RJOAS: Russian Journal of Agricultural and Socio-Economic Sciences
ISSN 2226-1184 (Online) | Issue 12(144), December 2023

UDC 332; DOI 10.18551/rjoas.2023-12.05

MODEL OF INSTITUTIONAL STRENGTHENING ON PERCEPTIONS OF INNOVATION IN BUMDES ACTIVITIES IN THE FIELD OF AGRICULTURE IN TIDAL LANDS OF BARITO KUALA DISTRICT, SOUTH KALIMANTAN, INDONESIA

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ABSTRACT
Village-owned enterprises play a crucial role in the economic development of the community. Therefore, it has been decided that villages will receive financial aid from the district or city government, in the form of village funds. These funds are allocated to BUMDes (Village-Owned Enterprises) with the aim of enhancing the economy and the well-being of the community in the villages of Barito Kuala Regency. There are 133 village-owned enterprises (BUMDes) in the Barito Kuala area. 33 out of the total 133 BUMDes are engaged in the agricultural sector. Due to the agricultural potential of the tidal land in Barito Kuala Regency, the local communities have established BUMDes, which are focused on agricultural activities. The objective is to identify the institutional strengthening model that affects the perception of innovation in BUMDes activities in the agriculture sector on tidal land in Barito Kuala Regency, South Kalimantan Province. The objective is to identify the pivotal aspects that impact the institutional strengthening model. A total of one hundred samples were utilized. The employed analytical tools include descriptive analysis, product moment correlation analysis, Cronbach's alpha, and structural equation model (SEM) analysis. The findings of the research suggest that exogenous latent variables have a substantial influence of 76.8% on the institutional function of BUMDes, whilst other variables not included in the model have an impact of 23.2%. The R2 value for Y2, which measures individual skill in managing innovation, is 0.864. These findings indicate that external hidden factors explain 86.4% of the differences in individual skill in innovation management, while the remaining 13.6% can be attributed to other variables that were not considered in the analysis. The analytical findings of the path coefficients in the structural model reveal the presence of five influential paths. This pathway establishes connections between various factors: X1 (representing individual characteristics) and Y1 (representing the institutional role of BUMDes); X1 (representing individual characteristics) and Y2 (representing individual capabilities in managing innovation); X2 (representing the use of communication media) and Y1 (representing the institutional role of BUMDes); X3 (representing BUMDes dynamics) and Y1 (representing the institutional role of BUMDes); X4 (representing the external environment) and Y1 (representing the institutional role of BUMDes); X5 (representing the quality of information) and Y1 (representing the institutional role of BUMDes); X5 (representing information quality) and Y2 (representing individual capability in managing innovation); and Y1 (representing the institutional role of BUMDes) and Y2 (representing individual capability in managing innovation).

KEY WORDS
BUMDes, innovation, tidal land, structural equation model.

Village-owned enterprises (BUMDes) are institutions or village economic entities that are established and controlled by the village administration. They are administered in an economically, independent, and professional manner, utilising primarily the community's riches as capital (Dewi, 2014). Village-Owned Enterprises (BUMDes) were established with the objective of generating profits to enhance the village's primary revenue, enhance the village economy, and uplift the welfare of village communities (Budiono, 2015). Village-owned enterprises (BUMDes) play a crucial role in stimulating the village economy and

enhancing the welfare of village communities (Umanailo et al., 2018). The attainment of the goals and objectives of village-owned enterprises (BUMDes) can be realised via the use of a concentrated and proficient management approach. Village-Owned Enterprises (BUMDes) serve as a remedy for issues that arise in villages and are intended to stimulate and propel the local economy (Agunggunanto et al., 2016).

In recognition of the significance of village-owned enterprises in fostering the economic growth of the community, it has been established that villages will receive financial aid from the district or city government. This assistance, known as village funds, will be allocated to BUMDes (village-owned enterprises) with the aim of enhancing the local economy and improving the well-being of the residents in the villages of Barito Kuala Regency. Barito Kuala district has a total of 133 village-owned enterprises (BUMDes). Out of the total 133 BUMDes, 33 are involved in agricultural activities. The reason for this is that Barito Kuala Regency possesses agricultural potential due to its tidal terrain, leading to the establishment of BUMDes in the local villages, which mostly focus on agricultural activities.

