certain vital processes of the plant organism. In low concentrations, it can stimulate root formation, growth by stretching, etc. Therefore, a number of authors consider it to be phytohormones. In the plant there is a complex interaction between individual hormones. They affect the synthesis, decay and transport of each other. A change in the level of one of the components of the phytohormonal system inevitably leads to a change in the entire system. Thus, without taking into account the mutual influence of phytohormones, it is very difficult to decide uniquely the question of the specificity of their action [16, 24].

The data of domestic and foreign science and practice testify to the successful use of physical and chemical factors of influence as means of controlling the vital activity of plants.

The problem of regulating the growth and development of plants with the help of physiologically active substances is currently one of the most urgent in modern biology. Interest in this group of compounds is due to a wide range of their effects on plants, the ability to regulate separately the stages of growth and development in order to mobilize the potential possibilities of the plant organism, and, consequently, to increase the yield and quality of agricultural products. A large set of chemical preparations (retardants, herbicides,

growth stimulators, etc.), partially already used in agriculture or under testing, requires careful study of the characteristics of their action on plants, depending on the genotype and environmental factors.

As many studies have shown, the effectiveness of various chemicals is largely determined by the susceptibility of not only individual species, but also varieties of cultivated plants. The mechanism of action of the growth regulator is based on the activation of the protein-synthesizing system. Under its influence, a decrease in the index of peroxide oxidation of membrane lipids was established, which is controlled by nuclear and cytoplasmic genes. In plant roots accelerates the mitotic division of cells. Increases the germination energy and field germination of seeds, the resistance of plants to diseases (brown rust, root rot, etc.) and stress factors (high and low temperatures, drought, phytotoxic action of pesticides), increases yield and improves product quality [9, 23].

Given the urgency of the problem of using growth regulators in the cultivation of perennial legumes, scientists conducted studies on the effectiveness of regulators. As a result of the studies, a positive reaction of plants to the tested growth regulators was established and their optimal doses were determined.

### CONCLUSION

The use of perspective ways and methods to increase the yield and quality of seeds of leguminous crops is the most important task in the current conditions of agriculture. Modern varieties and hybrids of legumes have a high potential for productivity and for more effective ways to increase the agricultural sector of the economy from an ecological point of view, the practice of plant-growing should include the method of presowing seed treatment with microelements and growth regulators that cause activation of the metabolic- processes in the plant organism in extremely small doses, are able to protect the plant from stress and pathogen effects, which is very important for the formation of the crop

At the present day, the role of research on the development of adaptive technologies for cultivating crops with a high yield level, creating optimal conditions for legume-rhizobia symbiosis, increasing plant resistance to unfavorable environmental factors, decreasing the pesticide load and improving the mineral nutrition of macro- and microelements. At the same time, complex studies using trace elements, growth regulators and biologically active substances of natural origin for processing seeds of agricultural crops were insufficiently conducted. In-depth study of this direction is necessary to justify energy-saving technologies for the production of high-quality agricultural products and their wide application in production. This problem has an extremely topical significance in practical plant growing with the purpose of effective application of mineral fertilizers with the identification of antagonism, synergism, additivity and interaction coefficients in ontogenesis of plants.

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## **SIMULATION OF CLIMATE CHANGE IMPACT OF SOIL MOISTURE AVAILABILITY IN THE DRY LAND CORN FIELDS OF SUMBAWA REGENCY, NUSA TENGGARA BARAT PROVINCE**

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### **ABSTRACT**

Climate change has great impact on the availability of soil moisture for the production of food crops in the drylands. Objective of the research was to study climate change simulations on the availability of soil moisture in dry land in Unter Iwes District, Sumbawa Regency, West Nusa Tenggara Province. The method used for water balance calculations was Thornthwaite-Mather. Evapotranspiration calculations use the Penman Monteith model on the CROPWAT 8.0 model. The level of groundwater availability was obtained by analyzing groundwater content (KAT) data on the value of field capacity and permanent wilting point on dry land. The results revealed that changes in temperature and rainfall are factors that affect the water balance. The surplus occurred in January to March and the deficit occurred in April to November. The highest water-surplus was 244,2 mm m<sup>-1</sup> in the Pelat Village and the lowest in Pungka Village was 225.5 mm m<sup>-1</sup>. The highest deficit was 494.32 mm m<sup>-1</sup> in Pungka Village and the lowest in Pelat Village was 475,59 mm m<sup>-1</sup>. Increasing temperature and decreasing rainfall impact on water availability, thus reducing the surplus period at the study site. The deficit period shift occurred only in scenarios accompanied by 10% rainfall (C1, C5 and C9). Decreased soil moisture availability and high demand for crop water affect the potential for reduction. The potential of corn yield reduction in Pelat Village is highest at 20,7% (C9  $\Delta T + 6^\circ C$  and  $\Delta CH -10\%$ ).

### **KEY WORDS**

Climate change, moisture availability, water requirement, drylands.

Climate change, leading to increased extreme climatic events and a serious impact on agricultural production and food security (Downing, 1993; Lennon, 2015; Ochieng, Sendi and Mathenge, 2016; Ali and Erenstein, 2017). Climate change can be identified by changes in average values and variability in climatic elements, lasting for a long period of time (IPCC, 2013). Increased variability in rainfall from the atmosphere with rising temperatures has the potential to intensify soil moisture deficits, affect the quantity of crop production and the productivity of crops that have short life cycles, and the resilience of agro-ecosystems in the future (Valverde et al., 2014; Saadi et al., 2015).

The most extreme climatic events that affect agricultural sector in Indonesia are the El Niño events that are dominated by decreasing rainfall and causing drought effects. IPCC (2014) shows that the earth's surface temperature has increased by 0,85°C (0,65-1,06°C) during the period 1880-2012, and the Indonesian region experienced a temperature increase of 0,8 ° / 100 years (Bappenas, 2014). El Niño events increase the chances of crop failure in the dry seasons due to plants experiencing water shortages. Lassa (2012) reported damage to 3.44 million ha of various types of crop failure due to the 7500 occurrences of natural

disasters from 1970-2010. There is a close relationship between climate change and agricultural production (Winarto et al., 2013). Boer et al. (2014) stated that the increase of 1°C of Nino index in August caused the decline of rice production in the period of January-April next year by 10-20% in Java Island and more than 20% in South Sulawesi Province. Results of study by Surmaini et al. (2015) showed that rice drought was broader in El Niño events during 1991, 1994, 2002 and 2004. The average loss of rice production due to drought in the May-October period was 1,3 million tons. Effects of water stress and drought on plant growth and decrease in rice yield were also reported by other researchers (Boonjung and Fukai, 1996; Mostajeran and Rahimi-Eichi, 2009; Wu, Guan and Shi, 2011; Singh et al., 2012; Palanog et al., 2014; Pandey and Shukla, 2015).

Water resources are the main inputs for agricultural development in any areas (Patanè et al., 2011; Sultana et al., 2017). Reduced availability of water due to changes in temperature and precipitation can disrupt the sustainability of agricultural production (Huntington, 2010). Evaluation of the limited availability of water in dry agricultural land is essential, in relation to the impacts of climate change and its effects on global food production. Both of these provide the basis for efficient irrigation scheduling and optimal allocation of water resources (Perea et al., 2016; Wang et al., 2016). Potential water resources in the form of groundwater storage are available indispensable in the framework of water management, especially the development of food crops (such as maize) in dry climates (Baier, 1969; Hunt et al., 2009; Zhao, Liu and Zhang, 2010; Ayu et al., 2013<sup>a</sup>; Akuraju et al., 2017).

Water availability can be analyzed based on soil characteristics and meteorological aspects (Zangiabadi et al., 2017). The availability of meteorological water is the availability of water that basically comes from rainwater. Rainfall data contribute to characterizing water availability for agricultural planning and management (Franciane, et al., 2018). The availability of water resources is strongly influenced by climatic conditions, topography, soil type, land cover and geological structure (Hartanto, 2017). The availability of meteorological water can be shown in the water balance chart. The water balance is a quantitative interpretation of the hydrological cycle that can be achieved through a general equation, describing the amount of in-flow water, available water, and water coming out of the system during a certain period (Brisson, 1998; Jenifa et al., 2010, Hadisusanto, 2010). Water balance is the basis for managing climate, soil and plants which is very useful for planning and developing agricultural production (Sujalu et al., 2014). The main components of soil water balance in agricultural land are rainfall, surface runoff, evaporation, transpiration, water exchange between root zones, seasonal variations of the water storage (Akuraju et al., 2017), and lateral seepage of soil water (Zhao and Zhao, 2014). The difference between precipitation and evapotranspiration in a catchment area is water reserves and can be utilized on the land (Soemarno, 2011). The correlation between water inflow, water expenditure and changes in soil water storage during a certain period (Sukerta et al., 2013), can be used to identify water sources and water use during this time period (Moghadas, 2009).

Water balance can be used to determine dynamics of water content in soil (Ayu et al., 2017<sup>b</sup>). Quantification of water balance components is very helpful for understanding and analyzing the availability of water resources (Nzoiwu et al., 2017), extreme hydrological potentials such as floods and droughts, and interactions between soil and atmospheric surfaces, water resource efficiency (Qu et al., 2016). Thornthwaite and Mather (1957) is an approach used to determine the level of water availability, planting season and harvest potential. Thornthwaite-Mather Water Balance (TMWB) is a comprehensive water balance model for rooting environments (Dingman, 2002), one approach that can be used to predict the dynamics of soil water content for plant growth, so that it can calculate the amount of plant water demand, especially in the period critical where soil water levels are very low (Djufry, 2012), and future hydrological conditions (Huisman et al., 2009). Results of water balance simulation research by Ayu et al. (2013<sup>c</sup>) using the Thornthwaite-Mather model indicates a water surplus and water deficit at the study site. Tufaila et al. (2017) found water balance with surplus rainfall for three months, and water deficit for nine months. Results of

Madarwilis et al. (2011) explained that the condition of soil moisture is always at the water limit available to plants, even though the water balance experiences a deficit, both under normal conditions, dry and wet conditions.

This research was conducted to determine the soil moisture availability using the water balance and climate change simulation in the drylands area of Unter-Iwes Subdistrict.

### METHODS OF RESEARCH

The study was conducted in Unter Iwes Sub-district, Sumbawa District, West Nusa Tenggara Province (NTB), and Indonesia from March 2015-December 2017. Geographically, it is in position 8°32.5, 5 'LS to 8°32.315' LS and 117°24.51, 8 'BT to 117°26.312' BT. The data used in the research is meteorological data for the period of 2004-2016 from BMKG data of Sumbawa Regency. Research was conducted in two villages, Pelat Village and Pungka Village, based on dryland food crop agriculture and soil texture (Table 1). Research locations were selected based on the completeness of soil and meteorological informations and data (Figure 1).

Table 1 – Research location

Location	Cropping areas (Ha)	Soil type
Pungka village	133	Greyish-brown alluvial soil
Pelat village	1086.96	Complex of Brown Mediterranean soil and Reddish-brown Mediterranean soil

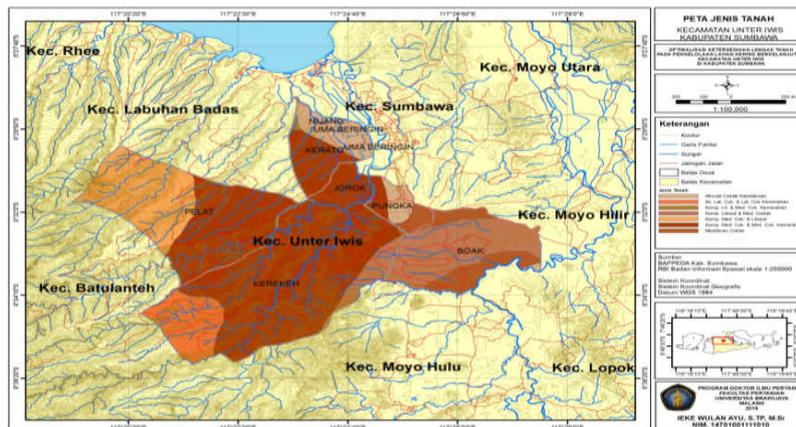


Figure 1 – Soil types in the research location

Water balance calculations are performed using the Thornthwaite-Mather method (regional water balance) (Thornthwaite & Mather, 1957) and CROPWAT 8.0 model (water balance) (FAO, . Data for regional water balance input is rainfall calculated using the "USDA soil conservation service method" method. Estimates of evapotranspiration were analyzed using FAO-Penman Monteith on the Cropwat 8.0 model and the maximum soil capacity to retain water. The output of water balance is in the form of ground water deposits, surplus and deficit every month. Whereas CROPWAT 8.0 requires data on climate data input (maximum and minimum temperature, humidity, wind speed, and solar radiation), plant data, and soil data (water retention capacity, infiltration, and initial depletion). The capacity to hold water is converted into a thick form of water ( $\text{mm m}^{-1}$ ). The analysis of crop water demand (ETc) was done by comparing the value of AT with ETc calculated by equation 1 in each scenario of climate change (Table 2). The simulation of climate change impacts is based on global climate data for 2016, 2046, 2076, and 2106 using scenarios of temperature increase ( $\Delta T$ ) and rainfall change ( $\Delta CH$ ) (Table 3).

ETc is defined as the amount of water lost in each plant growth phase (Kc) through evapotranspiration (ETo). If  $AT > ETc$ , then the water requirement is fulfilled but if  $AT < ETc$

then the plant will lack water in its growth phase.  $ET_c$  has different values because it refers to the climatic conditions of the region.

$$ET_c = K_c \times ET_o \quad (1)$$

Table 2 – Soil texture and Water Holding Capacity of soil

Location	Soil Texture	Water holding capacity ( $\text{mm m}^{-1}$ )	
		Field moisture capacity	Available water
Pungka village	Clay (Heavy soil)	1.420	310
Pelat village	Loam (Medium soil)	1.180	770

Table 3 – Scenario of climate change

Scenario	Year	Year $\Delta T$ ( $^{\circ}\text{C}$ )	$\Delta\text{CH}$ (%)
C0	Actual (2004-2016)	0	0
C1	2046	2	-10
C2	2046	2	-5
C3	2046	2	5
C4	2046	2	10
C5	2076	4	-10
C6	2076	4	-5
C7	2076	4	5
C8	2076	4	10
C9	2106	6	-10
C10	2106	6	-5
C11	2106	6	5
C12	2106	6	10

These calculations are used in general to estimate the plant's water requirements in optimal management and environmental conditions. But in the calculation of actual evapotranspiration, the stress coefficient ( $K_s$ ) is involved because it is not always in optimal condition.

$$ET_a = K_s \times ET_c \quad (2)$$

Where:  $K_s$  is a function of total water available (TAW), water is available without causing plant stress (RAW) and depletion in the root zone ( $D_r$ ).  $K_s$  is 0-1, if  $K_s$  value 1 indicates the absence of water stress so that  $ET_a$  value is equal to  $ET_c$ .

$$K_s = \frac{TAW - D_r}{TAW - RAW} = \frac{TAW - D_r}{(1-p)TAW} \quad (3)$$

The response of plants to the condition of water shortage is indicated by the increasing potential of crop yield (Yes). Each plant has a different yield reduction factor ( $K_y$ ) (Equation 4).

$$\left(1 - \frac{Y_a}{Y_m}\right) = K_y \left(\frac{ET_a}{ET_c}\right) \quad (4)$$

## RESULTS AND DISCUSSION

*Impacts of El Nino on the trend of temperature and rainfall.* During the 2004-2016 timeframe, there has been an upward trend in temperature in Sumbawa Regency (Figure 1). The average air temperature increased by  $1^{\circ}\text{C}$ - $2^{\circ}\text{C}$  in the last three years compared to normal conditions. Further the heating of air affects the spatial and seasonal distribution of rain and quantity of rainfall (Xu et al., 2009; Reuter et al., 2013; Rana et al., 2014; Trenberth et al., 2014; Loo, Billa and Singh, 2015; Szwed, 2015; Leng, Tang and Rayburg, 2015).

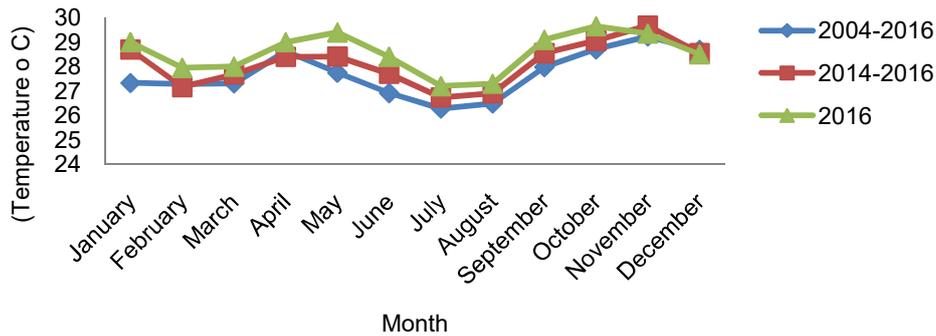


Figure 1 – Trend of temperature change in the Sumbawa Regency

Results showed that overall average rain fall in Sumbawa regency has low number in the period of 2004-2016 (13 years), 2014-2016 (three years), and 2016 (last year). In the period of 2004-2016, the average rainfall in Sumbawa Regency was 1,296 mm year<sup>-1</sup> with effective rainfall that is 911.5 mm year<sup>-1</sup>. Very low annual rainfall of less than 2,000 - <1,000 mm year<sup>-1</sup>, with 7-8 months dry months characteristic of dry climate dry land in the West Nusa Tenggara Province (Las et al. 2014).

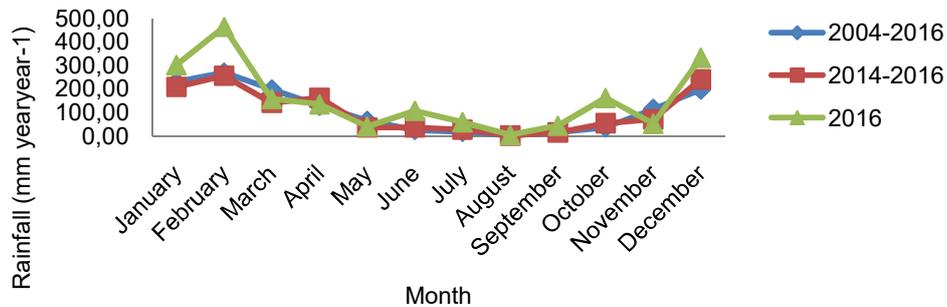


Figure 2 – Trend of rainfall change in the Sumbawa Regency

During the period 2004-2016, rainfall fluctuations were marked by the up and downs of precipitation and the shifting of months without rain. Low rainfall tendency occurs from May to September, and August is the peak of low rainfall. Rainfall tends to increase in October, and is the month of transition from the dry season to the rainy season. In November most of the research area entered the rainy season, and the accumulation of rainfall increased from December to March. The ups and downs of rain show the difference between rainy and dry seasons. In April is the end of the rainy season, so the accumulation of rainfall is reduced compared to the previous month, due to enter the dry season. Increased rainfall starts from November to February. The rainy season lasts from November to March, and summer runs from May to September, while October is the month of transition (Loo et al., 2015).

The period of 2010 is the year with the highest rainfall, which is 1818,4 mm year<sup>-1</sup>, and the period of 2004 is the period with the lowest average rainfall is 820, 6 mm year<sup>-1</sup>, with three months without rain in July, August, and September. The month without rain occurred in 2011-2012, namely from June to August which was marked by the decrease in the average rainfall intensity from 1631,1 mm year<sup>-1</sup> in 2011 to 1303,8 mm year<sup>-1</sup> in 2012. The shifting months without the rainfall that occurred in 2004 and 2011 indicates that a month without rain occurs early with a longer time of 4 months. In the 2014-2016 period (the last three years) shows the average amount of rainfall has increased, namely 907 mm in the first year (2014) to 1,860 mm in the first year (2016). High rainfall intensity in 2016, marked by rainfall throughout the year, with low rainfall occurring in August, and the incidence of high rainfall intensity, in 2016 occurred in 2010 in the period 2004-2016. Higher rainfall will affect higher surface runoff and impact on the decrease in groundwater filling rate (Trenberth,

2011). The rise and fall of rainfall in an area is the impact of global temperature changes (IPCC, 2014; Suryadi et al., 2017), which has implications for changes in climatic elements such as rainfall, temperature and other climatic elements (Bhatt and Mall, 2015). The EL Nino (2009) and La Nina (2010) phenomena have an impact on the distribution and value of rainfall intensity in Indonesian territory (Zubaidah, 2012). The decline in rice productivity in 2013 was caused by the El Nino phenomenon with a long dry season and continued until 2016 in Sumbawa Regency (BPS of Sumbawa Regency, 2016).

Changes in air temperature will affect rainfall. Reduced rainfall and increased temperatures will affect the availability of water through the mechanism of evapotranspiration. The results showed that the evapotranspiration value fluctuated around 96, 1 mm. The main climate variables affecting ETo in Sumbawa District are temperature, wind speed, and solar radiation (Ayu et al., 2018<sup>d</sup>).

