



UDC 332; DOI 10.18551/rjoas.2023-12.18

MODEL OF EMPOWERMENT OF WOMEN FARMERS IN OPTIMIZING THE USE OF YARD LAND FOR THE DEVELOPMENT OF HEALTHY VEGETABLE FARMING AND INCREASING THE DIVERSITY OF COMMUNITY FOOD CONSUMPTION IN TIDAL LANDS

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ABSTRACT

The increase in population and land conversion causes limited land and weakening agricultural productivity so that an alternative is needed to answer the problem of food supply. The government has made efforts to empower women farmers to improve the use of yard land. The implementation of empowering peasant women in tidal land has considerable potential, due to the wide availability of land. The attention of meeting the needs of healthy vegetables can be supported by the availability of farmer household yard land in tidal land in South Kalimantan. This study aims to analyze the influential factors on the empowerment model of women farmers in optimizing the use of yard land for the development of healthy vegetable farming in increasing the diversity of community food consumption in tidal lands. The number of samples used was 100 samples. The analytical tool used in this study uses Structural Equation Modeling (SEM) analysis. The results showed that 88.7% of the empowerment of the farmer women's group was influenced by its exogenous latent variables, while 11.3% was influenced by other variables outside the model. While the household economy of peasant women is influenced by exogenous latent variables by 76.8%, while the remaining 24.2% is influenced by other variables outside the model. The results of the analysis of the path coefficients in the structural model show that there are 5 paths that have a significant influence. The path is between X1 (individual characteristics) to Y1 (empowerment of peasant women's groups); X1 (individual characteristics) to Y1 (empowerment of peasant women's groups), X3 (institutional role of peasant women's groups) to Y1 (empowerment of peasant women's groups), X5 (external environment) to Y2 (peasant women's household economics) and Y1 (farmer women's empowerment) to Y2 (peasant women's household economics). Suggestions that can be given are based on the results of research that to increase the empowerment of peasant women in an effort to encourage improvements in the household economy of farm women can be done through improving the quality of the characteristics of farm women, the institutional role of farmer groups that need to be encouraged to be even better, and the external environment that continues to be strengthened in order to create a cycle for the empowerment model of farm women to optimize the use of yard land For the development of healthy vegetable farming in increasing the diversity of food consumption of people in tidal lands.

KEY WORDS

Empowerment, tidal lands, women farmers, yard land.

The increase in population and land conversion causes limited land and weakening agricultural productivity so that an alternative is needed to answer the problem of food supply. The increase in the population in Indonesia in 2010-2017 was 238,518.8 people to 261,890.9 people (BPS, 2018). The area of agricultural land in Indonesia in 2012-2015 was 25,342,310.91 ha to 24,806,582.75 ha (Ministry of Agriculture, 2017). One of the efforts to meet food needs through the use of yard land.

The government has made efforts to empower women farmers to improve the use of yard land, one example is through the Sustainable Food House Area (KRPL) and



Sustainable Food Yard (P2L) programs. The empowerment process in the program is carried out by farmer women's groups and with assistance by the government.

In the empowerment process, there are problems that arise, including: (1) Most peasant women have limited land, especially urban areas; (2) Land used as a joint garden is someone else's land, both community land and government land, (3) Production is still oriented to meet family needs, as the opinion (Suraningsih, 2017) if excess production is distributed to neighbors and very little is sold so that it has not increased income, (4) In addition, there are already those who sell their agricultural production to neighbors and the surrounding community or in the form of orders or cooperation, (5) Low participation of peasant women in utilizing yards, carrying out agricultural cultivation with agricultural innovation technology. This is due to the low empowerment of members as seen from the low knowledge and technical ability of cultivation, the low role of change agents, environmental support, the ability to make decisions, market results, poor organizational management, leadership style and quality of communication between the chairman and members and the programs implemented are often not in accordance with the wishes (Aminah et al., 2015; Daniel et al., 2008; Fitri & Suhifatullah, 2013; Suraningsih, 2017; Zulvera et al., 2014).

The implementation of empowering peasant women in tidal land has considerable potential, due to the wide availability of land. However, tidal land is faced with several problems, namely this land is classified as land that has a low fertility level, for that it is necessary to use balanced fertilizer and lime to meet plant nutrient needs (Auditha et al., 2019). Given the various obstacles faced on tidal land, farming on this land requires more technological interventions in order to become more productive as agricultural land (Ak & Novitarini, 2020). Increasing the capacity of farmer women who carry out agricultural activities on tidal land, through the use of online media as a product promotion tool is proven to contribute to the peasant woman's household (Septiana et al., 2023).

Through counseling on the potential of yard land, it will be possible to increase the income and diversity of farmers' food in tidal lands. The use of yard land that is carried out appropriately, is able to contribute to household income and provide additional choices of types of food that can be consumed farming families (Hartoni et al., 2023).

According to Oktarina (2022), so far, farmer women have felt the benefits of the yard but have not been able to use it optimally. This tends to be the tendency of peasant women who are active in the group to be the caretakers of the group only. The use of yards is still traditional and still has not applied modern technology. This is related to the perception of farm women who are still oriented to meeting family needs only, so it is necessary to change communication patterns by changing the optimal use of yards with business orientation. Therefore, it is necessary to establish a model of empowering farm women for yard utilization so that farm women become empowered so that they can increase income. This is related to the results of Hubies' study (2010), stating that peasant women have a very important role, namely as housewives, additional breadwinners and decision makers in fulfilling family consumption.