Village-owned enterprises (BUMDes) in the agricultural sector will implement innovation and technology within the agricultural sector to promote the long-term viability of the BUMDes business. Farmer-led institutional innovation is the act of farmers taking the initiative to establish, develop, and enhance institutions that are tailored to address the specific issues or possibilities they face in their own setting (de Bont and Veldwisch, 2020).

METHODS OF RESEARCH

The research will be conducted in Barito Kuala Regency. The research site was deliberately selected, taking into account that Barito Kuala Regency possesses the largest expanse of tidal land in South Kalimantan. The research process encompasses three main stages: preliminary survey, research execution, and conclusion of the research report.

The focus of this study was on BUMDes administrators operating in the agriculture sector specifically in Barito Kuala Regency. A total of 100 samples were utilized. The sample size was chosen to ensure that it accurately represents the population. This study focuses on the use of structural equation modelling (SEM) to analyze the perception of innovation in BUMDes activities in the agricultural sector in the tidal fields of Barito Kuala Regency, South Kalimantan Province.

This research use structural equation modelling (SEM) analysis as its analytical tool. Maruyama, in the Handbook of Statistical Techniques by Mustafa and Wijaya (2010), defines structural equation modelling (SEM) as a statistical model that quantifies the strength of hypothetical relationships between variables in a theoretical model, either directly or through intervening variables. Mediating variables. Partial Least Squares (PLS) is a component-based Structural Equation Modelling (SEM) approach that incorporates formative build features. PLS is alternatively referred to as a prediction-oriented technique. The Partial Least Squares (PLS) approach is particularly advantageous for forecasting dependent variables that involve a substantial number of independent variables. The PLS technique assumes that all variance measures are suitable for explanation and are in the form of variances.

Structural equation modelling is a statistical method that utilizes both quantitative data and qualitative causal assumptions to examine and estimate causal relationships. This research used the partial least squares (PLS) approach as its methodology. The structural equation model is a statistical technique used to analyse the relationships between observed and latent variables in a dataset. Structural Equation Modelling (SEM) is a statistical method that enables researchers to examine intricate correlations between variables in order to acquire a full understanding of the entire model (Ghozali, 2008). The Partial Least Squares (PLS) method has distinct benefits, such as its ability to handle data that does not follow a multivariate normal distribution and its independence from high sample sizes.

PLS features two indicator models in its representation, specifically:

- Reflective Indicator Model. The reflexive indicator model, commonly known as the primary factor model, is characterised by the covariance of indicator measurements being impacted by latent variables or reflecting variations in latent variables;

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The coefficient of determination (R2) for Y2, representing individual competence in managing innovation, is 0.864. This suggests that exogenous latent variables account for 86.4% of the variation in the measurement model, or outer model, defines how each block of indicators relates to its latent variables. The design of the measurement model determines the nature of the indicators of each latent variable, whether reflexive or formative, based on the operational definition of the reflexive outer model:

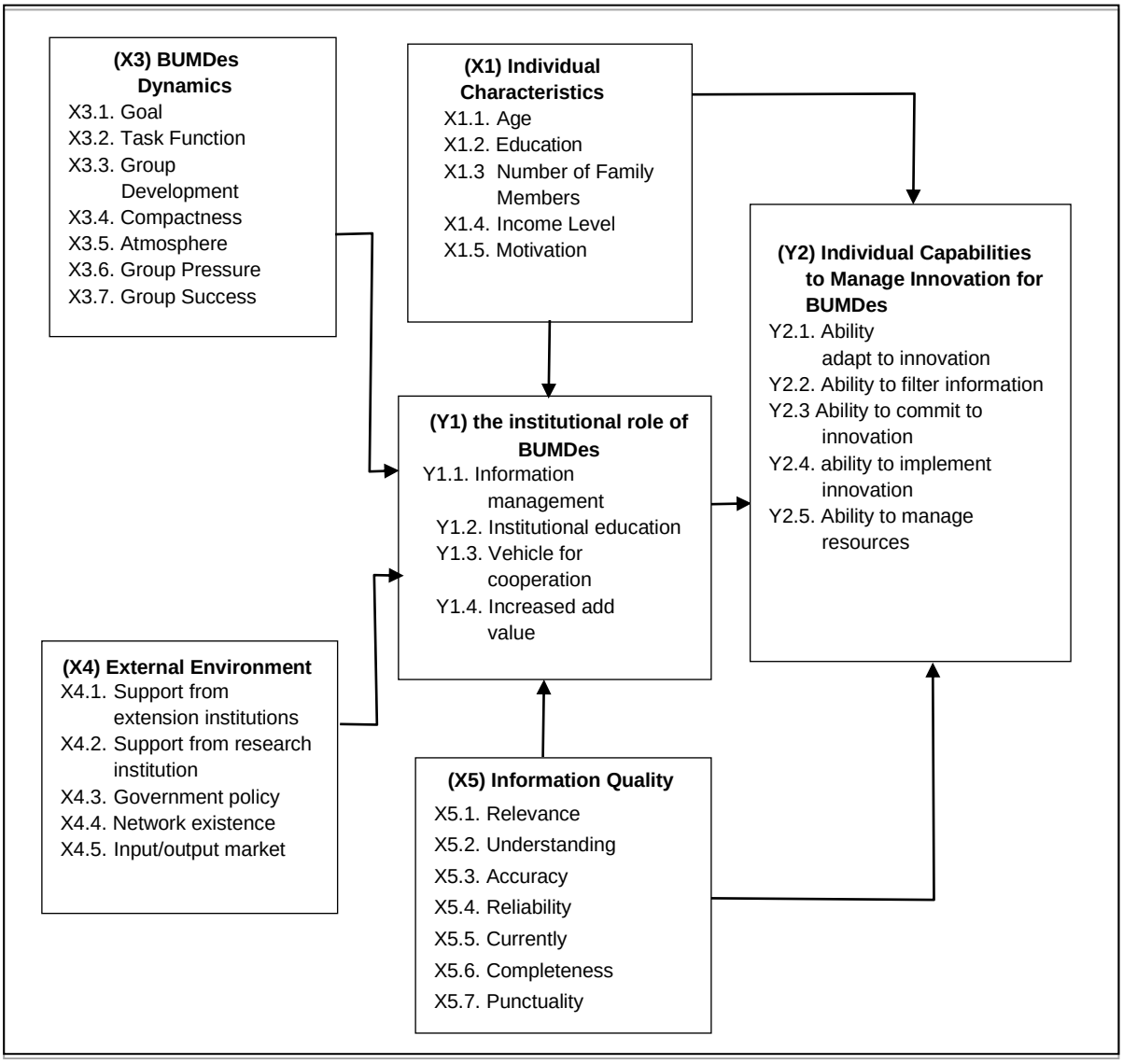

Figure 1 – Model of SEM BUMDes

Convergent and discriminant validity: a loading value of 0.5 to 0.6 is considered sufficient, for the number of indicators of the latent variable ranging from 3 to 7. Meanwhile, for discriminant validity, the AVE (Average Variance Extracted) value is recommended to be greater than 0.50.

Composite reliability: the accepted limit value for the composite reliability level is ≥ 0.7, although it is not an absolute standard. The outer formative model is evaluated based on its substantive content, namely by looking at the significance of the weights.

The structural model, also known as the inner model, delineates the connection between latent variables according to substantive theory. The construction of a structural

model that represents the connection between hidden variables relies on a problem statement or research hypothesis, which encompasses theory, actual research findings, analogy, normative considerations, and rationality. The evaluation of this model can be done by examining the R-squared value. It is considered significant if the t-value exceeds the critical value of 1.96 at a 5% error rate, as stated by Ghozali (2008).

The PLS evaluation model is based on predictive measurements that have non-parametric properties.