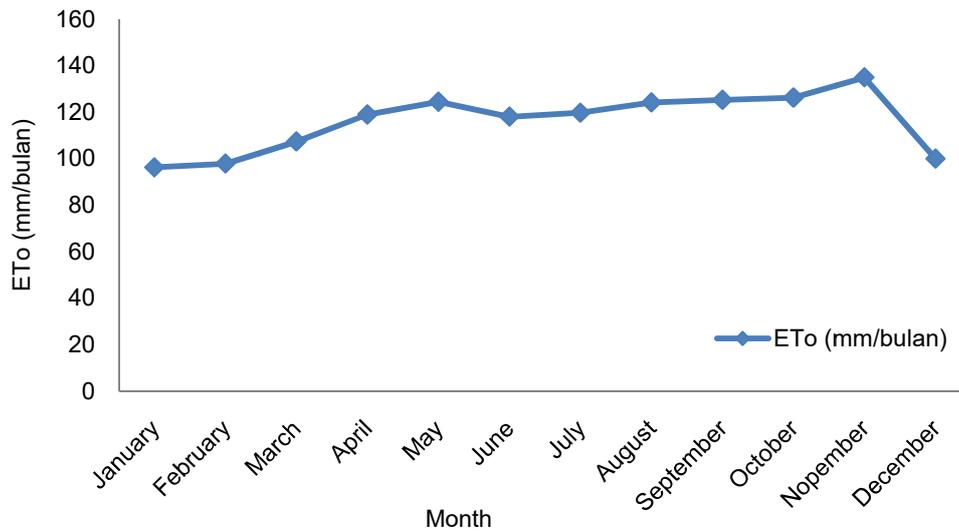
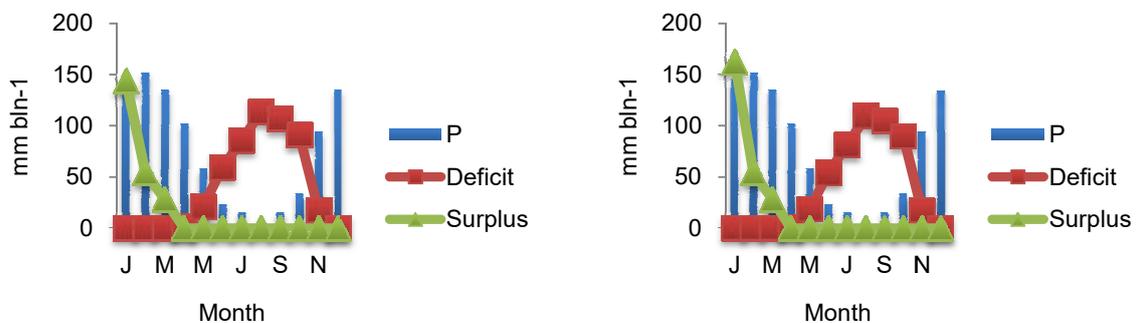


Figure 3 – Evapotranspiration values estimated by the Penman-Monteith method

**Water balance of the Region.** Rainfall and evapotranspiration can provide important information about the estimated amount of water that can be obtained to determine the period of surplus or water deficit in the field (Ayu et al., 2013<sup>e</sup>). Calculations of the Thornthwaite-Mather water balance produce the value of surplus water and deficit and water stored in the soil (ST). Changes in temperature and precipitation affect the amount of water (Machiwal et al., 2016; Ghanem et al., 2011; Muchuru et al., 2016). The results of water balance analysis in Pungka Village and Pelat Village showed that the surplus period occurred for 3 months ie in January-March, and deficit period occurred during 8 months ie in April-November (Figure 4).



a. Water balance in the Pungka village

b. Water balance in the Pelat village

Figure 4 – Water balance in the Research locations

Pelat Village is a village that has a surplus value of 244,2 mm year<sup>-1</sup> and a deficit of 475,59 mm year<sup>-1</sup> high compared to Pungka Village with a surplus value (225,5 mm year<sup>-1</sup>) and deficit (494,32 mm year<sup>-1</sup>). The highest surplus in Desa Pelat of 162.0 mm year<sup>-1</sup> and Desa Pungka for 143,2 mm year<sup>-1</sup> occurred in January. The lowest surplus in Pelat and Pungka Village was 27,9 mm year<sup>-1</sup> in March. The high surplus value shows a low water storage (ST), the analysis results show that the ST value in Pungka Village is 761,32 mm year<sup>-1</sup> with STo value, which is 130 cm lower than ST in Desa Pelat which reaches 898,934 mm year<sup>-1</sup> with STo value of 150 cm. The high deficit value compared to surplus is influenced by climate in Sumbawa Regency which is classified as dry with low rainfall. The deficit occurs as a result of changes in water reserves that are used for evapotranspiration and the absence of rainwater supply. The highest deficit in Desa Pelat was 109,62 mm year<sup>-1</sup>, and Pungka Village 113,33 mm year<sup>-1</sup> occurred in August. The high deficit value of Pungka Village is influenced by the amount of soil moisture retained (STo) equal to the capacity of soil in storing water (WHC), and the smaller the STo value indicates the greater the drought index. The results of the research Faqih et al. (2016) explains that the projected annual rainfall changes in the future will decrease rainfall in the southern parts of Sumatra and Kalimantan, most of Java, Bali and Nusa Tenggara.

Water deficit in research area is influenced by physical properties of soil, one of which is texture. The results showed that the soil texture in Pungka village tended to be clayey and had a high ability to retain water compared to clay textured soil in Desa Pelat. Soil texture is one of the soil physics characteristics that affect the availability of soil moisture (Adiputra et al., 2016), one of the important factors affecting soil capacity to retain water as well as various physical and chemical properties of other soils (Arsyad, 2010).

*Impacts of climate change on the water balance.* Changes in temperature and decreased availability of rainfall affect water availability. The projected impacts of climate change on the availability of soil moisture by setting scenarios in the study (2004-2016, 2046, 2076, and 2106) show that the more extreme scenarios used, the greater the increase in water supply deficits. Climate change will affect the precipitation, evapotranspiration and water balance (Garner et al., 2017, Kirby et al., 2016).

The results show a comparison between conditions 0 (actual) and other scenarios (Table 4). The difference from the temperature increase of 2-6° C caused the increase of evapotranspiration of 3,91-4,24% so that it impacted the decreasing of surplus period at study location. The deficit period shift occurs only in scenarios accompanied by 10% rainfall (C1, C5, and C9) at both locations. Shifts occur in May and October which are transitional periods. Temperature rise causes higher evapotranspiration, and will increase the demand for water for irrigation (Wang et al., 2012).

Table 4 – Impacts of climate change on the water Surplus and water Deficit

Scenario	Pungka village				Pelat village			
	Deficit		Surplus		Deficit		Surplus	
	mm	months	mm	months	mm	months	mm	months
C0	494,32	8	225,5	3	475,59	8	244,2	3
C1	566,17	8	199,1	2	547,00	8	210,3	2
C2	551,74	8	211,2	3	532,65	8	230,2	3
C3	523,11	8	220,3	3	504,19	8	239,2	3
C4	509,21	8	223,7	3	490,38	8	242,5	3
C5	612,03	8	187,0	2	597,47	8	201,6	2
C6	597,58	8	202,1	3	578,28	8	221,4	3
C7	568,90	8	211,2	3	549,73	8	230,4	3
C8	523,11	8	220,3	3	504,19	8	239,2	3
C9	647,40	8	184,3	2	627,91	8	203,8	2
C10	632,94	8	194,4	3	613,50	8	213,9	3
C11	604,23	8	203,6	3	584,90	8	223,0	3
C12	590,28	8	187,6	3	571,01	8	206,9	3

Changes in the duration of the surplus months cause groundwater savings to fluctuate, which tends to decrease. Overall ST value decreased compared to actual condition in all

climate change scenarios except in scenario C4 ( $\Delta T = + 2^{\circ} \text{C}$ ;  $\Delta \text{CH} = +10\%$ ) in Pungka Village which increased by  $761,699 \text{ mm year}^{-1}$  from actual condition that is  $761,315 \text{ mm year}^{-1}$ . This is related to the increase in rainfall that goes further beyond potential evapotranspiration, and soil texture conditions in Pungka Village, which is dominated by clay fraction, so the ability to hold water is higher than in Pelat Village. ST decreases in all sites ranged from  $724, 521 \text{ mm year}^{-1}$ - $898, 473 \text{ mm year}^{-1}$  compared to actual conditions. The highest ST drop in all areas occurred in scenario C9 ( $\Delta T = + 6^{\circ} \text{C}$ ;  $\Delta \text{CH} = -10\%$ ) of  $696,196$  for Pungka Village and  $821,14 \text{ mm year}^{-1}$  for Pelat Village.

*Effects of climate change on the maize water requirement.* Simulation is done in areas experiencing a decrease in rainfall, there is the possibility of increased opportunities for drought. Conversely, in areas that tend to increase rainfall, it is likely that there will be frequencies and intensity of extreme rainfall. Climate simulation is one way to know climate projection ahead by considering various things that affect climate conditions.

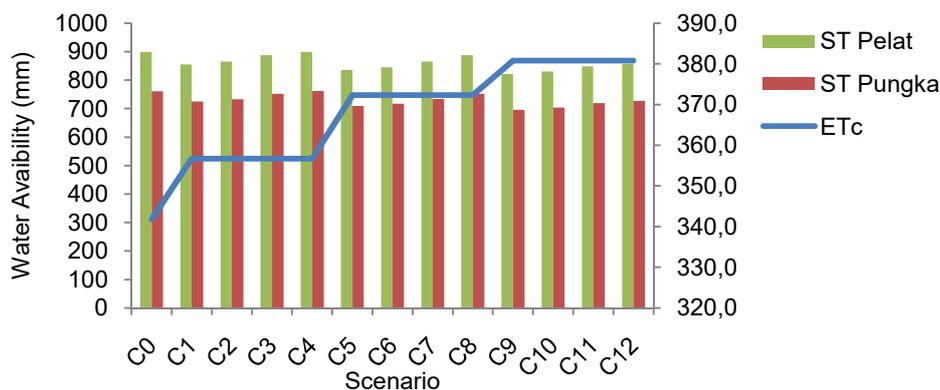


Figure 4 – Water availability in the location of Pungka and Pelat villages

The result of climate projection analysis predicts that in 2106 an increase in evapotranspiration and demand for crop water due to global warming will reduce water supply surplus and will significantly increase demand for irrigation water during periods of plant growth in the dry season. Selection of the right planting time according to the condition of water availability can avoid from the high yield decline (Ayu et al., 2013<sup>e</sup>). Increasing the efficiency of water use of maize crops will effectively reduce total water demand and improve the resilience of agricultural systems to climate change (Garcia, Guerra and Hoogenboom, 2009; Hernández et al., 2015; Greaves and Wang, 2017; Mo et al., 2017). Changes in the value of evapotranspiration, driven by variability in temperature, sun, wind, vapor pressure (Ayu et al., 2018), rainfall dynamics play an important role in the variation of a region's climate balance (Právělie et al., 2014; Zhao and Zhao, 2014). The results show that the impacts of climate change have been seen with increasing water demand due to rising temperatures in the C1-C12 scenario.

Increasing water demand is increasing especially at the increase of temperature accompanied by decreasing of rainfall. Climate change affects changes in patterns and intensity of rainfall (Bates et al., 2008). Tables 5 and 6 show that an increase in temperature of  $2^{\circ} - 6^{\circ} \text{C}$  increases the crop water requirement from actual conditions, as indicated by higher ETc and ETa values. Under conditions below the maximum soil water deficit, plants have already begun the difficulty in absorbing water. In such circumstances some of the plant stomata close down, resulting in an actual evapotranspiration of magnitude under potential evapotranspiration. If this condition often occurs, crop production can decrease (Wahjunie et al., 2008). Djaman et al. (2018) argue that plant evapotranspiration (ETa) is an important parameter in hydrology, and plays a key role in designing and managing water in rainfed agriculture, which is estimated by indirect methods using reference to plant evapotranspiration (ETo) and crop coefficient.

The realization of cultivation done in dry months has a risk to crop yield. Increased water demand has an impact on water availability that is not sufficient for crop water

requirements, especially when entering the dry month as indicated by the reduction of yields at two sites. Adequate available water for the growth and production of corn is 30% available water (maximum soil water deficit), the amount of water stored in the soil that can be immediately available to plants without stress, and for sweet corn above 50% (Allen et al., 1998; Shaxson and Barber, 2003).

Table 5 – Impacts of climate change on the soil water available and potential reduction of maize yield during the rainy season in the Pungka village

Scenario	Planting date: 11 <sup>th</sup> November			Planting date: 11th Maret		
	Harvesting date: 28 <sup>th</sup> Februari			Harvesting date: 6th Juni		
	Season: Rainy (wet)			Season: Dry		
	Etc (mm)	ETa (mm)	Crop yield reduction (%)	Etc (mm)	Eta (mm)	Crop yield reduction (%)
C1	292,8	291,2	0,0	356,7	347,3	2,7
C2	292,8	291,2	0,0	356,7	349,9	1,8
C3	292,8	291,2	0,0	356,7	354,9	0,0
C4	292,8	291,2	0,0	356,7	354,9	0,0
C5	306,4	304,7	0,0	372,3	354,4	5,4
C6	306,4	304,7	0,0	372,3	357,2	4,5
C7	306,4	304,7	0,0	372,3	365,4	1,7
C8	306,4	304,7	0,0	372,3	368,7	0,6
C9	309,5	307,8	0,0	380,8	359,0	6,6
C10	309,5	307,8	0,0	380,8	361,9	5,6
C11	309,5	307,8	0,0	380,8	370,6	2,7
C12	309,5	307,8	0,0	380,8	374,3	1,5

Note: ETc= Crop Evapotranspiration; ETa= actual Evapotranspiration; RP= Reduction of crop yield, Soil type = Clay soil (heavy-soil).

Table 6 – Impacts of climate change on the soil water available and potential reduction of maize yield during the rainy season in the Pelat village

Skenario	Planting date: 11th November			Planting date: 11th March		
	Harvesting date: 28th February			Harvesting date: 6 <sup>th</sup> June		
	Season: Rainy (wet)			Season: Dry		
	Etc (mm)	ETa (mm)	Crop yield reduction (%)	Etc (mm)	Eta (mm)	Crop yield reduction (%)
C1	292,8	291,2	0,0	356,7	354,9	16,4
C2	292,8	291,2	0,0	356,7	311,8	15,2
C3	292,8	291,2	0,0	356,7	322,3	11,5
C4	292,8	291,2	0,0	356,7	327,3	9,70
C5	306,4	304,7	0,0	372,3	312,7	19,5
C6	306,4	304,7	0,0	372,3	316,3	18,3
C7	306,4	304,7	0,0	372,3	327,0	14,7
C8	306,4	304,7	0,0	372,3	332,2	12,9
C9	309,5	307,8	0,0	380,8	316,3	20,7
C10	309,5	307,8	0,0	380,8	319,8	19,5
C11	309,5	307,8	0,0	380,8	330,6	15,9
C12	309,5	307,8	0,0	380,8	335,9	14,2

Note: ETc= Crop Evapotranspiration; ETa= actual Evapotranspiration; RP= Reduction of crop yield, Soil type = Loam (Medium-soil).

The reduction of the dry season results in the Plates location was a high reduction in yield compared to the reduction of the Pungka location. Different conditions are shown by the scenario of a temperature increase of 2° C with 5-10% rainfall in Pungka Village which has clay textured soil showing a reduction in yield of 0,0%, compared to the same scenario in Desa Pelat with clay textured soil showing a reduction in yield of 11,5-9,70%. Increased temperatures of 4°C-6 °C along with a decrease in rainfall of 5-10% can cause water availability during dry months to be deficit, and can not be met by high rainfall. Large rains can cause water movement only through the macro pores without penetrating the soil matrix (Sugita et al., 2004). The influence of rain on the movement and distribution of water in the soil is also very dependent on soil pore characteristics in relation to water content before rain and the rate of soil infiltration (Shipitalo et al., 1990). Infiltration of the study area was

influenced by soil type, soil organic matter, porosity, bulk density, specific gravity and initial soil moisture content (Ayu et al., 2013<sup>f</sup>).

Climate change will have an impact on plant growth and the amount of water needed by plants to grow well (Ayu et al., 2013<sup>g</sup>); Mehta et al., 2013; Saadi et al., 2015; Wang et al., 2016). The results of Ayu et al. (2018<sup>e</sup>) explained that the realization of cultivation in May may increase the risk of crop yield reduction, caused by decreased rainfall during period of plant growth. Changes in crop water requirements (CWR) and the needs of crop irrigation under climate change conditions can provide a theoretical basis for the design of irrigation water conservation facilities and management of agricultural water resources (Zhou et al., 2017). In efforts to reduce or eliminate the impacts of climate change on crop production, Okonya et al. (2013) and Thuy et al. (2014) suggest crop diversification, harvest rotation, and application of production-enhancing technologies. Soil management using mulch can increase rainwater storage in the soil (Wanga et al., 2018) and the availability of soil moisture at a depth of 20-60 cm, and increase plant growth and yield (Cook, Valdes and Lee, 2006; Chakraborty et al. 2008; Bana et al., 2013).

## CONCLUSION

Low rainfall trends occur in May to September, and August is the peak of low rainfall. Water surplus in the Pelat village is a maximum of 244, 2 mm year<sup>-1</sup> and water deficit of 475.59 mm year<sup>-1</sup>. Increasing the temperature of 2-6°C causes an increase in evapotranspiration of 3,9-4,24%, thus impacting the reduced water surplus period at the study site. The shift in the period of water deficit only occurs in a scenario of 10% rain reduction (C1, C5, and C9). A temperature increase of 4-6°C and is accompanied by a decrease in 5-10% rainfall, resulting in water deficit during dry months, and not yet fulfilled despite high rainfall. Yield reduction of maize in the Pelat Village is highest of 20,7% in the scenario of C9 ( $\Delta T + 6^\circ\text{C}$  and  $\Delta CH - 10\%$ ).

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## **DO NEW VARIETIES OF MAIZE AND KENAF COULD IMPROVE GROWTH AND PRODUCTION WHEN CULTIVATED BY INTERCROPPING IN SEASONAL FLOODED AREA OF BONOROWO LAND?**

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### **ABSTRACT**

Intercropping has an added farming income ratio. Corn as a food source after rice and soybean, is needed by rural communities. This study aims to determine the extent of the production enhancement in the use of maize and kenaf new varieties cultivated using intercropping pattern in seasonal flooded area. Kenaf (*Hibiscus cannabinus* L.) is a natural fiber producing plant able to grow in seasonal flooded area. The intercropping combination of maize and kenaf planting is highly anticipated by farmers. Both commodities are expected to increase farmer revenue/income. The research was conducted in Rowomarto village, Patianrowo sub-district, Nganjuk district in 2015/2016 planting season. The treatments were arranged in a Randomized Block Design that was repeated four times. There were 7 treatments consisting of 3 intercropping of maize and kenaf, and 3 monoculture of kenaf (Kr.9, Kr.11, Kr.12), and 1 monoculture treatment of hybrid corn Bisi 18. Plot size was 9.6 m x 15 m with corn planting distance of 80 cm x 30 cm and kenaf planting distance of 30 cm x 10 cm, one plant per planting hole. The results showed that intercropping of maize and kenaf from the treatment using Bisi 18 hybrid corn + Kr.9; Bisi 18 hybrid corn + kenaf Kr.11; and Bisi 18 hybrid corn + kenaf Kr.12 each gave a farm income ratio of Rp 32.650.000, - / ha Rp. 30,100,000, - / ha and Rp. 30.450.000 / ha respectively. The land equivalent ratio is greater than 1 which means that the area use of intercropping system is efficient.

### **KEY WORDS**

Maize, kenaf, intercropping, flooded area.

Kenaf (*Hibiscus cannabinus* L.) is a fiber-producing plant that can be used as raw material for gunny sack, dash board, door trim, fiber drain, geotextile, pulp and an eco-friendly household handicraft. Marginal land (such as seasonal flooded area) that has not been cultivated as agricultural objects is quite wide, about 4.3 million ha (Puslitanah, 2012). Kenaf is suitable planted in marginal land such as seasonal flooded area or known as bonorowo land. Seasonal flooded area is a land that has an abundant amount of water during rainy season and vice versa the water shrinks during the dry season, even there can be no water at all. In such conditions kenaf is suitable to be cultivated because kenaf has the ability to survive in a flooded area. This happens because kenaf brings out its adventitious roots when there is a puddle. The adventitious root can take O<sub>2</sub> in water, so that the plant photosynthesis process continues even in a waterlogged or flooded conditions.

There are 3 types of seasonal flooded area, namely the seasonal flooded area with very high flooded (flooded reaching > 1 m), seasonal flooded area with medium flooded (flooded reaches 0.5 - 1.00 m) and seasonal flooded area with shallow flooded (flooded reach < 0.50 m). Of the three types of seasonal flooded area, the most ideal to be planted by kenaf are the seasonal flooded area with medium and shallow flooded.

The cropping pattern in seasonal flooded area is planted rice once a year, so the pattern is rice plant – fallow – fallow (Sastrosupadi, 2014). An effort to empower the land is using kenaf planting methods with the hope to eliminate the fallow time that have been happening. In order to support food security, especially corn and fiber availability, the intercropping of maize and kenaf is considered to be a real contribution. In addition, the intercropping pattern of maize and kenaf provides an increase in rural areas farm income. Cultivation using intercropping pattern has benefits, both technically and economically.

Intercropping pattern cultivation means that there is a difference between the use of space, different leaf canopy forms, an unequal rooting system so that both plants can use the environment optimally (Thayamini, et al., 2010). In addition to be more productive land use, the utilization of available natural resources such as water, nutrients, labor and time is more efficient. Economically, it can increase farm income, because it gets double result from two cultivated commodities. According to Arifin et al.,(2010), the lack of phosphate elements will cause the plants unable to absorb other nutrients. In general, the phosphate function is as metabolites constituent, activators, cofactors and physiologic.

Plants require a certain amount of potassium from the soil which absorbed in the form of  $K^+$  ions. In soils rich in potassium, the plant is actually able to absorb more than the required amount (Nursyamsi, 2012). Potassium as a catalyst has an important role, especially in the reshuffling of proteins and amino acids. In addition, this element also has the task of dismantling and preparing carbohydrates, so that when the crop lacks of potassium it will inhibit photosynthesis and respiration.

This study aims to determine the extent of production enhancement in the use of maize and kenaf new varieties cultivated using intercropping pattern in seasonal flooded area.