- The validity of the measurement model, specifically the reflection indicators, is assessed for both convergent and discriminant validity. Additionally, the composite reliability of the block indicators is evaluated. Meanwhile, the outer model formative indicators are assessed by examining their substantive content, namely by comparing the relative weight and analysing the importance of the weight's size. A reflective measure is considered high when it exhibits a correlation of over 0.70 with the variable it is intended to assess. Nevertheless, while doing research in the early phases of creating a measurement scale, a loading value ranging from 0.5 to 0.60 is deemed satisfactory (Chin in Ghozali, 2014);
- The structural model, referred to as the inner model, is evaluated based on its ability to account for a significant portion of the variance. This is accomplished by assessing the predictive power of the dependent latent variable through the utilisation of the Stone-Geisser Q-square test, as outlined by Stone and Geisser in Ghozali (2014). Additionally, the magnitude of the structural path coefficient is taken into consideration. The robustness of this estimation was assessed by employing a t-test statistic derived from a bootstrapping technique (Ghozali 2014).

RESULTS AND DISCUSSION

The initial model employed 5 external latent variables and 2 endogenous latent variables. The latent variables and their corresponding manifest variables are described as follows:

- The exogenous latent variable refers to a hidden variable that is external to the system being studied. The construct of Individual Characteristics (X1) is operational by five observable variables, specifically age (X1.1), education (X1.2), number of family members (X1.3), income level (X1.4), and motivation (X1.5);
- The exogenous latent variable "use of communication media" (X2) is measured by three manifest variables, namely conventional media (X2.1), print media (X2.2), and electronic media (X2.3);
- The exogenous latent variable X3 represents the dynamics of BUMDes. It is measured by seven manifest variables, which are BUMDes aims (X3.1), task function (X3.2), group development (X3.3), compactness (X3.4), atmosphere (X3.5), group pressure (X3.6), and group success (X3.7).The exogenous latent variable external environment (X4) has five manifest variables (indicators), namely support from extension institutions (X4.1); research institution support (X4.2); government policy (X4.3); network presence (X4.4); and input/output markets (X4.5);
- The exogenous latent variable information quality (X5) consists of seven manifest variables, often known as indicators. These indicators include relevance (X5.1), understanding (X5.2), accuracy (X5.3), dependability (X5.4), actuality (X5.5), completeness (X5.6), and punctuality (X5.7);
- The endogenous latent variable, the institutional function of BUMDes (Y1), comprises four indicator variables: information manager (Y1.1), institutional education (Y1.2), collaboration vehicle (Y1.3), and improved added value (Y1.4);
- The endogenous latent variable of BUMDes individual capability in managing innovation (Y2) comprises five indicator variables: adaptability to innovation (Y2.1), information filtering ability (Y2.2), commitment to innovation (Y2.3), implementation of innovation (Y2.4), and resource management ability (Y2.5).

The purpose of evaluating the measurement model is to examine the correlation between latent variables and their corresponding indicators. During this phase, the testing process involves assessing the validity and reliability of the data. This includes doing reliability testing using Cronbach's alpha and composite reliability, as well as evaluating convergent validity using the loading factor and average variance extracted (AVE) values

A construct is deemed reliable when its Cronbach's alpha and composite reliability ratings above 0.7. Convergent validity of an indicator can be established if its outer loading value exceeds 0.70 or if the average variance extracted (AVE) value is greater than 0.50 (Hair et al., 2014). Table 1 displays the outcomes of the validity and reliability assessments.

Table 1 – Results of convergent reliability and validity testing after indicators have been eliminated