### MATERIALS AND METHODS OF RESEARCH

The study was conducted in seasonal flooded area (bonorowo land) precisely in Rawomarto village, Patianrowo subdistrict, Nganjuk district during 2015/2016 planting season. Entisol (Aluvial) is soil type from sedimentary streams in plainly sunken areas (SuprptoHardjo et al., 1960). Climatic type in the experimental area is D3 climate (6-7 month of wet season and 5-6 month dry season) (Oldeman et. al., 1980).

Planting materials used is kenaf new varieties: Kr.9, Kr. 11 and Kr.12 and corns grown is Bisi 18 new varieties. The study was arranged in Randomized Block Design (RAK) where each treatment was repeated four times. There are 7 treatments which consists of: three intercropping of maize and kenaf, three monoculture of kenaf and one monoculture of maize. Plot size was 9.6 m x 15 m. Corn planting distance of 80 cm x 30 cm with one plant per planting hole. The corn is planted first then after it is 15 days old, then continued by planting kenaf. The kenaf planting distance is 30 cm x 10 cm, after grow, it is thinning by leaving 1 plant per hole.

Table 1 – Soil analysis result of Rawomarto area, Patianrowo Nganjuk

Land Characteristic	Value	Categories
pH (H <sub>2</sub> O)	6,30	Low
KCl	5,20	Slightly acidic
N-total (%)	0,082	Very low
C-total (%)	0,515	Very low
C/N-ratio	6,280	Low
P <sub>2</sub> O <sub>5</sub> (Olsen) ppm	11,00	Low
Cation Arrangement (me/100 g)		
K	0,34	Medium
Na	0,90	High
Ca	7,20	Medium
Mg	1,08	Medium
Cation Exchange Capacity (me/100g)	27,32	High
Base saturation (%)	38	Medium
Texture		
Clay	23	
Dust	24	Sandy clay
Sand	53	

Based on NKL Formulation:  $X_i/Y_i$  (Hichach and Mecollu, 1987; Rifai et al., 2014), where:  $X_1$  = Intercropping Production,  $Y_1$  = Monoculture Production.

Plant maintenance is carried out to control weeds or disturbing plants. In wet season weeds that are commonly encountered are nut sedge, Bermuda grass, reeds and goatweed. The plant maintenance is done manually at the time of weeds grow rapidly around the age of

10-15 days after maize being planted. 6 times water provision during plant growth. Water is obtained from a groundwater source that is pumped by a diesel pump machine. *Helicoverpa armigera* caterpillar pests that attack corn and kenaf are controlled with deltamethrin 0.05-0.1 g/l (2-4 ml Decis 2.5 EC/liter of water). In growth period pests attack is Empoasca sp. or leaf suction pest, this could be controlled using monokrotofos 0.3-0.6 g/l (2-4 ml Gusadrin 154 WSc./liter of water). Stem blight or Fusarium disease should be sprayed with 0.19 g/l Kaarbendazim and mankozeb 2.21 g/l (3 g Delsene 200 MX/liter of water). Inorganic fertilizers administered to kenaf at a dose of 120 kg N + 18 kg P<sub>2</sub>O<sub>5</sub> + 30 kg K<sub>2</sub>O which equivalent to 300 kg of urea + 50 kg SP 36 + 50 kg KCl per hectare. The fertilizer dose for corn is 80 kg N + 36 kg SP-36 P<sub>2</sub>O<sub>5</sub> + 30 kg K<sub>2</sub>O which is equivalent to 200 kg Urea + 100 kg SP-36 + + 50 kg KCl/hectare. Fertilization is done by creating a hole near the plant using tugal (ditugal), and then covered with soil.

Parameters observed included plant height, stem diameter and dry fiber yields for kenaf. While for corn the parameters observed included plant height, corn cob and dry corn kernels. It also evaluated farm income and land equivalent ratio. The data from soil analysis at research location are presented in Table 1.

## RESULTS AND DISCUSSION

Based on the variance analysis result it is showed that intercropping pattern of corn and kenaf had significant effect on plant height and kenaf stem diameter at 60 days and 120 days after planting (Table 2).

Table 2 – Intercropping effect of maize and kenaf on kenaf plant height growth

Treatment	Kenaf Plant Height, cm	
	Plant age 60 DAP	Plant age 120 DAP
Intercropping Maize and Kenaf		
Kr.9	119,60 a	225,30 a
Kr.11	102,20 a	218,20 a
Kr.12	105,30 a	216,90 a
Monoculture Kenaf		
Kr. 9	190,20 b	310,10 b
Kr.11	187,30 b	301,90 b
Kr. 12	188,30 b	304,20 b

The numbers followed by the same letter in the same column are not significantly different in DRMT test (5%).

The plant height growth for kenaf which intercropped with maize is significantly different compared with monoculture kenaf, either at 60 or 120 days after planting. This occurs because the intercropping pattern of maize and kenaf causes the crop to compete in obtaining nutrients, water, CO<sub>2</sub>, spatial and light, so that their growth rate is interrupted. In contrast to the monoculture cropping system, where kenaf plant height growth rate continues to progress without any obstacles. The average height of kenaf plants intercropped using three new varieties that were observed at 120 days after planting was only about 220 cm while the height of monoculture kenaf plants could reach 3.05 cm. According to Santoso et al., (2003) kenaf plant weakness, circular growth is less optimal than the plant height growth. According to Mibar (1997) sunlight as a source of energy for plants play a role in chlorophyll photosynthesis process. Furthermore it was stated that the results obtained from photosynthesis process are carbohydrates that will be distributed throughout the plant organs for growth.

Overall variety analysis data for kenaf stem diameter growth using intercropping pattern is presented in Table 3.

The kenaf stem diameter growth which is intercropped with maize has experience growth restrictions, either at 60 or 120 day after planting. But in monoculture kenaf pattern, the stem diameter growth is not disturbed. This shows that the intercropping pattern of maize and kenaf experiencing a rather tight competition compared with monoculture kenaf pattern.

The variance analysis result shows that hybrid corn Bisi 18 which is intercropped with kenaf has not influence its growth, either height or corn cob length. More data are presented in Table 4.

Table 3 – Intercropping effect of maize and kenaf on kenaf stem diameter growth

Treatment	Kenaf Stem Diameter, mm	
	Age 60 DAP	Age 120 DAP
Intercropping Maize and Kenaf		
Kr.9	119,60 a	225,30 a
Kr.11	102,20 a	218,20 a
Kr.12	105,30 a	216,90 a
Monoculture Kenaf		
Kr.9	190,20 b	310,10 b
Kr.11	187,30 b	301,90 b
Kr.12	188,30 b	304,20 b

The numbers followed by the same letter in the same column are not significantly different in DRMT test (5%).

Table 4 – Intercropping effect of maize and kenaf on P7 hybrid corn growth parameters

Treatment	Maize Height, cm	Cob Length, cm
Intercropping maize and kenaf		
Bisi 18 + Kr.9	272,10 a	19,60 a
Bisi 18 + Kr.11	271,00 a	19,40 a
Bisi 18 + Kr.12	271,60 a	18,90 a
Monoculture maize		
Bisi 18	271,80 a	19,80 a
BNT 5%	0,90	1,10

The numbers followed by the same letter in the same column are not significantly different in BNT test (5%).

Table 5 – Maize and kenaf Intercropping effect on results of dried corn kernels, dried kenaf fiber, farm income and Land Equivalent Ratio

Treatment	Dried Corn Kernels	Dried Kenaf Fiber	Farm Income Ratio	Land Equivalent Ratio
Intercropping maize and kenaf	ton/ha	ton/ha	Rp.	
Bisi 18 + Kr. 9	5,90	2,30	32.950.000	1,80
Bisi 18 + Kr. 11	5,70	2,00	30.100.000	1,64
Bisi 18 +Kr. 12	5,60	2,10	30.450.000	1,66
Monoculture Maize				
Bisi 18	6.10	-	18.300.000	1,00
Monoculture Kenaf				
Kr.9	-	3,50	22.750.000	
Kr.11	-	3,00	19.500.000	
Kr.12	-	3,40	22.100.000	

Description: Price of corn kernels Rp. 3.000, -/kg and the price of quality A dried kenaf fiber Rp, 6,500, -/kg.

Based on the observation parameters above, could be seen that there is no difference between monoculture pattern of maize and intercropping pattern of maize and kenaf in terms of height and cob length. This is due to the maize that planted first before kenaf plant, either using monoculture or intercropping pattern, so that the initial growth rate is not disturbed. Besides, it is suspected that hybrid corn Bisi 18 has a slightly erect leaf shape, that create a more efficient light penetration.

Maize is classified as a C4 plants that has a wide adaptability to growth and yield limiting factors. C4 plant leaves serves as photosynthesis result producer which is then distributed to all parts of the plant. In terms of environmental conditions, C4 plants have the advantages of adapting to various limitations such as lack of light, low rainfall and poor soil fertility (Haryanti et al., 2014)..

Data results of dried corn kernels, dried kenaf fiber, farm income and Land Equivalent Ratio are presented in Table 5.

From table 5 it can be seen that the farming income ratio of intercropping maize and kenaf shows the highest results compared to monoculture either maize or kenaf. So is the Land Equivalent Ratio. This is in line with Adeniyana et al., 2007 research result who argued that the intercropping pattern of maize and kenaf gives the highest LER.

### CONCLUSION

From the research can be concluded that intercropping pattern using maize and kenaf new varieties could increase farm income ratio when compared with monoculture system using only maize or kenaf. Farm income ratio of hybrid corn Bisi 18 + kenaf Kr.9; hybrid corn Bisi 18 + kenaf Kr.11; hybrid corn Bisi 18 + kenaf Kr.12, respectively Rp. 32.950.000, - / ha; Rp. 30.100.000, - / ha and Rp. 30.450.000, - / ha. Kenaf highest farm income ratio using monoculture system is obtained from Kr.9 with Rp. 22.750.000, - and an efficient land use with Land Equivalent Ratio is more than 1.

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## **CASSAVA PRICE COMPETITIVENESS AND CULTIVATION INTEREST**

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### **ABSTRACT**

This study aims to determine how much the price influence toward interest in the cultivation of cassava. The price is determined by price suitability with product quality and price competitiveness. Meanwhile, the interest in cassava cultivation determined by the level of happiness, production costs, and technology in Bangka Regency, Bangka Belitung Province, Indonesia. Respondents in this study were cassava farmers with a total of 153 respondents selected by using the snowball sampling technique. The analysis used in this research is descriptive statistics and multiple regressions. The result of the research is descriptively known that price conformity with product quality according to the respondents is considered unsuitable. Price competitiveness according to the respondents is relatively normal there are no price differences. In the indicators of interest in cultivation, the level of happiness and technology is responded to on a low scale, while production costs are met on a high scale. The knowledge of most cassava farmers in Bangka Regency regarding cassava cultivation should be questioned because they consider the quality of their products is the best, whereas the varieties of seedlings they plant are cassava seeds that have an average quality when compared with the Province of Borneo in Indonesia.

### **KEY WORDS**

Cassava price, cultivation interest in cassava, price competitiveness, cassava seed.

The non-oil and gas sector is one of the sources of state revenue in support of the Indonesian economy. The non-oil and gas sector, mainly from the agricultural sector, contributes substantially to the value of the national Gross Domestic Product (GDP) and the large volume of exports. According to the Indonesian Central Bureau of Statistics (BPS) in 2018, GDP value for agriculture sector over the past few years shows an increasing trend from 2014 to 2017. Given the significant contribution of the agricultural sector to the state, the agricultural sector plays an essential role as a source of state income and employment for the Indonesian government. Tuber commodity in the form of cassava is one of substitute food commodities of Indonesian people in the form of rice which is quite an essential role in supporting food security and raw materials of tapioca starch industry in Indonesia. Cassava has a reasonably good energy value when compared with rice, corn, sweet potatoes, and sorghum (Steyn et al., 2014). Where this cassava contains 60% water, 25-35% starch, and protein, minerals, fibre, calcium, and phosphate (Indonesian Ministry of Agriculture, 2016). The development of cassava productivity in Indonesia during 1980-2016 tended to increase, along with the increase of farmers' passion for growing excellent cassava varieties of Gajah.

The growth rate of cassava productivity in Indonesia increased by an average of 2.64% per year. The productivity of 97.51 quintals/ha in 1980 to 239.13 quintal/ha in 2016. The last five years productivity (2011-2016) increased by 2.85%, despite a decline in cassava production by 2015 compared to 2014 (Indonesian Ministry of Agriculture, 2016). Production of cassava in 2015 as much as 21.80 million tons of wet bulb decreased by 1.63 million tons (6.98%) compared to 2014. The decline in massive cassava production occurred in Java (East Java, Central Java, and West Java) as much as 1.15 million tons and outside of Java (North Sumatra, South Sulawesi, Maluku, Bangka Belitung Islands and West Nusa Tenggara) of 0.48 million tons. The decrease of cassava production occurred due to the decrease of the harvest area of 53.58 thousand hectares (34%) and productivity of 4.04 quintal / hectare (1.73%). Bangka Belitung Islands Province is one of the areas of cassava production centres outside Java Island, and Bangka Regency is one of the largest cassava

producing areas (520 ha) in the Bangka Belitung Islands. However, the area of harvest area is not in accordance with the production output in 2015 as much as 1314 tons compared to West Bangka Regency which has 12,910 tons of production with a harvest area of 505 ha. The condition of cassava production in Bangka Regency is contradictory or inversely proportional to the result of national cassava analysis, where the decrease of national cassava production in 2015 is due to the decrease of harvested area.

The phenomenon of cassava production in Bangka Regency is the basis of research to investigate the effect of price on the interest of cassava cultivation of farmers. Price is the sum of money that is billed on a product or service, or the sum of the value exchanged by customers to benefit from owning or using a product or service (Kotler and Keller, 2006; Kahneman & Tversky, 2013; Koller, Goedhart, & Wessels, 2010). In addition, the price is the amount of money paid for the goods and services, or the amount of value that the consumer redeems in order to benefit from owning or using goods or services (Kotler & Armstrong, 2013; Larivière et al., 2013; Mimouni-Chaabane, & Volle, 2010). Price depends solely on company policy, but also pay attention to various things. Low or expensive the price of a product or commodity depends on the specifications and advantages of the product itself are very relative in nature. According to Lamb et al. (2001), the price is what the consumer (buyer) must give to get a product. Price is the most flexible element among the four elements of the marketing mix (Nagle & Müller, 2017; Casadesus-Masanell & Ricart, 2010; Grant, 2016). In the sense that the price of cassava is the sum of all the values that farmers trade in order to benefit from having a cassava commodity. According to research that has been widely practised, prices have become a significant factor influencing farmers' choices in growing crops (Karlán et al., 2011; McGuirt et al., 2011; Chiputwa, Spielman, & Qaim, 2015; Fafchamps & Minten, 2012). The objective of this research is to identify the influence of price on the interest of cassava cultivation of farmers in Bangka Regency, Bangka Belitung Islands Province, Indonesia.

## METHODS OF RESEARCH

This study uses a descriptive approach. Descriptive statistical methods are statistics used to analyze data by way of describing or describing data that has been accumulated as is without intending to make conclusions that apply to the public or generalization (Sugiyono, 2016). Data collection through research instruments in the form of questionnaires. The data analysis begins with the use of descriptive statistics through the SPSS application to illustrate the profile of the respondents. After a depiction of the respondent's profile, an index number analysis is performed using the average value (Sekaran, U., & Bougie, R., 2016). This index number is applied to determine the tendency of respondent's answer about the variables studied (Ferdinand, 2014). The value of the index number in this study has an interval to make the result conclusion; the interval can be seen in table 1 below:

Table 1 – Interval scale

No.	Interval Scale	Information
1.	1,00 – 1,80	Very low
2.	1,81 – 2,60	low
3.	2,61 – 3,40	Medium
4.	3,41 – 4,20	High
5.	4,21 – 5,00	Very high

Source: Adapted from Ferdinand (2014)

Interview method is also conducted by researchers to sharpen the results of the study. Respondents in this study were cassava farmers in Bangka Regency, Bangka Belitung Province, Indonesia with a total of 153 respondents selected by using the snowball sampling technique.

## RESULTS OF STUDY

This descriptive statistic is a statistical test used to find out the general description of cassava farmers in Bangka Regency. The following descriptive statistic test results can be seen in the following tables:

Table 2 – Profile of respondents

		Frequency	Percent
Gender	Male	85	55.6
	Female	68	44.4
	Total	153	100.0
Age	< 20 years	6	3.9
	21-30 years	31	20.3
	31-40 years	59	38.6
	> 41 years	57	37.3
	Total	153	100.0
Level of Education	High School	146	95.4
	Diploma	4	2.6
	Bachelor	3	2
	Master-Doctor	0	0
	Total	153	100.0

Source: Output SPSS.

Based on Table 2, it is seen that most respondents have male gender (55.6%). While the age of the respondents was 31-40 years old (38.6%) and at the level of education, most of the respondents had a high school education (95.4%). From the above data obtained that the farmers in Bangka Regency are still in a productive age with the level of education is still relatively low. Low levels of education will be directly related to technological factors. Where technology is one of the indicators of interest to cultivate cassava. With low education will lead to a lack of knowledge about good and proper cassava management procedures so as to improve production output. The above statement is consistent with the results of interviews with various village heads from each district in Bangka Regency; they talked about the lack of application of the latest technology by cassava farmers when compared to Kalimantan (Borneo) and Lampung provinces in Indonesia. Lack of application of technology causes the production of cassava each period continues to decline and eventually the cassava farmers only consider the cultivation of cassava as a complement to other cultivation plants such as white pepper plants that the people of Bangka Belitung have been accustomed to planting from the colonial era to the present.

In the index number analysis, there are several interval criteria in deciding the average value obtained. These intervals are seen in table 3 below:

Table 3 – Price indicators

Frequency Item	Answer					N	Total Score	Mean Score	Conclusion
	Strongly Agree (5)	Agree (4)	Less Agree (3)	Not Agree (2)	Strongly Not Agree (1)				
X <sub>1</sub>	2	12	20	105	14	153	342	2.23	Low
X <sub>2</sub>	31	98	22	2	0	153	617	4.03	High

Source: Data processed by researchers.

Based on the above price indicator value, it can be seen that the average value of price conformance indicator with product quality (X<sub>1</sub>) has a value of 2.33 and the average indicator value of price competitiveness (X<sub>2</sub>) is 4.03. The average value of the price conformance indicator is included in the low category. It proves that the price offered by the middlemen and the factory is not very much in line with the expectations of the cassava farmers in Bangka Regency. While the price competitiveness indicator included in the high category, this is because the offering price of each middleman and factory is relatively the same, although different only around Rp 25-50 according to interviews from each cassava farmer.

Price determination by middleman based on price quote determined by tapioca factory located in Bangka Regency. The number of middlemen in Bangka Regency is relatively large, wherein one village there are some cassava middlemen. Based on interviews with some middlemen, it is found that at present they have difficulties in obtaining cassava yield from farmers because the existing farmers complain about the decrease of production which each period is more pronounced and the price is not as expected. Along with the decline in the number of cassava production by farmers, some cassava middlemen have switched to become more prospective middlemen of other agricultural commodities.

Respondents' answers about prices not in accordance with product quality will be inversely proportional to the statement of interviews from several village heads. The respondents considered that the quality of cassava produced was in the right category. Whereas according to direct observation researchers in the field is still not in right cassava management conditions when compared with Lampung province.

Table 4 – Indicator of happiness, production costs, and technology

Frequency	Answer					N	Total Score	Mean Score	Conclusion
	Strongly Agree (5)	Agree (4)	Less Agree (3)	Not Agree (2)	Strongly Not Agree (1)				
Y <sub>1</sub>	11	23	69	22	28	153	426	2.78	Medium
Y <sub>2</sub>	27	81	37	8	0	153	586	3.83	High
Y <sub>3</sub>	0	6	20	54	73	153	265	1.73	Very Low

Source: Data processed by researchers.

Based on table 4 above, it can be seen the average value of happiness indicator has a value of 2.78, and the average value of production cost indicator is 3.83, followed by the value of technology indicators is 1.73. Happiness level indicator shows medium level or may be said because the average value shows the value too low, hence the researcher can conclude that the cassava farmers in Bangka regency less so happy with cassava cultivation. The results of the interviews show similarities in the indicators of happiness, where farmers complain about less favourable prices compared to other agricultural commodities such as white pepper, rubber, and oil palm.

The cost of production in cassava is relatively cheap because of the characteristics of cassava plants that are easy to be cultivated compared to the superior cultivation plants found in Bangka Belitung provinces such as white pepper, rubber and palm oil. Therefore reasonable if the respondents or farmers in Bangka Regency answered indicator cost production is cheap. While on the technological indicator, the respondents considered that cassava technology that is currently applied is still in dangerous condition. It is recognized by respondents because of ignorance of how to cultivate good cassava, so they use the way of cultivation as usually applied by his parents first.

## CONCLUSION AND SUGGESTIONS

Interest in cultivating cassava in Bangka Regency through the indicator of price appropriateness with the quality of cassava and price competitiveness do not seem to be in accordance with the expectations of farmers so it can be concluded that the interest of farmers cultivation in Bangka Regency is still not qualified or low. Price adjustment indicator with quality of cassava seems to need to be reviewed, it is caused by the wrong perception by the respondents, where they think that quality cassava seedlings by way of cultivation that as usually practiced by his parents used to be the same with cultivation of cassava in other provinces, including Lampung and Kalimantan provinces. Lampung Province as a barometer of cassava cultivation on the island of Sumatra has a better way of cultivation compared with most farmers in Bangka Regency. This is because the farmers in Bangka regency consider this cassava is not as a pre-eminent commodity in Bangka Belitung province, so they just try it, and if there is decreasing production and price that is not in accordance with expectations, then they will switch to commodity others that have proven to be more reliable such as white pepper, rubber, and palm oil.

Price competitiveness offered by middlemen and factories is considered by the respondents to be almost the same. Therefore the answers of the respondents tend to be on a high scale. The level of happiness and technology responded by the respondents with a low enough number, where the occurrence of cassava production decline every period with a relatively unsuitable price, then the lack of knowledge in technology cultivation of cassava today. With the largest tapioca factories found in Bangka Regency should be a stimulus to encourage farmers to cultivate cassava. But the reality in the field, there are only a few farmers who can take advantage of it.

Based on survey results, farmers who use these conditions are farmers who have the level of undergraduate education and have a large enough capital to cultivate cassava. Cassava seeds found in Bangka Regency are distributed by factories nearest to their villages, and those who directly buy cassava seeds from Lampung province in order to have good quality seeds compared to those in Bangka Belitung Province. There is a need for counselling and training to the farmers in Bangka Regency, so they can make cassava as a leading commodity by the Government of Regency and Provincial Government especially on the distribution of high-quality cassava seeds and the latest agricultural technology that can boost the production of cassava in maximum stages.

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## THE EFFECT OF MARKETING ON ORGANIC RICE CULTIVATION SUSTAINABILITY IN BOYOLALI REGENCY OF INDONESIA

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### ABSTRACT

This research was conducted from December 2016 to February 2017 in Boyolali Regency. The location was selected because Boyolali Regency was the one cultivating organic rice since 2009 until today and has successfully exported it to Belgium and Germany in 2013. The analysis technique employed in this study was a Multiple Linear Regression; the sample consisted of 86 farmers living in the Sub Districts having widest organic rice farmland: Sambu, Mojosoongo, and Andong. The result of research showed that marketing affected directly the sustainability of organic rice cultivation significantly with t-test probability (Sign) value of 0,017 less than specified  $\alpha$  of 0,05. It indicated that organic rice product marketing, price, and market demand affected the sustainability of organic rice cultivation.

### KEY WORDS

Marketing, sustainability, organic rice, farmers.

Indonesia is an agrarian state and development in agricultural field becomes its main priority in regional economic development. The development of agriculture is very important as the main food sector in Indonesia. It is because more than 55% of Indonesian populations work in agricultural sector and live in rural areas (Suprihono, 2003). The awareness of danger resulting from synthetic chemical use in farming makes organic farming interesting to both producers and consumers. Most consumers prefer health-safe and environment-friendly food material, thereby encouraging the increase in the demand for organic product. Indonesia has substantial potency, for example, many land resources have not be utilized to develop organic farming system, and technology has been available to support organic farming such as compost production, planting without land cultivation and natural pesticide.

Government has launched many policies in organic farming development, but the development of organic farming in Indonesia still runs very slowly. This condition is due to some constraints: market, understanding on organic product and certification process considered as hard by small farmers. Since the last two decades, the world market's demand for organic farming product begins to grow. However the growth of organic farming product is still low. The consumers of organic product are still limited to those who highly concerns with environment preservation and health. This phenomenon reveals limited domestic market that still becomes main constraint. The constraint often encountered is that many farmers have not been interested in organic farming. The reluctance results from unclear organic farming product market including the price obtained. Farmers' interest in practicing this organic farming will improve when domestic market can be grown.

Indonesia has large potency in developing organic farming, particularly organic rice. Several regencies in Central Java, on of which Boyolali Regency, start to pioneer the development of organic rice farming system. Organic rice farming develops rapidly in Boyolali Regency. Boyolali Regency is one of regencies in Central Java having the second widest organic land, 318,45 ha (AOI, 2015). Agricultural, Forestry and Plantation Service of Boyolali Regency reports farm rice productivity of 5,8 ton/ha in 2015 (BPS of Boyolali Regency 2016). This rice productivity can contribute to fulfilling the demand for high quality rice. However, it should be supported with marketing as well. Marketing process plays an important role in supporting the distribution of products to consumers. This research aimed to analyze the effect of marketing on the sustainability of organic rice cultivation in Boyolali Regency.

## METHODS OF RESEARCH

This research was taken place in Boyolali Regency because this regency has cultivated organic rice since 2009 until today. This study was an explanatory research, the one explaining causal relationship between variable through hypothesis testing (Effendi and Tukiran, 2014). Sampling technique employed was multistage cluster random sampling, classified by land width, village, and farmer group. Sub District sample was taken based on the one having widest land in organic rice cultivation, including Sambu, Mojosongo, and Andong Sub Districts. The sampling technique used was simple random sampling with lottery method. This research employed multiple linear regression analysis to test the correlation between variables and the sample of research consisted of 86 respondents.

Table 1 – Sub Districts, Villages and Farmer Groups becoming the sample

No.	Districts	Village	Farmer Group	Land Area (ha)	Members	Sample
1.	Sambu	Jatisari	Sido Mulyo	22	56	8
			Ngudi Rejeki	20,1	74	11
			Sido Tentrem	11,0	68	10
		Catur	Budi Rahayu	18,03	76	12
		Semono	Kismo Luhur	8	11	2
2.	Mojosongo	Metuk	Rukun Tani	28,6	56	8
		Dlingo	Pangudi Bogo	24,87	97	15
			Pangudi Raharjo	16,46	55	8
3.	Andong	Nduwet	Bina Lingkungan	14,5	45	7
		Sruwoh	Lestari Makmur	13,5	33	5

Source: Primary Data (Questionnaire), 2017.

## RESULTS AND DISCUSSION

The respondents of research were farmers managing organic rice cultivation in Sambu, Mojosongo, and Andong Sub Districts.

Table 2 – Characteristics of Respondents by Age

Characteristics of Respondents	Criteria	Amount	Percentage (%)
Age (years)	Old : ≤40 years	16	18,6
	Young : 41-49 years	34	39,5
	Elderly : ≥50 years	36	41,9

Source: Primary Data (Questionnaire), 2017.

Table 2 shows that 16 respondents (18,6%) are less than 40 years old, 34 respondents (39,5%) are 41-49 years old, and 36 respondents (41,9%) are 50 years old. Most respondents have been elders, more than 50 years old. Kartasapoetra (1987), the farmers aged more than 50 years are usually fanatic with tradition and difficult to give understanding that can change their ways of thinking, working, and living.

An individual's education level will affect his/her attitude, perspective and ability of doing something. Mardikanto (1982) suggests that education will affect an individual's ways of thinking and mindset. The higher the education of an individual, the higher is the knowledge, attitude, and skill levels.

Table 3 – Characteristics of Respondent by Formal Education Level

Characteristics of Respondents	Criteria	Amount	Percentage (%)
Formal Education	Low : Uneducated-Graduated from Elementary School	41	47,7
	Medium : Graduated Junior High School- Senior High School	36	41,9
	High : Graduated Diploma-Bachelor	9	10,5

Source: Primary Data (Questionnaire), 2017.

Table 3 shows that by formal education level, 41 respondents (47,7%) are not graduated or graduated from Elementary School, 36 respondents (41,9%) graduated from Junior and Senior High Schools and 9 respondents (10,5%) graduated from Diploma until Bachelor. Thus, formal education level of respondent farmers is still low. Most farmers have been old, so that formal education did not get adequate attention.

Table 4 – Characteristics of Respondents by Non-Formal Education Level

Characteristisc of Respondents	Criteria	Amount	Percentage (%)
Extention Education	Low	: 0-1 time	7 8,1
	Medium	: 2-3 time	62 72,1
	High	: ≥ 4 time	17 19,8
Training	Low	: 0-1 time	33 38,4
	Medium	: 2-3 time	34 39,5
	High	: ≥ 4 time	19 22,1

Source: Primary Data (Questionnaire), 2017.

Table 4 shows that 7 respondents (8,1%) attended 0-1 time-extension activity in one planting season, 62 respondents attended 2-3-time extension (72,1%) and 17 respondents (19,8%) attended ≥ 4-time extension. About 33 respondents (38,4%) perform 0-1 time-practice, 34 respondents (39,5%) perform 2-3 time-practice and 19 respondents (22,1%) perform ≥ 4-time practice. Non-formal education level of farmers belongs to medium category in which they have ever attended extension and practice activities 2-3 times in one planting season. The farmers' activeness in attending extension and practice activity is very important because it is expected top bring about the change in knowledge, attitude, and skill.

Land mastery is a land width attempted by respondent farmers for organic rice farming activity.

Mardikanto (1994) suggests that farmers with narrow land, limited capital,, limited knowledge and skill often have poor spirit and less wish to go forward. The ownership status of land is the ownership status of land used for cultivating organic rice.

Table 5 – Characteristics of Respondents by Land Mastery

Characteristisc of Respondents	Criteria	Amount	Percentage (%)
Land Mastery	Low	: <0,25 Ha	13 15,1
	Medium	: 0,25-0,49 Ha	65 75,6
	High	: 0,50-0,99 Ha	8 9,3
Land Ownership Status	Low	: Peasants	5 5,8
	Medium	: Lessee	21 24,4
	High	: Own	60 69,8

Source: Primary Data (Questionnaire), 2017.

Table 5 shows that 13 respondents (15.1%) have land mastery of less than 0,25 Ha, 65 respondents (75,6%) have 0,25 Ha-0,49 Ha wide land and 8 respondents (9,3%) have 0,50 Ha-0,99 Ha wide land. Most respondents have land mastery of 0,25 Ha-0,49 Ha, belonging to medium category. The farmers having farming land try to make innovation in some of their farming land, without being afraid of failure.

By the land ownership status, 5 respondents (5,8%) are peasants, 21 respondents (24,4%) are lessee, and 60 respondents (69,8%) own their land. The land ownership status of most respondents belongs to high category, self-owned land, so that they have freedom in making decision in organic rice cultivation.

Marketing is any effort resulting in a transfer of right to object and distribution maintenance. Each of farming produces has marketing channel different between one and another. Product marketing channel can change and be different dependent on area condition, time, and technology advance (Soetriono *et al*, 2006).

Table 6 shows that 43 respondents (50,0%) consider that organic rice product is marketed easily belonging to low category. Organic rice harvest output is usually sold in the form of dry grain to farmer group association and Appoli. Middleman (*penebas*) usually buys

rice directly on the farm. *Gapoktan* (farmer group association) cannot receive organic rice bravely from the farmers in the local area and it only sells organic rice produced by group or leased from group's members the quality of which has been reliable. The group has not been able to maintain the quality of organic rice produced in the area because control mechanism is difficult to perform, thereby relying more on mutual trust between business performers. Marketing is performed by Appoli in cooperation with *Sahabat Sejahtera* Cooperatives. *Sahabat Sejahtera* Cooperatives is the one established by Appoli on November 27, 2013.

Table 6 – Distribution of Respondents by Marketing

Marketing	Criteria	Amount (n)	Percentage (%)
Marketing of Organic Rice Products	Low : Consider	43	50,0
	Medium : Doubtful	7	8,1
	High : Agree	36	41,9
Price of Organic Rice Products	Low : Disagree	37	43,0
	Medium : Doubtful	10	11,6
	High : Agree	39	45,3
Market Demand	Low : Disagree	2	2,3
	Medium : Doubtful	69	80,2
	High : Agree	15	17,4

Source: Primary Data (Questionnaire), 2017.

The farmers sell unhulled rice to Appoli or farmer group in some stages, harvesting in the farm, taking unhulled rice to Appoli or *gapoktan* and weighing it. Dry unhulled rice deposited to cooperatives to be reprocessed in order to get high-quality organic rice. Organic rice types processed in this cooperative include red rice, IR 64 and *pandan wangi*. Organic rice is packaged in 1 kg, 5 kg and 25 kg sizes. *Sahabat Sejahtera* Cooperatives can absorb and market 292,5 tons Harvest Dry Unhulled Rice (Indonesian: *Gabah Kering Panen* or GKP) in one planting season. The processing stage conducted in this cooperative includes sunbathing, warehousing, milling, grading, sorting, blower, packing, and marketing. Mawarni (2008) suggests that some problems occurring in organic rice marketing are difficulty in getting certification, poor ability of maintaining market's trust, for example, by mixing other rice, and inability of maintaining organic farming product availability corresponding to market demand.

Organic rice price belongs to high category as well, according to 39 respondents (45,3%). The price of organic rice is higher than that of conventional rice. The high price of organic rice can encourage the farmers to apply organic rice cultivation. The better and more stable price of organic rice will encourage the wider development of organic rice. The price of organic rice at farmer level is about IDR 15,000 – IDR 20,000, while the price of non-organic rice is about IDR 9,000.00 - IDR 12,000.00. Added-value the farmers obtain from organic rice development is about IDR 6,000.00 - IDR 8,000.00. The farmers have not yet enjoyed this added value because the farmer group as the main accommodator has not been ready to accept the farmers' product entirely due to limited capital, non-cash payment system, and the group's difficulty of controlling the quality of organic rice produced.

Market demand belongs to medium category, according to 69 respondents (80,2%). Organic rice marketing has distinctive segment, upper-middle class of society. Appoli's organic rice marketing uses Arjuna brand, with production legality or Indonesian National Standard (Indonesian: *Standar Nasional Indonesia* or SNI) certification and organic rice nutrition content being included on the label. Farmer group finds difficulty in complying with production continuity because its production volume is still low and only relies on organic rice produced by reliable group or group members' lands.

The result of multiple linear regression analysis on the effect of marketing on organic rice cultivation sustainability is presented as follows:

Table 7 shows that coefficient of marketing channel on organic rice cultivation sustainability is 0,231. T-statistic probability (Sign) value is 0,017 less than  $\alpha$  of 0,05. The result of decision does not support  $H_0$  but supports  $H_a$  or in other words, marketing variable

(X) affects significantly the organic rice cultivation sustainability (Y). It indicates that organic rice product marketing, organic rice product price, and market demand affect organic rice cultivation sustainability.

Table 7 – Test on the effect of marketing on organic rice sustainability

Comment	$\beta$	Sign	$\alpha$	Decision
Pyx	0,231	0,017	0,05	H <sub>0</sub> is not supported and H <sub>a</sub> is supported

Source: Primary Data Analysis, 2017.

The farmers' ability of marketing organic rice can be implemented through a variety of distribution channels based on consumers' demand. Marketing can be said as successful when the farmers have market chance and distribution channel can be reached by farmers. In addition, the farmers can sell its product discretely with higher bargaining position. Organic rice harvest can be sold directly to the consumers at high price or corresponding to the farmers' price standard. The farmers can sell organic rice to Appoli or *gapoktan* in the form of wet or dry unhulled rice with higher price than non-organic rice. In conventional rice farming, the farmers can sell its product in local market in the form of rice or in rice mill and unhulled rice in the farm through middleman.

Some of organic rice products are intended to self-consumption, some others are sold in traditional market and still some others are sold directly to Appoli or deposited to farmer group. Appoli institution helps market its organic rice by means of establishing a mutually benefiting partnership between farmers and marketer. Appoli's marketer includes PT Bloom Agro Jakarta, UD Tama Jaya Yogyakarta, UD Rizky Subur Yogyakarta, PT BNS Jakarta and Koperasi Bina Bakat Surakarta. Appoli also has *Sahabat Sejahtera* Cooperatives as the attempt of guarantying the marketing of its members' products. Rice varieties usually produced by farmers are Pandan Wangi, black rice, red rice and Ciherang/IR 64 rice.

Neither Appoli nor farmer group accepts organic rice produced by the local farmers easily and they sell organic rice produced by lands owned or leased by farmers or members of group the quality of which has been reliable. Such the condition makes the volume of rice sold relatively limited, while the demand for rice produced by this group is very large. The group has not been able to serve as quality guarantor over organic rice produced by the local farmers because control mechanism is difficult to perform thereby relying more on the aspect of mutual trust between business performers. Institution and product standardization expected to deal with the problem of organic rice quality control, in fact, have not been utilized much by local farmers or farmer group. It is because of high cost of certification and farmers finding difficulty in administration affairs.

## CONCLUSION

Considering the discussion above, it can be concluded that marketing affects significantly on organic rice cultivation sustainability. The government should facilitate both farmers and farmer groups' access to certification institution and make its cost lower, so that quality guaranty constituting one constraint with the marketing of organic rice can be overcome. The strategies taken in developing farming, among others, are to expand farmer or farmer group partnership, to expand marketer partnership and to improve promotion to potential consumers. The reinforcement of organic rice marketing institution should be supported by local government, quality overseeing institution and college.

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## THE APPLICATION OF LIQUID ORGANIC FERTILIZER FROM BANANA PSEUDOSTEM ON GROWTH AND YIELD OF SWEET CORN (*ZEA MAYS SACCHARATA*)

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### ABSTRACT

Due to its abundance availability, banana pseudostem has been considered as potential resource for organic fertilizer in order to decrease dependencay on synthetic fertilizers. Thus, this research was aimed to evaluate the application of liquid organic fertilizer originated from banana pseudostem on growth and yield of sweet corn. The experiment was carried out in Experimental Farm of Department of Agronomy, University of Sriwijaya from January to April 2016. It was resulted that all parameters observed showed better response to P<sub>3</sub> compared to other treatments. Furthermore, the application of banana pseudostem liquid organic fertilizer was believed could increase soil mineral nutrients content.

### KEY WORDS

Banana pseudostem, liquid organic fertilizer, sweet corn, yield.

The demand of sweet corn has been increasing as it is a popular food commodity due to the sweet taste and high nutrient content (Martajaya et al., 2010). It is mainly utilized as main ingredient for either processed foods or non food processed products, as well as the substitute for rice as the staple food. Considering the environmental effect, sweet corn cultivation using organic fertilizer has been performed in various areas. It is considered much safer and has less chemical residues compared to synthetic fertilizer. Nasution (2014) has studied the application of solid and liquid organic fertilizer from banana peel on lettuce (*Brassica juncea* L.) with the dosages of 15, 25, 35, 45 and 55 ml of liquid fertilizer. It was resulted that optimal dose for growth of lettuce plant was 25 ml per plant. Soluble nutrients in liquid fertilizer benefits plant growth through improved nutrient use efficiency and minimize nutrient loss resulted in higher yield production (Toonsiri et al., 2016).

Banana pseudostem is considered as a potential resource for organic fertilizer due to its abundance availability since most banana growers generally will just let the pseudostem (and the underground stem) rot on the ground after harvesting. Some research has been reported chemical content on the extract of banana pseudostem, such as tannins, saponins and flavonoids. Saponins are glycosides substances contained in various plant species which have excellent properties for plant tissue development (Sugiarti, 2011). Bahtiar et al. (2016) reported high concentration of macronutrients contained in banana stem consisting of 3087 ppm NO<sub>3</sub>, 1120 ppm NH<sub>4</sub>, 439 ppm P<sub>2</sub>O<sub>5</sub> and 574 ppm K<sub>2</sub>O. Similar results was reported by Suprihatin (2011) studying the existence of Ca, P and K in banana stem. From the extraction, it was found that the concentration of Ca, P, and K were 16.2% weight, 30.05% weight and 21.5% weight respectively with solvent volume of 600 ml and 15 minutes of stirring time.

However, the potency of banana pseudostem as organic fertilizer has not been widely studied. Thus, this study was aimed to evaluate the growth and yield of sweet corn by the application of liquid organic fertilizer from banana pseudostem.

### METHODS OF RESEARCH

This research was conducted in Experimental Farm of Department of Agronomy, Faculty of Agriculture, University of Sriwijaya, Indralaya started from January until April 2016. Randomized Block Design was used with 7 dosage treatments and 4 replicates resulting in total 28 treatment units. Sweet corn was planted on separate plot based on each treatment

with the size of 3.3 m x 3.5 m per plot and 70 cm x 30 cm planting space. The treatments were the dosage of liquid fertilizer consisted of: P<sub>0</sub> = control, P<sub>1</sub> = 400 ml per plot, P<sub>2</sub> = 800 ml per plot, P<sub>3</sub> = 1,200 ml per plot, P<sub>4</sub> = 1,600 ml per plot, P<sub>5</sub> = 2,000 ml per plot, and P<sub>6</sub> = 2,400 ml per plot.

The observed parameters included plant height (cm), number of leaves per plant, tasseling time (day), cob weight with husk per plant (g), cob weight without husk per plant (g), cob length (cm), cob diameter (cm), cob weight with husk per plot (kg), and cob weight without husk per plot (kg).

## RESULTS AND DISCUSSION

Plant cultivation has been heavily depended on fertilizer as its nutrient source during its growth and development stages. The use of organic fertilizer has been a trending issue in order to confront the dependancy of synthetic fertilizer concerning the environmental value. Banana pseudostem was used as the main ingredient of liquid fertilizer applied on sweet corn in this research. The effect of liquid organic fertilizer then was confirmed by evaluating both growth and yield parameters of sweet corn. Based on the analysis of variance, the application of liquid organic fertilizer from banana pseudostem significantly affected all observed parameters, except for tasseling time as given in Table 1.

*Growth parameters.* Growth parameters observed in this study included plant height (cm), leaf number, and tasseling time (day). However, based on the analysis of variance, only plant height and number of leaves were significantly affected by the application of liquid organic fertilizer.

Table 1 – Analysis of variance of liquid fertilizer application on growth and yield parameters of sweet corn

No	Parameters	F value	F 0.05	Coefficient of variance
1	Plant height (cm)	15.96*	2.53	9.95%
2	Leaf number	15.00*	2.53	2.77%
3	Tasseling time (day)	1.91 <sup>ns</sup>	2.53	1.79%
4	Cob weight with husk (g)	70.56*	2.53	4.28%
5	Cob weight with husk per plot (kg)	0.05*	2.77	3.39%
6	Cob weight without husk (g)	47.13*	2.53	5.21%
7	Cob weight without husk per plot (kg)	2.56*	2.77	2.40%
8	Cob length (cm)	35.06*	2.53	4.92%
9	Cob diameter (cm)	27.37*	2.53	2.37%

Note: \* = significant in F0.05; ns = non significant

The application of 1,200 ml of liquid fertilizer dosage (P3) showed the best result by having the highest plant with 159.60 cm, while the shortest was from P6 treatment with 85.40 cm (Table 2).