Variable	Indicator	Loading Factor	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	VIF
Individual characteristics (X1)	X1.1	0,831	0,849	0,898	0,688	2,051
	X1.2	0,854				2,091
	X1.4	0,797				1,793
	X1.5	0,836				2,093
Utilization of communication media (X2)	X2.2	0,868	0,712	0,874	0,776	1,441
	X2.3	0,894				1,441
BUMDes Dynamics (X3)	X3.1	0,883	0,898	0,924	0,710	3,013
	X3.2	0,863				3,414
	X3.3	0,778				2,086
	X3.4	0,859				3,214
	X3.6	0,827				2,314
External Environment (X4)	X4.2	0,849	0,839	0,892	0,676	2,006
	X4.3	0,862				2,123
	X4.4	0,836				2,066
	X4.5	0,735				1,565
Information Quality (X5)	X5.1	0,827	0,909	0,930	0,690	2,491
	X5.2	0,911				6,452
	X5.3	0,870				2,938
	X5.4	0,770				2,004
	X5.5	0,847				4,751
	X5.6	0,746				1,821
The Institutional role of BUMDes (Y1)	Y1.1	0,799	0,749	0,856	0,664	1,571
	Y1.3	0,806				1,425
	Y1.4	0,840				1,527
Individual Capabilities to Manage Innovation for BUMDes (Y2)	Y2.1	0,766	0,844	0,896	0,684	1,917
	Y2.3	0,871				2,259
	Y2.4	0,776				2,048
	Y2.5	0,888				2,646

Source: Primary Data Processing, 2023.

Based on the data presented in Table 1, it can be seen that the Cronbach's Alpha and Composite Reliability values for each variable indicator are more than 0.7, so it can be concluded that the construct of each variable meets the reliability test criteria. The results in Table 1 also show that the loading factor value for each indicator has a value greater than 0.7 and the AVE value is greater than 0.5, so it can be concluded that the research variable indicators have met the convergent validity criteria.

After validity and reliability testing was carried out by fulfilling all the criteria, collinearity testing was carried out on the structural model. To assess collinearity, it can be seen from the VIF. If the VIF value is above 7.00, then there is an indication of collinearity. The results of the analysis of the collinearity test are shown in Table 1. Based on the calculations that have been carried out, the variance inflation factor (VIF) value for each item ranges from 1.425 to 6.452, which is lower than the stipulated value of 7.0. This means that the structural model does not have multicollinearity, and there is no negative influence between items or predictors.

Evaluation of the structural model was carried out using R2, the Stone-Geisser Q-square test (Q2), and the path coefficient value or t-value for each path. The R2 value is used to measure variations in changes from exogenous variables to endogenous variables. The Q2 value implies how good the resulting observation value is. A Q2 value of more than 0 indicates that the model has predictive relevance (Hair et al., 2014). The R-square (R2) and Q2 values are presented in Table 2.

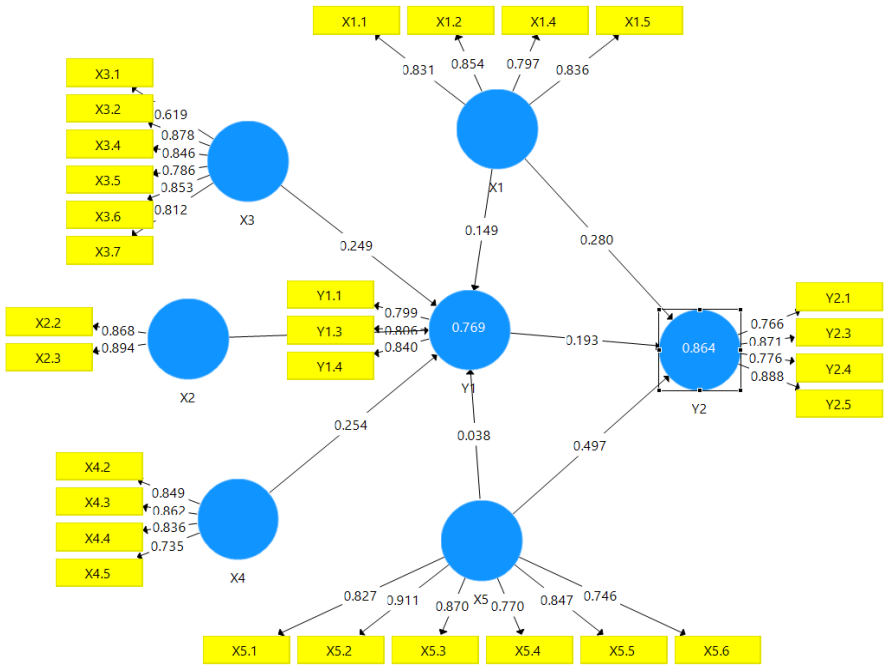

Figure 2 – Structural Model Estimation

Table 2 – R-Square ($R^{2)}$ and Q-square (Q^2)

Variable	R^2	R^2 Adjusted	Q^2
Y_1	0,768	0,756	0,476
Y_2	0,864	0,859	0,577

Source: Primary Data Processing, 2023.