Table 2 – The effect of liquid organic fertilizer application on plant height and leaf number of sweet corn on the 7<sup>th</sup> week

Treatment	Plant height (cm)	Leaf number
Control	110.02 b	11.00 a
P1	117.72 bc	12.00 b
P2	136.50 d	12.00 b
P3	159.60 e	13.00 c
P4	131.48 cd	12.00 b
P5	105.82 b	11.00 a
P6	85.40 a	11.00 a
LSD 5%	17.89	0.50

Means followed by the same letters in the same column are not significantly different at the 5% LSD level.

The effect of liquid organic fertilizer application on the increase of plant height is given in Figure 1. It was found that there was an increasing trend of plant height following the

increase of liquid fertilizer dosages. However, the height was gradually decreased after reaching the optimum level at P3 treatment and started decreasing afterwards. The highest dosage (2,400 ml per plot) even resulted the shortest height, even lower compared to control. Such trend was more apparent after 5<sup>th</sup> week observation.

Similar result was found in leaf number parameter showing P3 as the treatment with best result. Treatment P3 showed the best result by having most leaf number with 13 leaves, and was significantly different to other treatments (Table 2). Figure 2 shows the increase in leaf number in the 3<sup>rd</sup>, 5<sup>th</sup> and 7<sup>th</sup> week of observation for all treatments. Similar trend with plant height parameter also occurred in leaf number though it was less apparent. Leaf number of sweet corn would increase to a certain level (P3 dosage) then decrease afterwards.

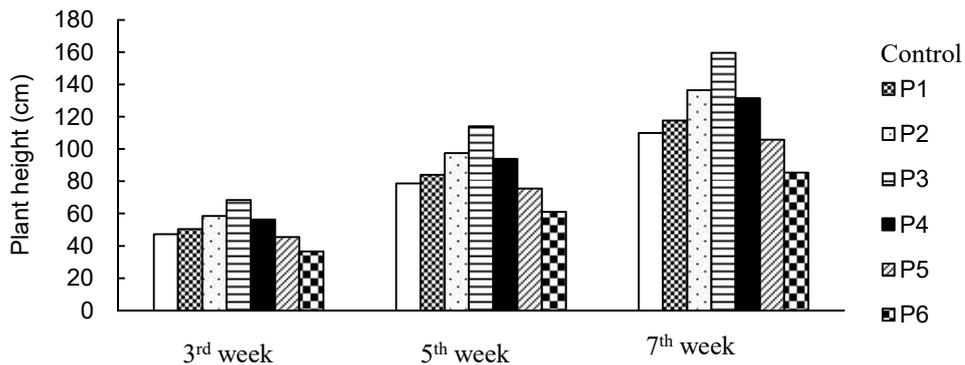


Figure 1 – The increment of sweet corn plant height due to liquid fertilizer application

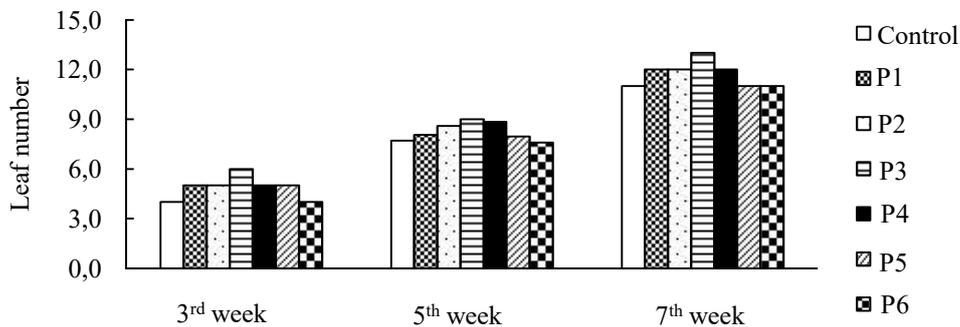


Figure 2 – The increment of sweet corn leaf number due to liquid fertilizer application

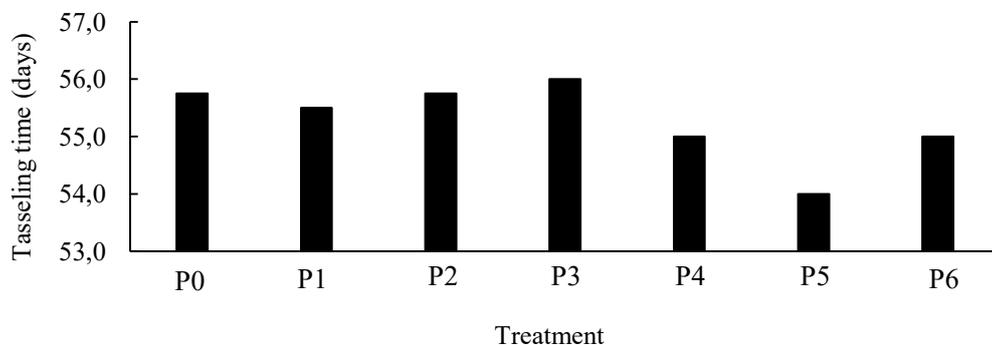


Figure 3 – The effect of liquid fertilizer application on tasseling time of sweet corn

The trend resulted in both parameters indicated that P3 (1,200 ml) was considered as the optimum dosage of liquid organic fertilizer for the growth of sweet corn. While P6 as the

highest dosage (2,400 ml) was considered too dense for corn growth resulting in the lowest results in these parameters.

The application of liquid organic fertilizer did not affect sweet corn tasseling time (Table 1). However, P3 treatment apparently showed slower tasseling time compared to other treatments, while P5 was the fastest with 54 days. However, the margin was only about 2 days (Figure 3).

**Yield Parameters.** The application of liquid organic fertilizer from banana pseudostem had significantly affected all yield parameters on sweet corn as seen in Table 3 and Table 4.

Table 3 – The effect of liquid organic fertilizer application on cob weight with husk, cob weight with husk per plot, cob weight without husk, and cob weight without husk per plot of sweet corn

Treatment	Cob weight with husk (g)	Cob weight with husk per plot (kg)	Cob weight without husk (g)	Cob weight without husk per plot (kg)
Control	231.87 b	9.28 b	135.00 b	5.40 b
P1	282.50 c	11.30 c	169.37 d	6.78 d
P2	321.87 d	12.88 d	184.37 e	7.38 e
P3	343.75 e	13.75 e	210.00 g	8.40 g
P4	323.75 d	12.95 d	186.87 f	7.48 f
P5	285.00 c	11.40 c	156.25 c	6.25 c
P6	225.62 a	9.03 a	128.75 a	5.15 a
LSD 5%	17.84	0.20	11.34	0.08

*Means followed by the same letters in the same column are not significantly different at the 5% LSD level.*

Table 3 shows the parameters of cob weight with husk (g), cob weight with husk per plot (kg), cob weight without husk (g), and cob weight without husk per plot (kg), while Table 4 shows the data of cob length (cm) and cob diameter (cm). Based on the results, it was found that P3 treatment showed the best result in all observed yield parameters. In contrast, P6 treatment resulted the lowest in all yield parameters, even lower compared to control.

Table 4 – The effect of liquid organic fertilizer application on cob length and cob diameter of sweet corn

Treatment	Cob length (cm)	Cob diameter (cm)
Control	18.40 b	3.80 ab
P1	18.56 b	3.94 b
P2	20.74 c	4.08 c
P3	25.23 d	4.44 d
P4	20.74 c	4.08 c
P5	17.83 ab	3.87 b
P6	16.48 a	3.71 a
LSD 5%	1.44	0.14

*Means followed by the same letters in the same column are not significantly different at the 5% LSD level.*

The results of yield parameters indicated similar trend with growth parameters where yield parameters would increase following the increase of fertilizer dosages but then would start decreasing after reaching the optimum level at P3. Then it was obvious that P3 was the best treatment in this study by showing better performance in both growth and yield parameters compared to other treatments. Lower concentration dosage was considered did not supply enough nutrients for plants, while too concentrated dosage would also not benefit plants' growth. Proper dosage of fertilization would be beneficial in order to obtain the optimal result (Sudarsana, 2000; Rahmi and Jumiaty, 2007).

## CONCLUSION

The conclusions of this research included: 1) the application of 1,200 ml of banana pseudostem liquid organic fertilizer per plot showed the best results on all growth and yield parameters observed compared to other treatments; 2) the yield resulted from the application of 1,200 ml of banana pseudostem liquid organic fertilizer reaching 13.75 kg (with husk) and

8.40 kg (without husk) per plot. Based on the results, it was suggested for further research to evaluate the application of liquid organic fertilizer from banana pseudostem on other plant commodities. The information will be beneficial in confirming the effect of banana pseudostem utilization as potential resource for organic fertilizer.

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**THE CORRELATION MATRIX AMONG VEGETATIVE GROWTH FACTORS  
OF CANDLENUT PLANTS (*REUTEALIS TRISPERMA* (BLANCO) AIRY SHAW)  
IN PRODUCING VEGETABLE OIL FUELS**

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**ABSTRACT**

Plant height, stem diameter, number of branches and wide canopy are vegetative characters that have strong correlation with the yield of Candlenut (*Reutealis trisperma* Blanco Airy Shaw). Candlenut is one of the most potential plant that produces biofuel. Biofuel made of Candlenut oil is not only a renewable fuel but it is also environment-friendly fuel. Thus, candlenut oil fuel is considered as sustainable energy. Unlike fossil fuel, candlenut oil does not contain harmful material such as phosphor and heavy metal. In addition, its ability to absorb CO<sub>2</sub> and produce O<sub>2</sub> at relatively huge amount makes it beneficial to reduce the green house effect that causes global climate changes. This research was conducted in 2015 in Kali Pare experimental garden, Research Institute for Sweetener and Fibre Crops, Malang, Located at 350 m above sea level with average rainfall 1500 mm per year and Mediteranian soil type. A Randomized BlockDesign with four replications was employed in this experiment. The treatment consisted of 3 kinds of planting materials, namely cuttings, grafting cuttings and grafting seedlings from seeds. Seedling was a planting space at the dimension of 5m x 5m in the garden. The total plant population used in this study was 300 trees. The purpose of this research was to obtain the index of the correlation matrix among the vegetative growth factors of Candlenut which included the planting cuttings, grafting cuttings and grafting seedlings from seeds. In addition, this study also attempted to obtain a high compatibility index on the material connection process for planting. The objective of this research was to assess the correlation matrix index among vegetative growth characters from different planting materials, namely planting cuttings, grafting cuttings and grafting seedlings. In addition, this research also investigated the best compatibility index and the fastest generative productive age. The Result of this experiment showed that the correlation matrix among vegetative growth characters involved the plant height, stem diameter, number of branches and wide canopy of the Candlenut. The correlation between high vegetative growth of plants (X1) and the stem diameter (X2) was found at the value of  $r = 0.83^{**}$ , which indicates a significant correlation; The correlation between the stem diameter of vegetative growth (X2) and the number of branches (X3) was found at  $r = 0.76^{**}$ , which also implies a significant correlation; The correlation between high vegetative growth of plants (X 1) and the number of branches (X3) shows  $r = 0.68^*$ , at a significant correlation; The correlation between the high vegetative growth of plants (X1) and canopy width (X4) and the correlation between stem diameter of vegetative growth (X2) and canopy width (X4), each provided value  $r = 0.63$   $0.69$   $r = *$  and  $*$  which shows significant correlation among the variables; The correlation between the amount of vegetative growth of the branch (X3) and canopy width (X4) gives a value of  $r = 0.49$  tn, which indicates an insignificant correlation; Whilst, the correlation between the vegetative growth and diameter of the rootstock and the diameter of the trunk obtained a value of  $R^2 = 91,53\%$ , which means that redirect cuttings Candlenut is compatible to use.

**KEY WORDS**

*Reutealis trisperma*, candlenut, *Aleurites Moluccana*, biofuels.

Candlenut plants which are propagated using the true seed are generally more variable than those which are grown out of their vegetative parts (Luntungan *et al.*, 2009). This is due to segregation phenomena that occur during the seed multiplication. Pranowo and Rusli (2012) stated that the grafted plants showed slower growth than the seedling plants although the former posed bigger stem diameters than the later ones. According to Cholid *et al.* (2015), plant growth in the high-yield plant grafting which is relatively low compared to the plants from seed but it has the size of the diameter of the rod. Almost similar statements were made by Rai (2004) stating that the plants derived from the grafting, their rate of growth seems to experience delay compared to the planting material of the plants derived from the seed. It is further expressed that the process of flowering goes more quickly for plants that grow from grafting.

Candlenut plants produce fuel vegetable oil biofuel/diesel that is environmentally friendly. When the candlenut fuel is used to fuel diesel engine, the exhaust smoke appears to be almost non-existent, because it contains free or low fatty acids (Herman and d. Pranowo, 2011). Furthermore, candlenut vegetable oil also contains no phosphorus or heavy metals which are often found in fossil-based fuel. The candlenut fuel is included into the renewable and alternative fuel that has renewable nature (updated) and sustainable development (ongoing). Another advantage of candlenut is its ability to absorb CO<sub>2</sub> and provide much O<sub>2</sub> which reduce the impact of global warming caused by climate change.

The Government has been working to find plants that can be used to produce vegetable oil fuel. It is expected that in the next 25 years people will not have to experience difficulties in producing fuel for transportation and industry. According to Syafarudin and Wahyudi (2012) it is estimated that the fossil-based fuel will run out soon. According to Pranowo *et al.*, 2015-growing plants that produce fuel vegetable oil such as *Jatropha (Jatropha curcas l.)*, *Sterculia (Sterculia foetida)* and Bintaro (*Cerbera manghas*), Yamplung (*Calophyllum inophyllum l.*), Kosambi (*Schlechera oleosa*) and Pongamia (*Pongamia pinnata*) does not contribute much amount of oil since the oil level of those plants ranges only for 10 – 30%. Whereas, candlenut oil deposits as much as 51.34% of oil. The generative growth process of the plant begins from the formation of flowers. The candlenut flowers then grow to be small fruit which usually happens in June and August during the dry season (Ajjjah *et al.*, 2009). The candlenut plants start to flower around the fifth year or at age of 5-5.5 years. However, the obstacles faced by candlenut oil plants when they are ready to flower is their leaves that start to fall down and emerge new shoots that spring and form a flower stalk before forming the fruit. The amount of the oil production of candlenut plants which flower after age of  $\geq 5$  years reaches up to 8-10 tons/ha/year (Syakir *et al.*, 2000).

Presently, Indonesia has started to using fuel made of vegetable oil/biofuel from Palm oil biosolar or in order to meet the needs of consumers. The Government of Indonesia has already published a Regulation No. 5/2006 regarding National energy policy and the Impres Number 1/2006 on the provision and utilization of vegetable oil fuel (Hasnam, 2009).

The purpose of this research was to obtain the index of the correlation matrix among the vegetative growth factors of candlenut plants including the planting cuttings, grafting cuttings and grafting seedlings from seeds. In addition, this research was also intended to obtain a high compatibility index on the connection material process for planting.

## **MATERIALS AND METHODS OF RESEARCH**

The research was conducted in 2015 in Kali Pare experimental garden, Research Institute for Sweetner and Fibre Crops, Malang, Located at 350 m above sea level with average rainfall 1500 mm per year and Mediteranian soil type. A randomized BlockDesign with four replications was administered in this experiment. Each treatment consisted of 3 kinds of planting materials, namely cuttings, grafting cuttings and grafting seedlings from seeds. Seedling was done in a space planting with dimension of 5m x 5m in the garden and total plant population of 300 trees.

Planting materials used in treatment were the candlenut varieties 1 that were grown from a). Dial side cuttings; b). grafting cuttings, and c). Seedlings from seeds. The observed

parameters included the height of the plant, stem diameter, number of branches and the width of the canopy at which were measured when candlenut plants reached age of 18 months in the field. Each treatment was observed for 20 times= $n$ . The formula of correlational coefficient (Sastrosupadi, 2003):

$$r_{12} = \frac{\sum xy - \sum x \cdot \sum y / n}{\sqrt{\left(\left(\sum x^2 - \frac{(\sum x)^2}{n}\right)\left(\sum y^2 - \frac{(\sum y)^2}{n}\right)\right)}}$$

Where: N = The number of the observed treatment; X = The parameters of the vegetative growth (height, diameter, the number of branch and canopy width (horizontal axis); Y = The results of the vegetative growth, height, diameter, number of branches and canopy width (vertical axis); R = The correlation coefficient; R<sup>2</sup> = coefficient of determination.

Table 1 – Guidelines in categorizing the correlation coefficient

Interval coefficients	The level of the relationship
0.00 – 0.199	Very low
0.20 – 0.399	Low
0.40 – 0.599	medium
0.60 – 0.799	Strong
0.80 – 1.000	Very strong

Source: Sugiono, 2007.

## RESULTS AND DISCUSSION

The result of the correlational analysis on the research parameters which included the height, diameter, number of branches and the canopy width of candlenut plants is presented in Table 2.

Table 2 – Correlation matrix on the parameters of vegetative growth factors of candlenut plants

	X1 (Height)	X2 (stem diameter)	X3 (Number branches)	X4 canopy width
X1 (Height)	—	0.83**	0.68*	0.63*
X2 (Stem diameter)		—	0.76**	0.69*
X3 (Number branches)			—	0.49 tn
X4 (canopy width)				—

Notes: \*\* = significant at the extent of 1%; \* = significant at the extent of 5%; tn = not significant.

Table 2 shows that the correlation value  $r = 0.83$  \*\* significant of the parameter of plant height (X 1) and the stem diameter (X 2). This correlation value shows that the correlation between those variables is very strong. Both components strongly contribute to the amount of candlenut production. The points show the parameters which are the diameter and height of the plant, which position are spreading closer to the linear lines. The correlation between the height and the growth of the plant stem diameter of candlenut forms a closed quadratic curve (Figure 1).

Figure 1 shows that the correlation between diameter growth parameters (X 2) and the number of branches (X 3) of candlenut shows value of 0.76 correlation \*\* significant. The quadratic curve is presented in Figure 2. The value of the coefficient of determination is at  $R^2 = 0.7882 = 78.82\%$  which means the diversity is at X 78.82% under the influence of the Y, remainder of 21.18% outside it. Based on the guidelines in categorizing the value of the correlation coefficient, the value above is considered very strong.

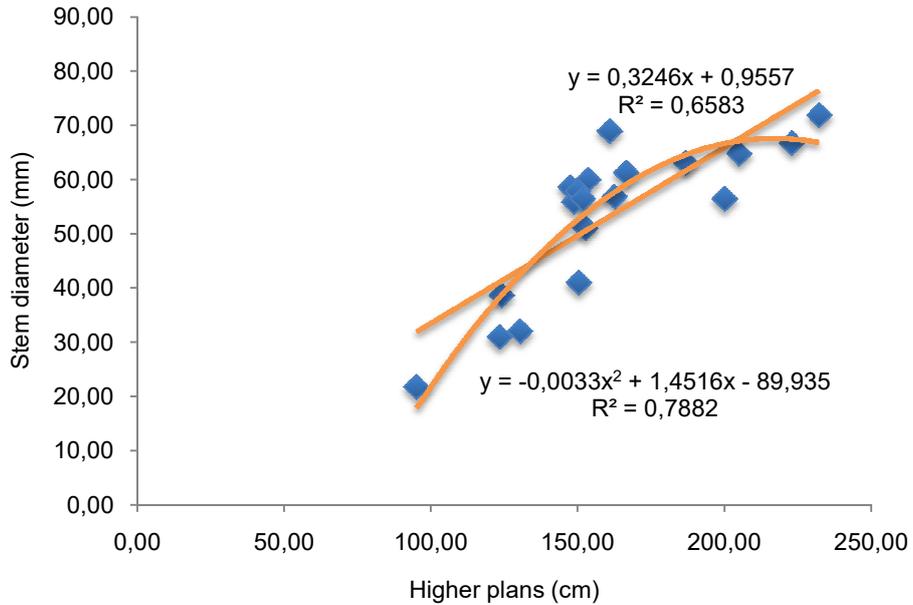


Figure 1 – The correlation between the parameters of the plant’s height growth and the stem diameter of candlenut

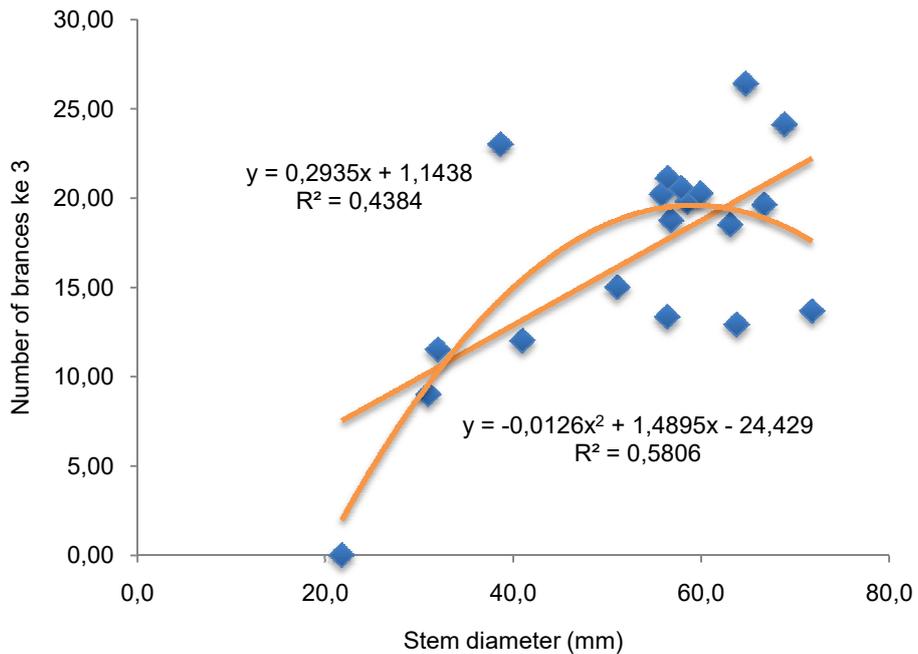


Figure 2 – Correlation between the diameter growth parameters and the amount of candlenut branches

The branch of candlenut plants is where the fruit-producing occurs, allegedly under certain conditions that will result in the production of candlenut.