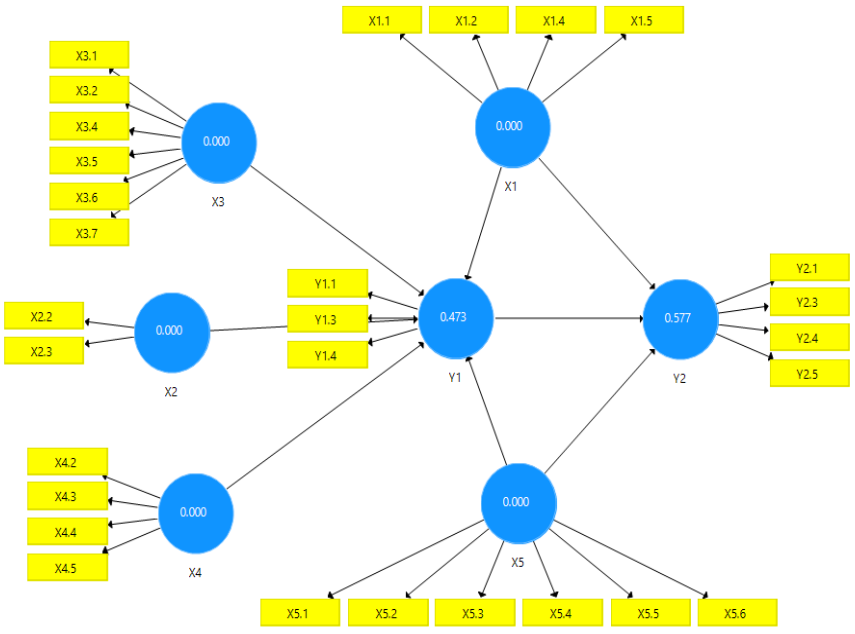

Figure 3 – Q-square value of structural model

Table 2 displays the R2 values for variable Y1 and Y2 as 0.768 and 0.859, respectively. According to Hair (2014), the R2 value exceeds 0.76, suggesting that the model employed is significant. The R2 value for Y1, representing the institutional role of BUMDes,

is 0.768. This result suggests that exogenous latent factors have a significant influence of 76.8% on the institutional role of BUMDes, while other variables not included in the model have an influence of 23.2%. The coefficient of determination (R2) for the relationship between Y2 and BUMDes individual capability in managing innovation is 0.864. This shows that 86.4% of BUMDes individual capability in managing innovation is influenced by exogenous latent factors, while the remaining 13.6% is influenced by additional variables not included in the model.

The study reveals a Q2 value of 0.476 for the BUMDes institutional role variable and 0.577 for the BUMDes individual capability variable in the management of innovation. Both Q2 values obtained are greater than 0, indicating that the model exhibits favorable observation values.

To further assess the model structure, it is necessary to examine the path coefficients, which represent the estimated links between latent variables in the structural model. The PLS-SEM technique generates path coefficient values that are within the range of -1 to +1. A path coefficient number around +1 suggests a robust positive relationship, while a value near -1 implies a robust negative relationship. The estimated value of the path coefficient is considered acceptable if the statistical t value exceeds the critical t value of 1.96 at a significance level of 5%, or if the p value is less than 0.10. The computed route coefficient and its significance are displayed in Table 3.

Table 3 – Estimated path coefficients and significance in the structural model

Track	Path Coef.	T Statistics	P Values	Information
X1 -> Y1	0,200	1,960	0,051	Significant
X1 -> Y2	0,296	2,817	0,005	Significant
X2 -> Y1	0,178	1,485	0,138	Not Significant
X3 -> Y1	0,241	2,801	0,005	Significant
X4 -> Y1	0,049	0,472	0,637	Not Significant
X5 -> Y1	0,026	0,207	0,836	Not Significant
X5 -> Y2	0,298	2,555	0,011	Significant
Y1 -> Y2	0,602	5,768	0,000	Significant

Source: Primary Data Processing, 2023.

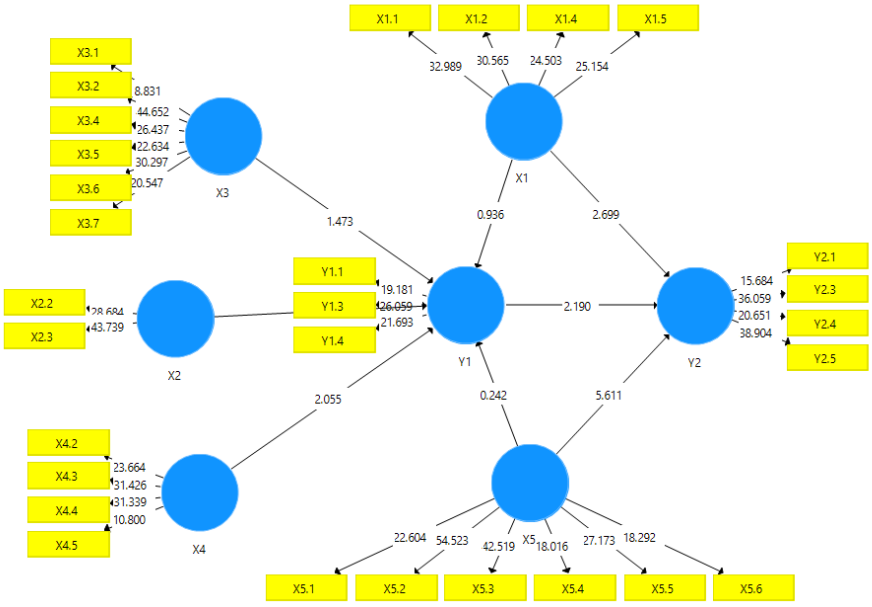

Figure 4 – T count of Structural Model

The examination of the path coefficients in the structural model reveals that there are five paths that exert a substantial influence. The relationship between X1 (individual characteristics) and Y2 (BUMDes individual capabilities in managing innovation) exists, as well as the relationship between X2 (utilization of communication media) and Y1 (BUMDes institutional role), the relationship between X4 (external environment) and Y1 (BUMDes institutional role), and the relationship between Y2 (BUMDes individual capability in managing innovation).

CONCLUSION

The R2 value for Y1, representing the institutional role of BUMDes, is 0.768. This shows that 76.8% of the institutional role of BUMDes is influenced by exogenous latent factors, while the remaining 23.2% is influenced by other variables not included in the model. The coefficient of determination (R2) for Y2, representing individual competence in managing innovation, is 0.864. This means that 86.4% of the variability in individual capability can be explained by exogenous latent variables, while the remaining 13.6% is influenced by additional variables not included in the model;

The examination of the path coefficients in the structural model reveals that there are five paths that exert a substantial influence. The relationship between X1 (individual characteristics) and Y2 (BUMDes individual capabilities in managing innovation) is represented by this path. Similarly, the connection between X2 (utilisation of communication media) and Y1 (BUMDes institutional role) is depicted. Additionally, the path from X4 (external environment) to Y1 (BUMDes institutional role) is shown, as well as the path from Y2 (BUMDes individual capability in managing innovation).

ACKNOWLEDGMENTS

Researchers would like to thank the Institute for Research and Community Service (LPPM) of University of Lambung Mangkurat which has provided research funds through the Obligatory Research Lecturer Research Grant (PDWM) in 2023 with PNBP Financing at the University of Lambung Mangkurat Fiscal Year 2023 Beginner Cluster Number: 615/UN8/PG/2023 dated May 31, 2023.

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