The correlation between the parameters of the high-growth plants (X 1) and the number of branches (X 3) candlenut provides value  $r = 0.68$  \* real (Tabel1) which indicates strong relationship between the two parameters. The quadratic curve is presented in Figure 3. The value of the coefficient of determination is at  $R^2 = 0.4449$  or  $R^2 = 44,49\%$ .

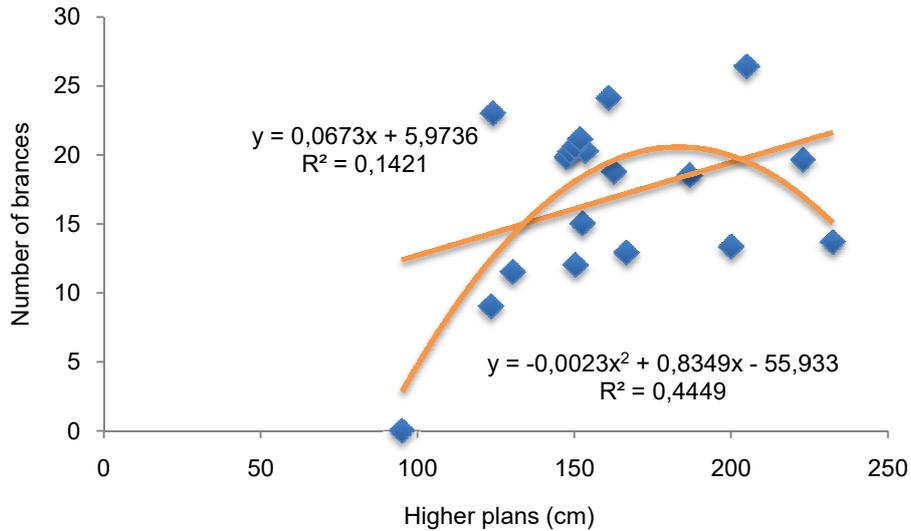


Figure 3 – The correlation between the parameters of the height growth of the plant and the number of branches of the candlenut

For the correlation between the height growth of plants (X 1) and canopy width (X 4) and the parameter X 2 diameter growth and canopy width (X 4) (Tabel1), each shows a value of correlation  $r=0.63$  \* significant and  $r= 0.69$  \* significant. The quadratic curve is presented in Figure 4 and Figure 5 with  $R^2$  (coefficient determination) respectively are  $R^2 = 0.3937$  and  $R^2 = 0.4776$ .

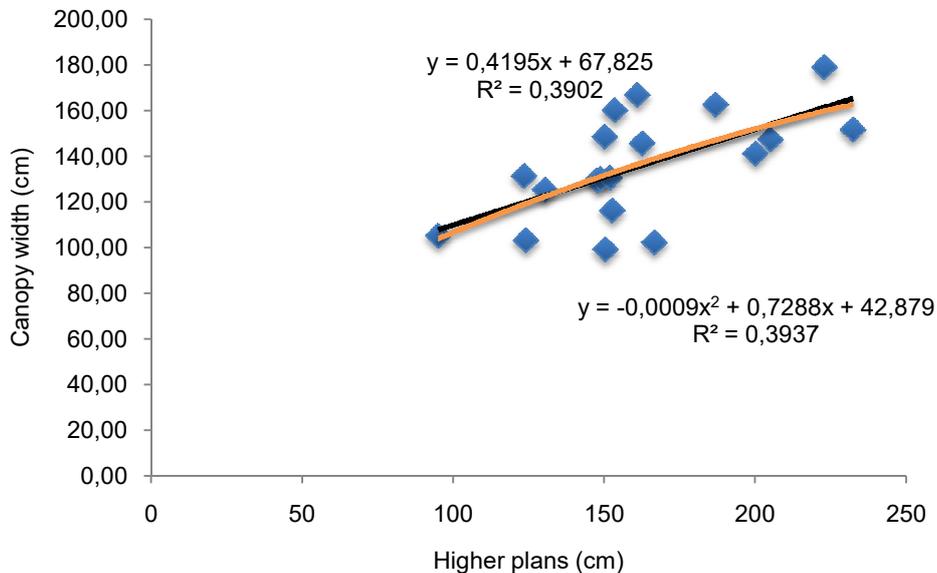


Figure 4 – The correlation between the height and the canopy width of candlenut

The canopy is the part where the photosynthesis occurs, which process produces asimilate as the main ingredient in producing a crop. Allegedly, a real correlation between the value and the produced asimilat is adequate enough to give some effects on the production of Candlenut.

Table 1 shows that the correlation between the parameters of the number of branches (X 3) and the canopy width (X 4) shows a correlation value off 0.49 (tn) insignificant. The quadratic curve is presented in Figure 6.

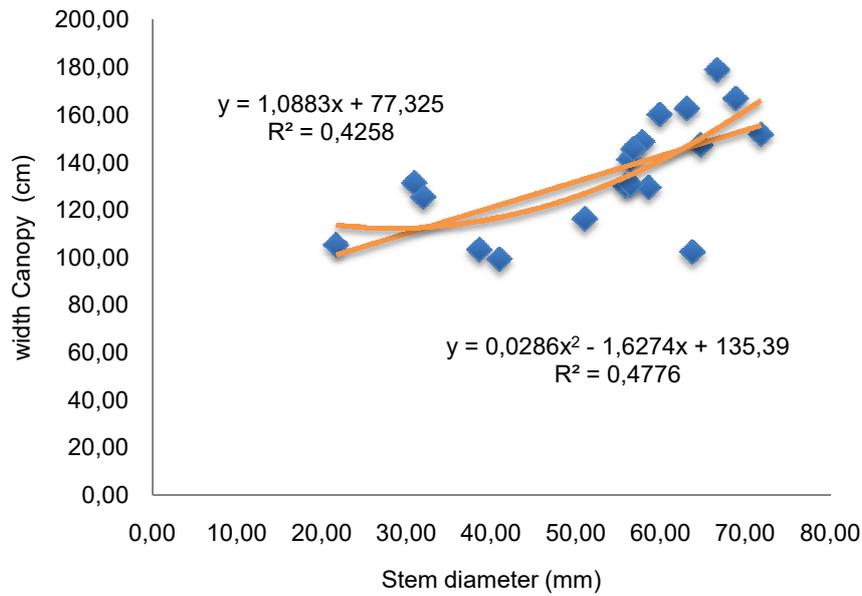


Figure 5 – The correlation between the growth of stem diameter and the canopy width of Candlenut

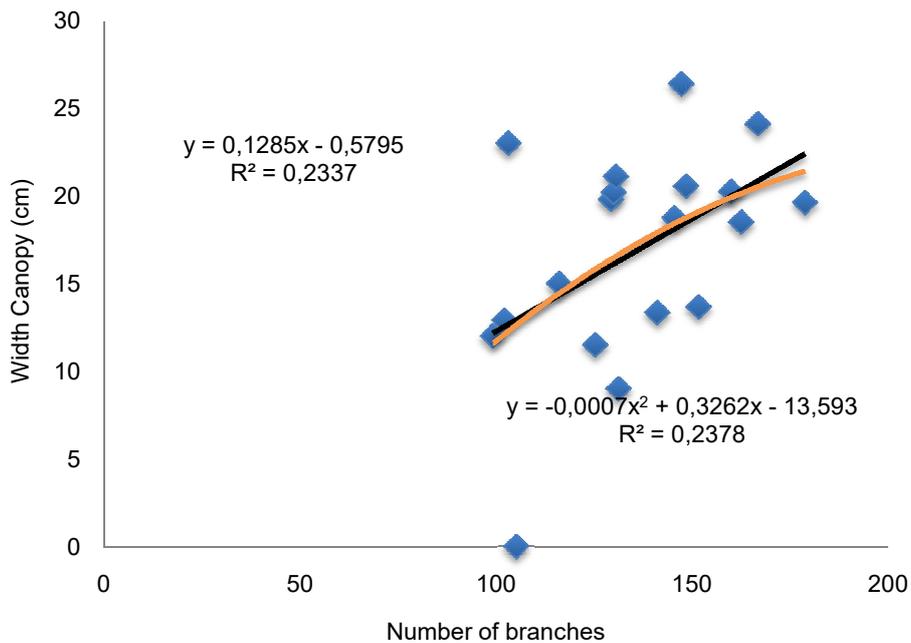


Figure 6 – The correlation between the number of branch and canopy width of candlenut plants

From Figure 6, it is known that some changes increasingly spread far from the linear line which means that the correlation value is only about  $r = 0.49$  and value determination of  $R^2 = 0.2378$ . According to Sugiono (2007), when the value of the correlation lies between 0.200-0.399 the value can be categorized low as the second parameter of the vegetative growth of candlenut.

Similar result was found in the correlation analysis of the root stock diameter root and the stem diameter. The result of the correlation analysis on the parameters of the stem diameter of top growth (X 1) and stem diameter rootstock(X 2) is presented in Figure 7.

It can be seen from Figure 7 that the value of the correlation parameter of the diameter growth rootstock and the stem diameter is at  $R^2 = 0.9153$  or 91.53% where almost of all the

distribution changes approach the linear line. This means that 91.53% of the diversity of (X 1) rootstock growth parameters was 91.53% influenced by the diversity of the X 2 (stem diameter of top growth parameter, 8.47% remainder are outside of it.

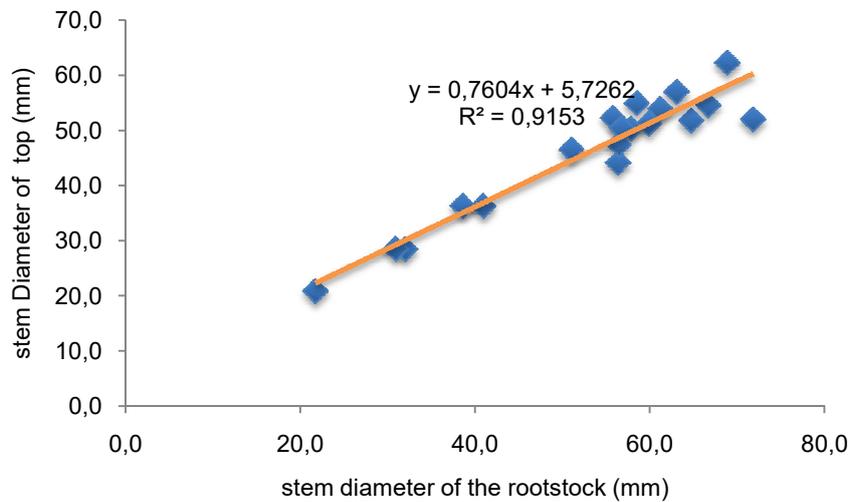


Figure 7 – The correlation between the the diameter of the rootstock and the diameter of the stem top of the candlenut

At  $R^2 = 91,53\%$ , the Y variation is influenced by the existence of its relationship with variables X. Therefore, the 91.53% of variations found in Y is determined by the index of the fit regression line nearby, namely against the point of observation. The greater the  $R^2$  means the more the line fit the regression towards the points of observation. Thus, the process of grafting cuttings candlenut has been considered appropriate (accordingly), in which its growth does not suffer any interference.

## CONCLUSION

From the result of this research, conclusions are drawn as follows:

The correlation between the plants' height (X 1) and the stem diameter (X 2) of candlenut plants provide a value  $r = 0.83^{**}$  which shows significant influence between those parameters and also indicates that the relationship is very strong.

The correlation between the stem diameter (X 2) and the number of branches (X 3) of candlenut plants shows value  $r = 0.76^{**}$  which implies that the influence is significant and the relationship is very strong.

The correlation between the plants' height (X 1) and the number of branches (X 3) of Candlenut plants shows value  $r = 0.68^*$  which indicates the real influence and strong relationship between those parameters.

The correlation between the plants's height and canopy width (X1) and (X 4) and correlation between the stem diameter (X 2) and the canopy width (X 4) of Candlenut plants show that the value were found at  $r = 0.63^*$  and  $r = 0.69^*$  both show significant influence and strong relationship between the parameters.

The correlation between the number of branches (X 3) and canopy width (X 4) of Candlenut plants shows value  $r = 0.49$  (tn) insignificant, which means that the influence is not significant and the relationship between those parameters are considered medium.

The correlation between the stem diameter growth bottom (X 1) and stem diameter of top(X2) of the candlenut grafting cuttings shows value  $R^2 = 91,53\%$ . Grafting cuttings is considered compatible for candlenut plants.

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## THE EFFECT OF LIGHT INTENSITY AND PACLOBUTRAZOL ON FLOWERING OF LANTANA PLANTS (*LANTANA CAMARA L.*)

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### ABSTRACT

*Lantana camara L.* widely planted in the city park as a bedding plant. *Lantana* grows in shaded place will experiencing stem elongation (etiolation) and decrease the number of flowers. This study use Nested Design that examined the effect of light intensity combined with four concentration of paclobutrazol with three replications. The results show that there was reduction of light intensity up to 50% with the addition of 80 ppm paclobutrazol concentration could inhibit plant length and increase the number of flower bunches of *lantana* plants. Concentration of 80 ppm paclobutrazol in 50% light intensity was able to inhibit plant length of 22,44% and increase the number of flower bunches by 20,81% compared to without paclobutrazol at 100% light intensity.

### KEY WORDS

*Lantana*, shaded place, light intensity, paclobutrazol, growing, flowering.

*Lantana (Lantana camara L.)* is an perennial bush ornamental plant that is often planted in city parks. *Lantana* has attractive flower colors including white, beige, yellow, pink, orange, purple and red. *Lantana* plants do not grow well in shaded places because *lantana* requires a place with high light intensity (Australian Weed Management, 2003). In fact, *lantana* plants in city parks are often planted in shaded places. Placement of *lantana* plants in a shaded place allowing the received light intensity will be reduced. *Lantana* plants placed in full intensity with reduced light intensity have different responses to the growth and flowering of the plants. Plants that are placed in shaded places tend to grow faster (etiolation) and the number of flowers decreases compared to plants in a place that are not shaded. Therefore, it is necessary to conduct research to obtain technology that can increase flowering of *lantana* plants even though *lantana* plants are in shaded conditions. The effort that can be done is to apply the growth regulating substances that are inhibiting vegetative growth of plants and able to increase flowering of plants.

Paclobutrazol is a growth inhibitor that works in sub meristems by inhibiting giberellin's biosynthesis through inhibition of kaurene oxidation to become kaurenic acid, so that cell elongation and enlargement is inhibited (Upreti, Reddy, Prasad, Bindu, Jayaram and Rajan, 2013). The working principle of paclobutrazol is to inhibit the oxidation reaction between kaurene and kaurenic acid in the synthesis of gibberellins which causes stress on plant stems (Salisbury and Ross, 1995). The research was conducted to get the interaction of light intensity and the right concentration of paclobutrazol which is able to control the length of the plant and increase the number of flowers.

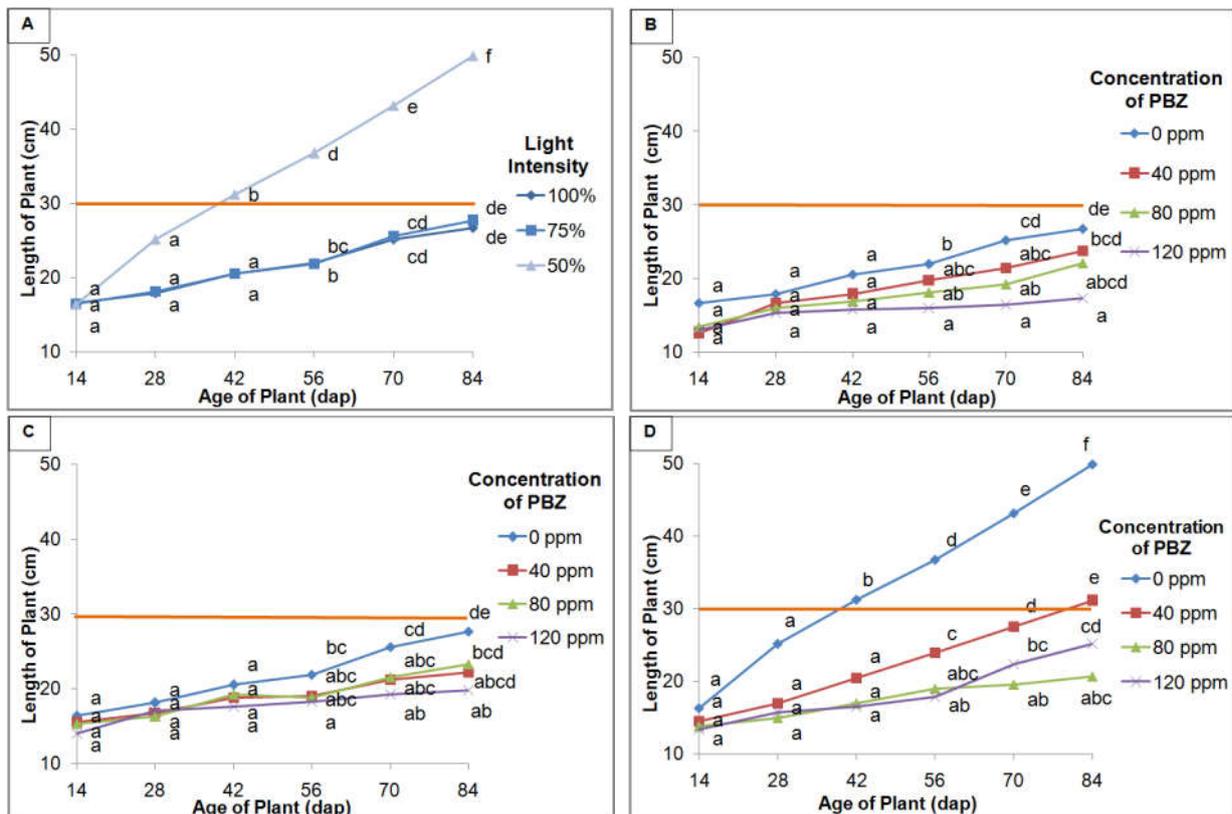
### MATERIALS AND METHODS OF RESEARCH

The research was conducted at nursery gardens of Housing and Residential Area (DISPERKIM) located at Bareng Village, Klojen Sub-district, Malang City at an altitude of  $\pm$  505 m above sea level with air temperatures ranging between 22,2°C-24,5°C, maximum temperature reaches 32,3°C and minimum temperature 17,8°C. Average air humidity ranges

74%-82% with maximum humidity reaches 97% and minimum reaches 37% from August to November 2017. This research uses Nested Design with two factors that is light intensity as the first factor and the concentration of paclobutrazol as the second factor (nested in intensity). The first factor consists of  $I_{50}$  (Intensity of light 50% (45.400 lux)),  $I_{75}$  (Intensity of light 75% (73.400 lux)) and  $I_{100}$  (100% intensity of light (101.300 lux)). The second factor consists of  $P_0$  (Without Paclobutrazol),  $P_{40}$  (concentration of paclobutrazol 40 ppm),  $P_{80}$  (Concentration paclobutrazol 80 ppm) and  $P_{120}$  (Concentration paclobutrazol 120 ppm). Parameters observed were length of plant, number of internodes, number of branches, number of leaves, leaf area, relative growth rate (RGR), dry weight of plant, leaf color, chlorophyll content, number of stomata, specific leaf area, flower color, number of flowers bunches, number of flowers per bunches and diameter of flowers bunches. The results were analyzed using the analysis of variance (F test) at 5% level and followed by BNT test at 5% level.

### RESULTS AND DISCUSSION

**Length of plants.** Intensity of light 50% (45,400 lux) resulted in the highest plant length compared to 75% (73,400 lux) and 100% (101,300 lux) intensity. Reduction of light intensity up to 50% (45,400 lux) with the addition of 80 ppm paclobutrazol was able to reduce plant length by 22,44% compared to without paclobutrazol at 100% light intensity (101,300 lux) (Figure 1).



A) Plant length at various light intensities, B) Plant length at 100% light intensity with different paclobutrazol concentrations, C) Plant length at 75% light intensity with different paclobutrazol concentrations and D) Plant length at 50% light intensity with different paclobutrazol concentrations.

Figure 1 – Effect of Light Intensity and Paclobutrazol Concentration on Plant Length (The same letter at the same plant age is not significantly different in the 5% BNT test)

Auxin hormones will increase along with the reduction in light intensity. Auxin will be buried in plants under conditions of low light intensity which can lead to faster elongation so

that plants grow taller/etiolation (Ardie, 2006). Paclobutrazol is a giberelin biosynthesis inhibitor that can significantly inhibit growth and increase flowering in some perennial plants. Giberelin production is inhibited by paclobutrazol by inhibiting entkaurene oxidation to become ent-kaurenoic acid in the process of giberellin's biosynthesis, which causes a reduction in the rate of cell division which causes the growth of plant length to be inhibited. (Mansuroglu *et al.*, 2009).

**Relative Growth Rate.** Intensity of light 50% (45,400 lux) tends to produce a higher relative growth rate compared to the relative growth rate at 75% (73,400 lux) and 100% (101,300 lux) light intensity. Reduction of light intensity up to 50% (45,400 lux) with the addition of 80 ppm paclobutrazol was able to reduce the relative growth rate of 11,71% compared to without palobutrazol at 100% light intensity (101,300 lux) (Figure 2). Low light intensity can increase the relative growth rate of plants due to low light intensity capable of producing plant length, number of stem segments, greater number of leaves and leaf area compared to the high light intensity. If the length of the plant, the number of stem sections, the number of leaves and leaf area are higher, it indicates that the relative growth rate is also higher. High concentrations of paclobutrazol will significantly reduce the dry weight of the plant. According to Nazarudin (2012) the inhibited gibberellins synthesis will affect the speed of cell division, then cause a reduction in the rate of plant growth.

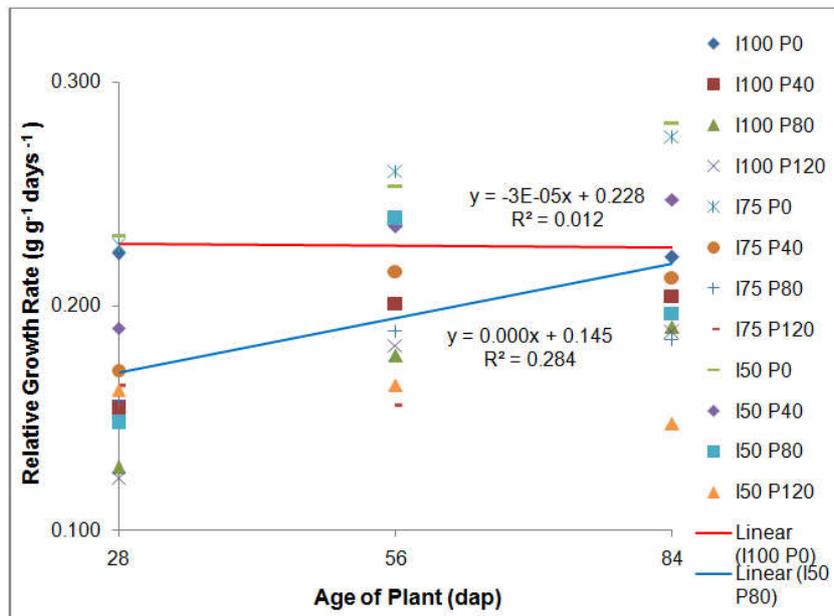


Figure 2 – Effect of Light Intensity and Paclobutrazol Concentration on Relative Growth Rate of the Plant

**Specific Leaf Area.** Reduction of light intensity up to 50% (45,400 lux) with the addition of 80 ppm paclobutrazol was able to reduce the specific leaf area by 17,67% compared to without palobutrazol at 100% light intensity (101,300 lux) (Figure 3). Increased concentrations of paclobutrazol at all light intensities will significantly reduce the specific leaf area. Sitompul and Guritno (1995) state that specific leaf area values are inversely proportional to biomass or leaf thickness. If the specific leaf area values are low indicate that the leaves are thicker. According to Jaleel, Manivannan, Sankar, Kishorekumar, Sankari and Panneerselvam (2007), leaf thickness treated with paclobutrazol will increase compared to control leaves. This is due to an enlargement of the size of the leaf mesophyll cells. Epidermal cells increase in size, palisade cells experience elongation and dilation, sponge cells grow larger and the cuticle layer thickens. Leaves at low light intensity will be thinner and wider, which aims to increase the interception of light by leaves. Decrease in leaf thickness at low light intensity is a form of plant adaptation to increase light transmission either to photosynthetic cells in the leaves and to the leaves located underneath.

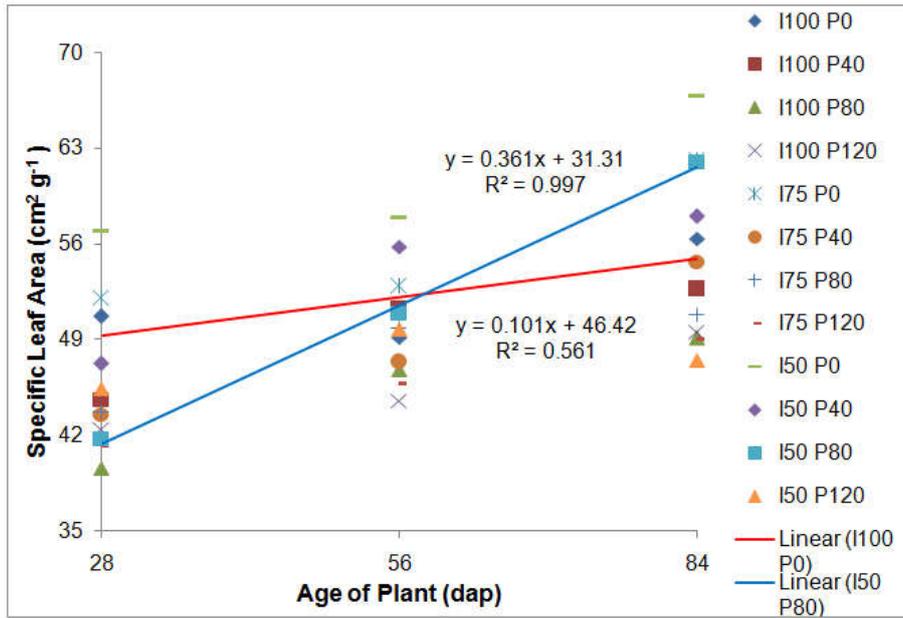


Figure 3 – Effect of Light Intensity and Paclobutrazol Concentration on Specific Leaf Area of the Plant

**Number of Flower Bunches.** Intensity of light 50% tends to produce a lower number of flower bunches compared to the number of flower bunches at 75% and 100% light intensity. Reduction of light intensity up to 50% (45,400 lux) with the addition of 80 ppm paclobutrazol was able to increase the number of flower bunches by 20,81% compared to without paclobutrazol at 100% light intensity (101,300 lux) (Figure 4). Increased concentration of paclobutrazol applied to the plant at all light intensities will significantly increase the number of flower bunches and the lower the intensity of light will reduce the number of flower bunches. According to Weaver (1972) the biosynthesis of gibberellins that is inhibited due to the given of retardant in the sub apical meristem causes a decrease in the rate of cell division, which causes vegetative growth to be inhibited, so that it will stimulate the plant to enter the generative phase which is forming flowers and seeds. According to Youssef and Abd.El-Aal (2013) states that flowering of plants treated with retardants is related to cytokinin synthesis. Therefore, vegetative and generative growth is determined by cytokines known as canopy hormones which are able to regulate flower formation and flowering buds in plants.

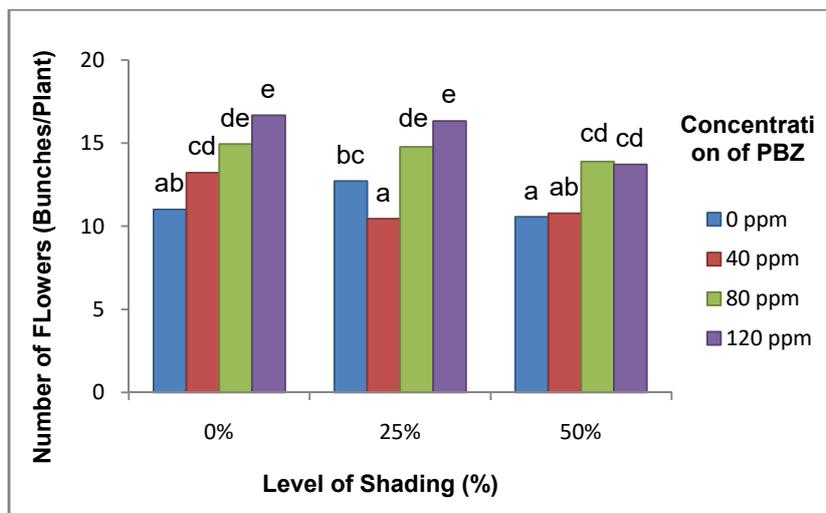


Figure 4 – Effect of paclobutrazol concentration treatment and light intensity on the number of flower bunches of lantana plants

## CONCLUSION

Reduction of plant length at a reduction in light intensity of 25-50% (45,400 - 73,400 lux) can be controlled with 80 ppm paclobutrazol concentration due to it can produce plant lengths below 30 cm and have a higher number of flower bunches compared than without paclobutrazol at 100% light intensity ( 101,300 lux).

## ACKNOWLEDGEMENTS

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DOI <https://doi.org/10.18551/rjoas.2018-08.61>**STRUCTURE AND MORPHOLOGY OF CELLULOSE FROM COCONUT COIR FIBERS****Pasang Patrik M.<sup>1,2\*</sup>, Yunianta<sup>3</sup>, Estiasih Teti<sup>3</sup>, Harijono<sup>3</sup>**<sup>1</sup>Graduate Program, Faculty of Agriculture, University of Brawijaya, Indonesia<sup>2</sup>Indonesian Palmae Research Institute, Manado, Indonesia<sup>3</sup>Faculty of Agricultural Technology, University of Brawijaya, Indonesia\*E-mail: [patrikpasang@yahoo.com](mailto:patrikpasang@yahoo.com)**ABSTRACT**

Coir fibers, which constitute the biggest part of coconuts, have not been used to the fullest. One way to increase the value added to the coconut fibers is by extracting the cellulose. Delignification and bleaching can be carried out simultaneously in the process of extracting the cellulose from coconut coir fibers. The purpose of this study was to determine the effects of delignification and bleaching carried out simultaneously on the structure and morphology of cellulose from coconut coir fibers. In the process, the powder of the coconut coir fibers was dissolved in ethanol (1:20 w/v) with concentrations of ethanol of 30%, 40%, and 50%. Then, hydrogen peroxide and sodium hydroxide solution were added. The delignification and bleaching process was carried out at a temperature of  $85^{\circ}\pm 2^{\circ}\text{C}$ , in respectively 90, 120, and 150 minutes. The spectrum analysis of the functional groups with Fourier Transform Infra-Red (FT-IR) shows that the peaks for the functional groups of O-H, C-H,  $-\text{CH}_2$  and 1,4- $\beta$  glycoside bonds as cellulose characteristics. The results of the analysis of the X-ray diffraction (XRD) indicate that the crystallinity index of the cellulose increased, and the XRD diffractogram major peaks at  $2\theta = 22^{\circ}$ . The morphological analysis with the scanning electron microscopy (SEM-EDX) shows that the treatment is quite effective to remove most of the silica bodies so as to improve accessibility for extracting the cellulose from the coconut coir fibers.

**KEY WORDS**

Coconut coir fibers, organosolv, cellulose, simultaneous process.

The coconut coir is the largest component of the coconut fruits, its availability is very abundant, but only a small fraction of it is used for industry. Most of the coconut coir becomes wasted in coconut plantations. One way to increase the added value of the coconut coir is by extracting the cellulose and then convert it into products that have economic values. The coconut coir is composed of fibers and powders, the main constituent of the coir fibers are the cellulose, hemicellulose, and lignin, with the proportion of 38.4%  $\alpha$ -cellulose, 24.5% hemicellulose, and 31.8% lignin (Basu et al., 2015).

The cellulose polymers characterized as builders of the monosaccharide units. The glucose monomer units are bonded to one another to form a linear chain through the glycoside bonds which have a tendency to form intra and intermolecular hydrogen bonds. The OH groups of glucose units adjacent to the same cellulose molecules can form intramolecular hydrogen bonds. These bonds provide a certain rigidity in each chain. The OH group adjacent to the cellulose molecules can form intermolecular hydrogen bonds. These bonds lead to the formation of larger molecular structure. The hydrogen bond between the hydroxyl group at the adjacent chain cause a cellulose polymer that is relatively stable, insoluble in water and other solvents (Eichhorn et al., 2010). In nature, the cellulose chains are synthesized and formed into microfibrils consisting of crystalline and amorphous regions (Fernandes et al, 2011; Nishiyama, 2009), where the microfibrils form fibrils that will eventually become cellulose fibers. Based on its molecular structure, the cellulose can be dissolved in water because it contains many hydroxyl groups that can form hydrogen bonds with water. In fact, the cellulose is not only insoluble in water, but also in other solvents, the

reason of which is the high rigidity of the chain and the chain intermolecular forces due to the hydrogen bonding between the hydroxyl groups of adjacent chains.

In lignocellulosic materials, cellulose is bonded together with hemicellulose and lignin by covalent bonding, various intermolecular bridges and van der Waals forces forming a complex structure (Kumar et al., 2010). The cellulose needs to be separated first from the hemicellulose and lignin before being used as the base material. The separation of the cellulose from the lignocellulosic materials can be done through delignification. Delignification aims to degrade and dissolve lignin optimally with minimal damage to the cellulose. Several studies have been investigated delignification the agricultural residues using different techniques (Gumuskaya et al., 2007; Law et al., 2007; Brigida et al., 2010; Bian et al., 2010; Johar et al., 2012; Penjumras et al., 2014; Arsyad et al., 2015) they were generally based on chemical treatments at the different route. Organosolv is delignification using an organic solvent to dissolve the lignin, the type of solvent used include ethanol, methanol, acetic and formic acid (Alaejos et al., 2006; Zhao et al., 2009; Vanderghem et al., 2012; Cybulska et al., 2015). The use of organic solvents intended to reduce the surface tension of the solution at a high temperature, accelerate the penetration into wood chips (Bendzala and Kokta, 1995). The delignification organosolv causes the loss of  $\alpha$ -aryl ether bond ( $\alpha$ -O-4) and glycerol aryl- $\beta$ -aryl ether ( $\beta$ -O-4) contained in the lignin molecules (Sundquist, 1999), and then dissolving the lignin component in an organic solvent.

The organosolv process provides several advantages such as high-yield pulp produced, recycled black liquor can be done easily, the risk of contamination is low and easily recoverable (Caparros et al., 2007). The organosolv process that has been demonstrated in commercial alcell process that uses ethanol, acetocell process using acetic acid, and organocell process using methanol (Shatalov et al., 2005; Alaejos et al., 2006). Ethanol is preferred because of its ability to dissolve lignin, and its ease of recovery (Caparros et al., 2007; Wildschut et al., 2013), less expensive, and can be distilled from the black liquor for reuse as an extracting solution.

During this time, the process of delignification and bleaching is done separately. For the efficiency of the process, the delignification and bleaching can be performed simultaneously. The delignification and bleaching carried out simultaneously on the coconut coir fibers have never been done. In this study, ethanol was used in the delignification while in the bleaching is hydrogen peroxide was used as an ingredient. The purpose of this study was to determine the effects of delignification and bleaching carried out simultaneously on the structure and morphology of cellulose from coconut coir fibers. The functional groups of the cellulose were analyzed by Fourier Transform Infra-Red spectroscopy (FT-IR), the crystallinity index of the cellulose was analyzed by X-ray diffraction (XRD), the morphology of the cellulose was analyzed by a scanning electron microscopy (SEM-EDX).

## METHODS OF RESEARCH

The coconut fibers were obtained from the experimental garden Kima Atas, Palmae Research Institute, Manado area, Indonesia. The other ingredients were ethanol, hydrogen peroxide ( $H_2O_2$ ), sodium hydroxide (NaOH). The main equipment used included a hot plate, magnetic stirrer, three-neck flask, condenser, analytic balance, oven, and glass beaker.

*Delignification and Bleaching.* The coconut coir fibers and powder were separated from each other using a decorticator. Furthermore, the coconut fibers were destroyed using a grinder. The coconut fiber powder was sieved using a sieve sized 60 mesh. The process of delignification and bleaching was conducted simultaneously (modification of Tutus, 2004; Gumuskaya et al., 2007). Five grams of powder of the coconut coir fibers was dissolved in 100 ml of ethanol, then 50 ml  $H_2O_2$  3% and 25 ml NaOH 1.5% were added. The proportion between the raw materials to the ethanol was 1:20, with concentrations of ethanol of 30%, 40%, and 50% and delignification times of 90, 120 and 150 minutes. The process of delignification and bleaching was done in a high-neck flask equipped with a condenser, being stirre using a magnetic stirrer and a heat source coming from a hot plate at a temperature of  $85^\circ \pm 2^\circ C$ . Once the process was complete, the sample was separated from the solution and

washed with distilled water three times to remove the residual chemicals and then it was dried in an oven at a temperature of  $60 \pm 2^\circ\text{C}$  for eight hours.

**Characterization of Cellulose.** The analysis of the functional groups of the cellulose samples was carried out by using an instrument-8400S Shimadzu FTIR spectrophotometer with KBr pellets (Rosa et al., 2010). The samples were characterized and added with KBr, crushed, homogenized, and then placed in the sample holder, and irradiated with infrared rays. The spectrum of observations was maintained at a wavelength of  $4000\text{-}400\text{ cm}^{-1}$  with a resolution of  $16\text{ cm}^{-1}$ .

The determination of crystallinity was done by using an instrument X-ray diffraction (XRD) PANalytical X'Pert MPD (Bian et al., 2012). The samples were placed in the sample holder with the X-ray source Cu ( $\lambda = 0154\text{ nm}$ ), the generator voltage of 40 kV and an electric current of 30 mA generator, the angle of diffraction ( $2\theta$ ) used was  $10\text{-}90^\circ$ . In determining the crystallinity index, the following equation was used (Segal et al., 1959) :

$$\text{Crl} = [(I_{002} - I_{\text{am}}) / I_{002}] \times 100$$

where Crl is the crystallinity index (expresses the relative degree of crystallinity),  $I_{002}$  is the maximum intensity of the 002 lattice diffraction ( $I_{002}$ ,  $2\theta = 22^\circ$ ),  $I_{\text{am}}$  is the height of the minimum between the peaks of 002 and 101 ( $I_{\text{am}}$ ,  $2\theta = 18^\circ$ ).  $I_{002}$  represents of the crystalline and amorphous regions,  $I_{\text{am}}$  represents of the amorphous regions.

The analysis of the surface morphology and elemental composition of the cellulose (Bian et al., 2012) was carried out by using a scanning electron microscopy instrument associated with energy dispersive X-ray (SEM-EDX Hitachi TM3000). The samples were placed in an aluminum plate that had two sides and then they were coated with gold and were subsequently observed at a voltage of 15 kV.

## RESULTS AND DISCUSSION

**FT-IR characterization.** The FT-IR analysis is a method used to identify the presence of certain functional groups in the molecule, in which the functional groups generally have their own characteristics. This method is based on the interactions between the infrared radiation and matter, interactions in the forms of absorption at a particular wave number of energy-related transitions between different energy states of vibration and rotation. The absorption peaks, which are observed with respect to the purity cellulose, are the wave number  $1740\text{ cm}^{-1}$ ,  $1509\text{ cm}^{-1}$  and  $1259\text{ cm}^{-1}$ . The peak at  $1740\text{ cm}^{-1}$  is related to the vibration acetyl group and ester uronat hemicellulose or chain esters of carboxylic group of ferulic acid and p-kumarat lignin. A peak at  $1509\text{ cm}^{-1}$  shows the C=C vibration skeletal aromatic lignin. A peak at  $1267\text{ cm}^{-1}$  is related to the strain CO hemicellulose and lignin (Rosa et al., 2010). The FT-IR spectrum of cellulose from coconut coir fibers after the simultaneous process is presented in Figure 1 and the main absorption peaks are presented in table 1.

Based on Table 1, the observed wave number ( $\text{cm}^{-1}$ ) of the cellulose of coconut coir fibers are seen at their peak with the wave number  $3340\text{-}3394\text{ cm}^{-1}$  showing the stretching vibration of OH groups, the peak at  $2898\text{-}2941\text{ cm}^{-1}$  showing the stretching vibration of the  $\text{-CH}_2$  groups cellulose (Jahan et al., 2011; Rosa et al., 2012; Satyamurthy et al., 2011). The absorption peaks at wave number  $1740\text{ cm}^{-1}$  were associated with stretching C=O group and the acetyl ester uronat hemicellulose ester or carboxyl groups on the p-coumarat lignin (Alemdar and Sain, 2008). The loss of the peak at  $1740\text{ cm}^{-1}$  shows that the delignification and bleaching conducted simultaneously could degrade hemicellulose and lignin, similar results were also reported by Alemdar and Sain, 2008; Nuruddin et al., 2011; Rosa et al., 2012. The peak that appears at wave number  $1645\text{-}1649\text{ cm}^{-1}$  indicates infiltration of water and it is associated with bending vibration of water molecules due to the strong interactions between the cellulose and water (Johar et al., 2012; Rosa et al., 2012). The peak at wave number  $1510\text{ cm}^{-1}$  shows the C=C aromatic skeletal vibration of lignin, indicating that the removal of lignin has not been perfect. Sarkanen et.al (1967) used lignin spectrum to show that the absorption peak at wave number  $1510\text{ cm}^{-1}$  contains lignin types guacyl.

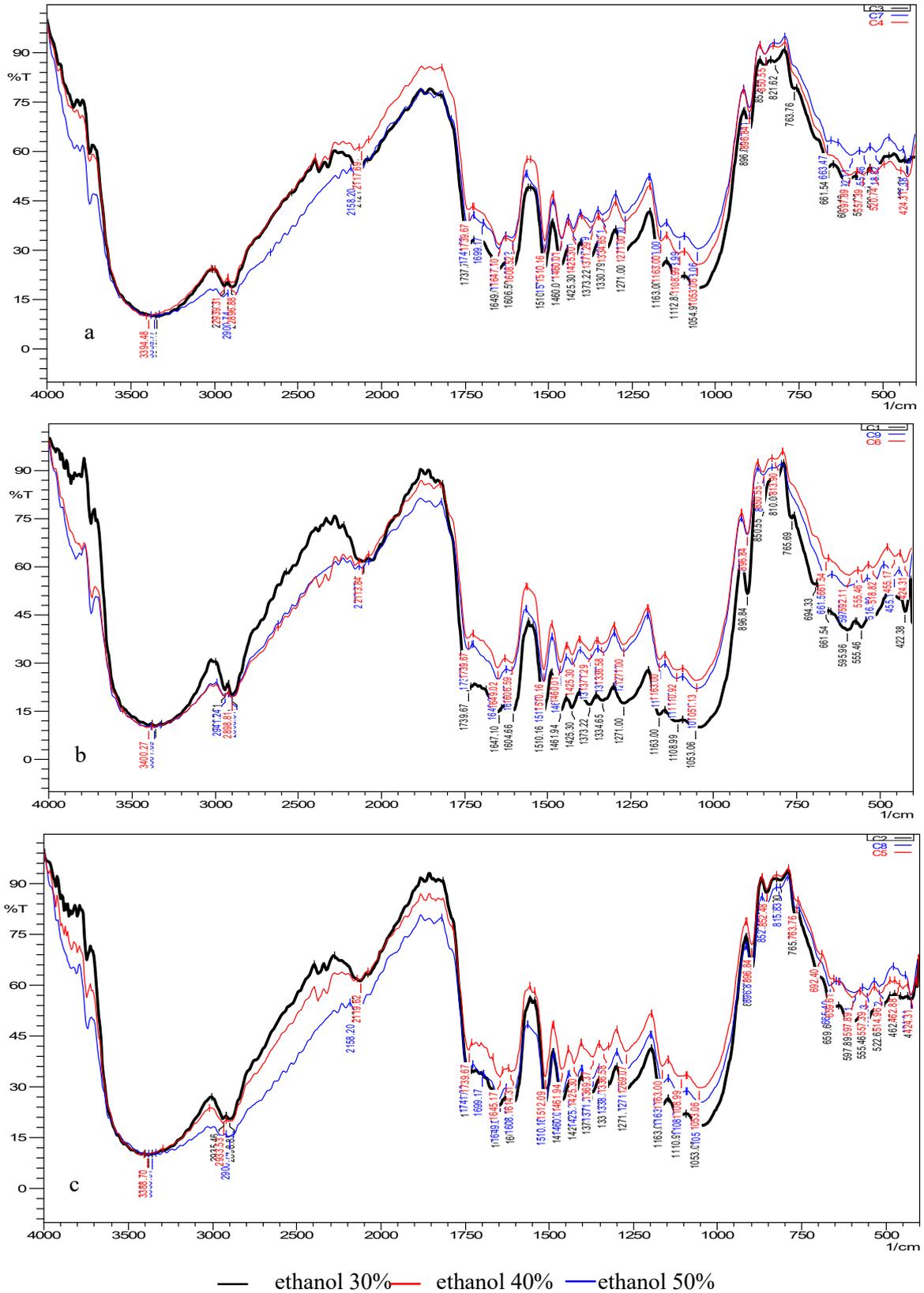


Figure 1 – FTIR spectra of cellulose from coconut coir fibers with different concentrations ethanol treatments for 90 minutes (a); 120 minutes (b); and 150 minutes (c). The x-axis is the wave number (cm<sup>-1</sup>), the y-axis is the transmittance (%)

The absorption peaks are important to help identify the cellulose component, which is  $1420\text{ cm}^{-1}$ , and are associated with the amorphous cellulose and crystalline cellulose II, while  $1430\text{ cm}^{-1}$  is associated with the crystalline cellulose II (Wang et al., 2009). Generally, the symmetrical bending of  $\text{CH}_2$  amorphous cellulose and crystalline cellulose I is shown at wave number  $1427\text{ cm}^{-1}$  (Bian et al., 2012). The  $\text{CH}_2$  symmetrical flexure in this study is detected at wave number  $1425\text{ cm}^{-1}$ , and according to Nelson and Connor (1964) it contains a mixture of the crystalline cellulose I and cellulose amorphous cellulose. Meanwhile, the emergence of the peak at  $1373\text{ cm}^{-1}$  is associated with bending vibrations from the group C-H and C-O aromatic ring polysaccharide in the range of  $1369\text{-}1373\text{ cm}^{-1}$  (Troedec et al., 2008). This is can be an indication of a larger exposition of the cellulose and hemicellulose on the fiber surface. The C-O stretching of aryl lignin can be observed with the advent of peak at  $1235\text{ cm}^{-1}$  (Yang et al., 2007), but the results of this study indicate that the peak is not detected in the FT-IR spectrum. The peak which is not detected is probably caused by the degradation of the matrix structure of coconut coir fibers or restructuring some of the functional groups unstable into a more stable structure (Harun et al., 2013). The asymmetry stretching of C-O-C is shown at wave number  $1163\text{ cm}^{-1}$ . The vibration of  $\text{C}_1\text{-H}$  is a special vibrate  $\text{C}_1$  anomeric for  $\beta$ -glycoside, indicated by the appearance of the peak at wave number  $896\text{ cm}^{-1}$  (Zhao et al., 2015).

Table 1 – Main absorption wave number (cm-1) of cellulose from coconut coir fibers

Functional group	C1	C2	C3	C4	C5	C6	C7	C8	C9
O-H stretching	3340	3359	3379	3394	3400	3388	3359	3361	3355
H-C-H stretching	2937	2939	2935	2939	2898	2933	2900	2941	2900
O-H deformation $\text{H}_2\text{O}$	1649	1647	1645	1647	1649	1645	1649	1649	1649
C=C aromatic skeletal vibration of lignin	1510	1510	1510	1510	1510	1512	1510	1510	1510
C-H deformation of cellulose	1425	1425	1425	1425	1425	1425	1425	1460	1425
C-H, C-O aromatic vibration of polysaccharide	1373	1373	1373	1371	1371	1369	1371	1373	1371
C-O-C asymmetric stretching of cellulose, hemicellulose	1163	1163	1163	1163	1163	1163	1163	1161	1163
glucose ring stretching (C)	1112	1108	1110	1108	1110	1108	1108	1110	1108
C-O stretching of cellulose, hemicellulose, lignin	1054	1053	1053	1053	1051	1053	1053	1051	1051
Glucose ring stretching; $\text{C}_1\text{-H}$ deformation of cellulose, hemicellulose	896	896	896	896	896	896	896	898	896

C1 = ethanol 30%, 90 minutes; C2 = ethanol 30%, 120 minutes; C3 = ethanol 30%, 150 minutes; C4 = ethanol 40%, 90 minutes; C5 = ethanol 40%, 120 minutes; C6 = ethanol 40%, 150 minutes; C7 = ethanol 50%, 90 minutes; C8 = ethanol 50%, 120 minutes; C9 = ethanol 50%, 150 minutes.

**X-ray diffraction analysis.** The cellulose consists of crystalline and amorphous regions which are randomly mixed. To analyze the crystal structure of the crystalline and amorphous regions, the X-ray diffraction is used as it allows to instantly capture images of the crystalline cellulose. The X-ray diffractogram of the crystalline region is indicated by a sharp peak while the amorphous is indicated by widened peaks. X-ray diffraction has been widely used to evaluate the crystalline structure of the cellulose since it provides a qualitative and semi-quantitative evaluation of the amorphous and crystalline cellulosic components in a sample (Park et al., 2010). The crystallinity index of the cellulose is one of the important parameters of the crystal structure (Gharehkhani et al., 2015).

The crystallinity index of the cellulose can be improved by performing delignification and bleaching carried out simultaneously. The simultaneous process will hydrolyze the amorphous components remaining in the delignification process. The addition of NaOH causes the fiber surface to become more open and porous and that will facilitate penetration of hydronium ions to degrade the amorphous components thereby increasing the crystallinity of the cellulose (Khristova et al., 2012). The crystallinity index of cellulose from coconut coir fibers is presented in Table 2.

Table 2 – The crystallinity index of cellulose from coconut coir fibers

Treatment	Crystallinity index (%)
C1	51.58
C2	44.59
C3	52.12
C4	54.05
C5	48.71
C6	48.96
C7	52.09
C8	49.76
C9	48.43

C1 = ethanol 30%, 90 minutes; C2 = ethanol 30%, 120 minutes; C3 = ethanol 30%, 150 minutes; C4 = ethanol 40%, 90 minutes; C5 = ethanol 40%, 120 minutes; C6 = ethanol 40%, 150 minutes; C7 = ethanol 50%, 90 minutes; C8 = ethanol 50%, 120 minutes; C9 = ethanol 50%, 150 minutes.

The crystallinity index of coconut coir fibers is 47.30% before the treatment. After treatment, the crystallinity index is about 48.43 to 54.05%. Crystallinity is low on raw coconut coir fibers because these crystalline regions are embedded in an amorphous component matrix such as hemicellulose, lignin. The changes in the crystallinity index can be attributed to the rearrangement of the cellulose molecules after removal of the amorphous components (Chen et al., 2011) because the amorphous regions easily absorb chemicals and undergo hydrolysis. The elimination of the amorphous components contributed to the increase in the crystallinity index so that the fibers will decrease swelling (Wan et al., 2011). H<sub>2</sub>O<sub>2</sub> bleaching process effective in the elimination of the remaining amorphous constituents and thus increasing the crystallinity index. Delignification and bleaching carried out simultaneously were quite effective for increasing the hydrolyzing reagents to the cellulose content and reducing the amorphous content in the crystals. Amorphous components, in this case, hemicellulose and lignin have been partially reduced.

The treatment using a concentration of ethanol of 40% and delignification time of 90 minutes (C4) produces cellulose with the highest crystallinity index that is 54.05%. The treatment using a concentration of ethanol of 30% and delignification time of 120 minutes (C2) produces cellulose with a crystallinity index lower than the raw material. This is because the swelling occurs only in the crystal so that the crystalline and amorphous persist (Jonoobi et al., 2011). The increased timing on the treatment processes of C6 and C9 causes a crystallinity index to be low because of the damage occurrence in the amorphous and the crystalline portion of a cellulose (Rosa et al., 2010). The XRD patterns of cellulose from coconut coir fibers are presented in Figure 2. The cellulose diffractogram in the coconut coir fibers shows that crystalline peaks are at  $2\theta = 15^\circ$  and  $2\theta = 22^\circ$  are the crystalline structure of the cellulose I (Nishiyama, 2009). The main peak of the cellulose in the coconut coir fibers diffractogram is shown in 002 peak ( $2\theta = 22^\circ$ ), indicating the removal of non-crystalline. Similar results were also reported by Fahma et al., 2011; Basu et al., 2015; Arsyad et al., 2015.

**Morphological analysis.** The analysis of the morphology of the raw material of coconut coir fibers and the cellulose extracted from the coconut coir fibers was carried out by using the SEM-EDX. The results of the analysis of the Scanning Electron Microscopy (SEM) can provide information on the shape and change the surface of a material being tested. The samples to be analyzed by the SEM should have a surface that is as reflective of electrons, so that the polymer material can be coated with gold in order to produce a sharp image of the surface. The Energy Dispersive X-Ray (EDX) one device used together with the SEM, EDX measurement which constitutes a quantitative analysis to determine the levels of elements in the samples of mass and atomic in percentages. Based on the analysis of the EDX in Table 3, it is indicated that the content of the main elements of the coconut coir fibers is C, O, Si and K. Silica is a secondary macro elements that constitutes the core substance of plant protein to strengthen the walls of the cellulose. The potassium element plays an important role in the stomata, enzyme activities and promotes increased strengths and durability against the weathering and deformation of the cellulose.

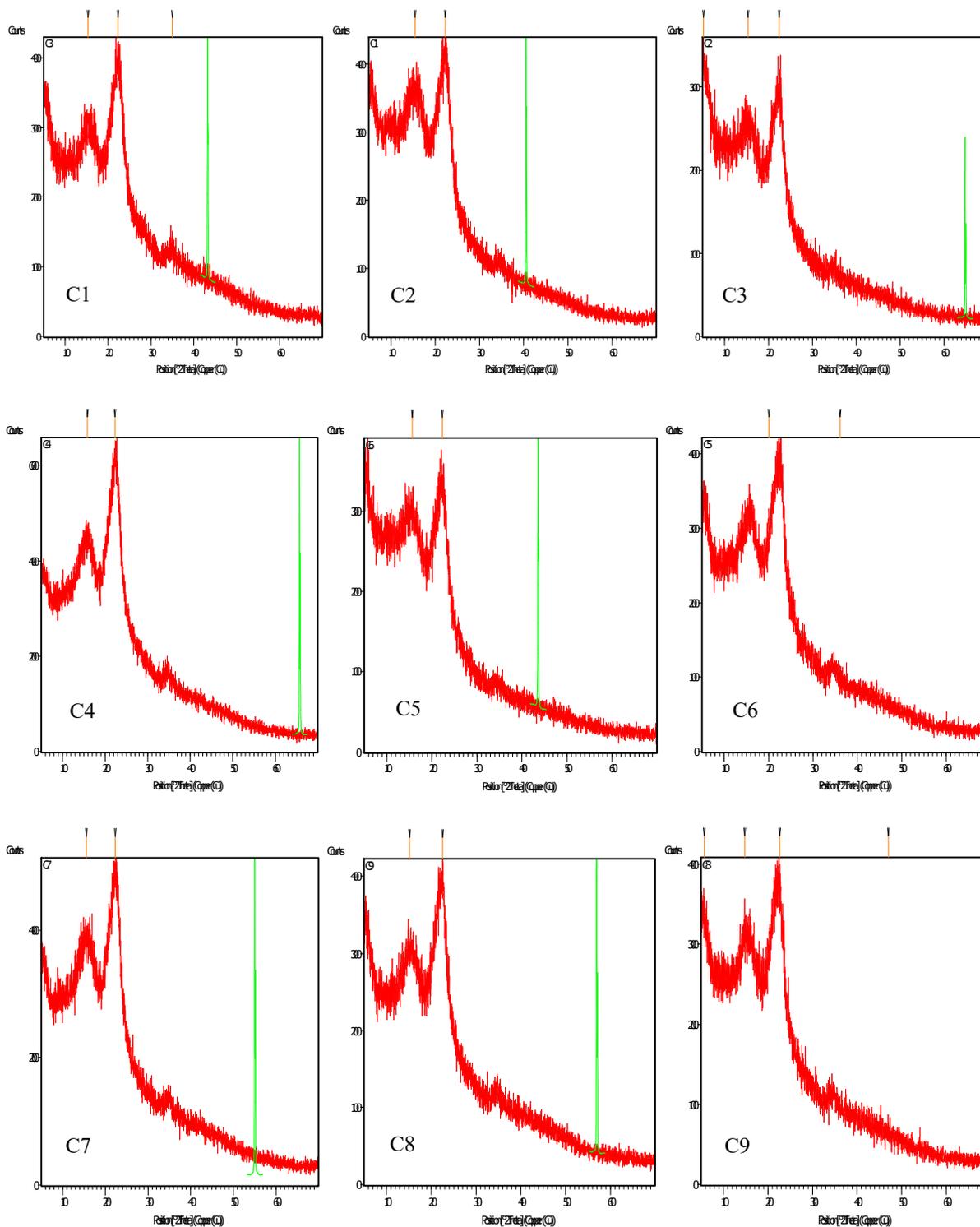


Figure 2 – XRD patterns of cellulose from the coconut coir fibers at the various treatment. The x-axis is the angle of diffraction, 2 theta ( $^{\circ}$ ), the y-axis is the intensity count

Table 3 – The content of coconut coir fibers element before the treatments process based on the EDX analysis

Element	Mass (%)	Atomic (%)
C	35.118	45.311
O	45.451	44.026
Si	19.053	10.513
K	0.378	0.150

The silica bodies become detached during the delignification and bleaching process carried out simultaneously leaving holes on the surface of the fiber. If observed carefully at the inside of the holes indicating the lines that connect the inside of silica to the surface of the fiber (Law et al., 2007). The loss of the silica bodies will increase the penetration of the chemical into the raw materials during the treatments. The shape, size and distribution patterns which are observed in the silica bodies of coconut coir fibers have similarities with empty bunches of oil palm fibers studied by Law et al., 2007. The silica bodies are pointy shaped and serve as a protection of the cellulose and give support to the plant structure. (Law et al., 2007; Neethirajan et al., 2009).

Before the treatments, it is shown the silica bodies spread over the surface of coconut coir fibers and other impurities (Figure 3a), the silica bodies are difficult to be degraded. The micrograph of the SEM of coconut coir fibers before and after the treatments is presented in Figure 3. After delignification and bleaching carried out simultaneously, it is shown that the structure of the fiber surface becomes smoother and cleaner. The treatment is effective enough to remove most of the silica bodies and waxy. On the surface of the fibers, holes are visible (Figure 3c). The released silica bodies can improve accessibility for extracting the cellulose from the coconut coir fibers. The EDX analysis results in Table 4, show that the main elements of the cellulose extracted from the coconut coir fibers are C and O, while the Si element is not detected.

Table 4 – The element of the cellulose after delignification and bleaching carried out simultaneously processes

Element	Atomic (%)								
	C1	C2	C3	C4	C5	C6	C7	C8	C9
C	64.301	74.778	80.815	60.420	71.949	66.529	64.702	60.892	88.734
O	35.699	25.222	19.185	38.727	28.051	33.471	35.298	38.806	11.266

C1 = ethanol 30%, 90 minutes; C2 = ethanol 30%, 120 minutes; C3 = ethanol 30%, 150 minutes;  
C4 = ethanol 40%, 90 minutes; C5 = ethanol 40%, 120 minutes; C6 = ethanol 40%, 150 minutes;  
C7 = ethanol 50%, 90 minutes; C8 = ethanol 50%, 120 minutes; C9 = ethanol 50%, 150 minutes.

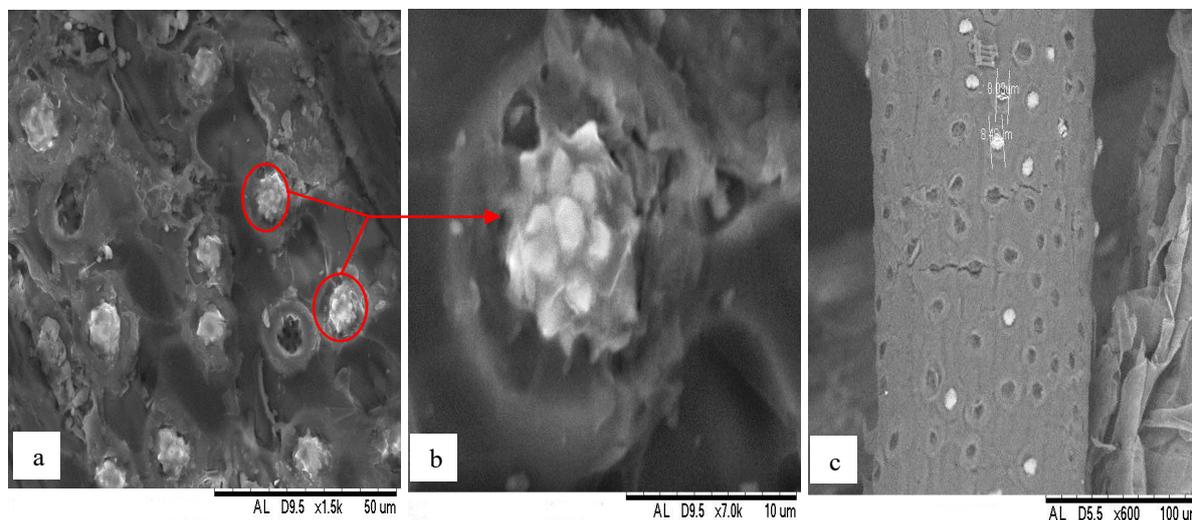


Figure 3 – SEM image of coconut fibers before the treatment with a magnification of 1500x (a); the body of silica with a magnification of 7000x (b), the cellulose of the coconut coir fibers after treatment with a magnification of 600x (c)

## CONCLUSION

Cellulose in coconut coir fibers was successfully extraction through a treatment of delignification and bleaching carried out simultaneously. The FT-IR spectra show peaks for functional groups O-H, C-H, -CH<sub>2</sub> and 1,4- $\beta$  glycoside bond as cellulose characteristics. The

crystallinity index of the cellulose increases after delignification and bleaching are conducted simultaneously. The highest crystallinity index of 54.05% was obtained from the treatment by using a concentration of ethanol of 40% and delignification time of 90 minutes. The morphological analysis with the scanning electron microscopy (SEM-EDX) shows that the treatment is quite effective to remove most of the silica bodies so as to improve accessibility for extracting the cellulose from the coconut coir fibers.

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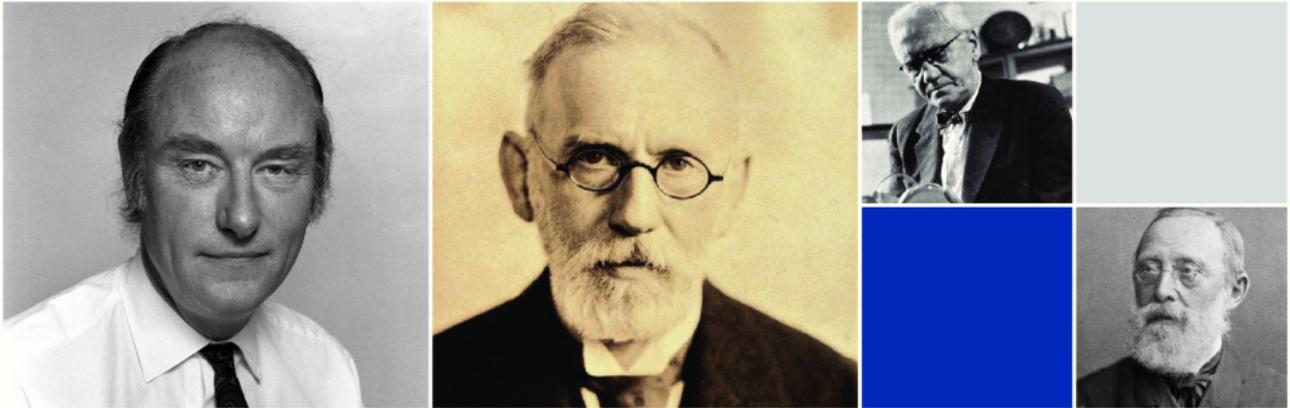
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