Horticultural crops of short-lived vegetable types will provide rotation and diversity of production from the yard land. In tidal land yards, especially in B/C land type areas, there are abiotic stress problems in farming in the form of Na-dd akbiate salinity stress and relatively high base saturation. So that one of the vegetable crops that can be recommended as a horticultural crop planted on tidal land type B / C is mustard ciasim vegetables, because they have better tolerance to NaCl stress (Kesmayanti, 2021).

Vegetables are horticultural crops that have a fairly high commercial value. Therefore, vegetables are agricultural products that are always consumed every day. This horticultural commodity can also be a source of income for the community, because it has advantages in the form of high selling value, diversity of types, availability of land resources, technology, and the potential for market absorption in the country that continues to increase. Vegetables in human life play a role in meeting food needs and improving nutrition, because vegetables are a source of vitamins, minerals, fiber, antioxidants and energy needed by humans. but there are still many Indonesian people who do not realize that the level of vegetable



consumption of Indonesian people is still very low, based on the records of the Directorate General of Horticulture in 2007 only amounted to 36.63 kg / capita / year. According to the standards of the World Food and Agriculture Organization (FAO), the ideal vegetable consumption is 65.75 kg / capita / year. (Directorate General of Horticulture, 2013).

From the BPS data, it illustrates that there is still a poor paradigm of healthy living in Indonesia, especially in consuming vegetables to fulfill daily nutrition. Where South Kalimantan Province is the lowest province, which is only around 33% of what is recommended by WHO and the Ministry of Health.

The low level of vegetable consumption in South Kalimantan needs to be a concern for body health both short and long term. So efforts to increase awareness to consume vegetables are very important for the people of South Kalimantan. Moreover, the potential to meet the needs of healthy vegetables can be supported by the availability of farmer household yard land in tidal land in South Kalimantan, through the empowerment of farmer women. This study aims to analyze the influential factors on the model of empowering women farmers in optimizing the use of yard land for the development of healthy vegetable farming in increasing the diversity of community food consumption in tidal lands of South Kalimantan Province.

METHODS OF RESEARCH

This research will be carried out in Banjar and Barito Kuala regencies. The selection of research sites is purposive (deliberate) for the reason that these two districts are districts that have the most tidal land in South Kalimantan. The research time will be carried out from May-November 2023 starting from the preparation of proposals, data collection, data analysis and final reporting of the study.

The main sample in this study was members of peasant women's groups in Barito Kuala Regency and Banjar Regency. The number of samples used is 100 samples, which is the minimum sample to run SEM analysis. The sample of 100 people was taken evenly in Kabupaten Barito Kuala and Banjar Regency.

The analytical tool used in this study uses *Structural Equation Modeling* (SEM) analysis. According to Maruyama in the Statistical Technic Guide book by Mustafa and Wijaya (2010) said Structural Equation Modeling (SEM) is a statistical model that provides approximate calculations of the strength of hypothetical relationships among variables in a theoretical model, either directly or through intervening or mediating variables. Partial Least Square or abbreviated as PLS is a type of component-based SEM with formative constitutive properties. PLS is also referred to as prediction-oriented technique. The PLS approach is particularly useful also for predicting dependent variables by involving a large number of independent variables. With the PLS approach it is assumed that all measures of variance are variances that are useful to explain.

Structural equation modeling is a statistical technique for testing and estimating causal relationships using a combination of statistical data and qualitative causal assumptions. The method used in this study uses the Partial Least Score (PLS) approach. Structural Equation Modeling (SEM) is a multivariate analysis technique that allows researchers to examine complex variable relationships to obtain a comprehensive picture of the entire model (Ghozali, 2008). The PLS method has its own advantages, including the data does not have to be normally distributed, multivariate, and the sample size does not have to be large. PLS have two indicator models in its description, namely:

- Reflexive Indicator Model. Reflexive indicator models are often called principal factor models where the covariance of indicator measurements is influenced by latent variables or reflects variations of latent variables;
- Formative Indicator Model. The formative model does not assume that indicators are influenced by constructs but assumes that all indicators affect a single construct. In addition, there are two model evaluations, namely the measurement model (outer model) and the structural model (inner model).



The outer model defines how each indicator block relates to its latent variables. The design of the measurement model determines the indicator properties of each latent variable, whether reflexive or formative, based on the operational definition of the variable. Outer reflexive model:

- Convergent and discriminant validity: loading values of 0.5 to 0.6 are considered sufficient, for the number of indicators of the latent variable ranges from 3 to 7. As for discriminant validity, it is recommended that the value (Average Variance Extracted) of AVE is greater than 0.50;
- Composite reliability: the accepted limit value for composite reliability is ≥ 0.7 , although it is not an absolute standard. The outer formative model is evaluated based on its substantive content, i.e. by looking at the significance of the weight.

The structural model or inner model describes the relationship between latent variables based on substantive theory. The design of structural models of relationships between latent variables is based on the formulation of problems or research hypotheses, consisting of theory, empirical research results, analogies, normative and rational. This model can be evaluated by looking at the R – square, expressed significantly if the value of t-value is greater than the t-table for an error rate of 5% is 1.96 (Ghozali, 2008).

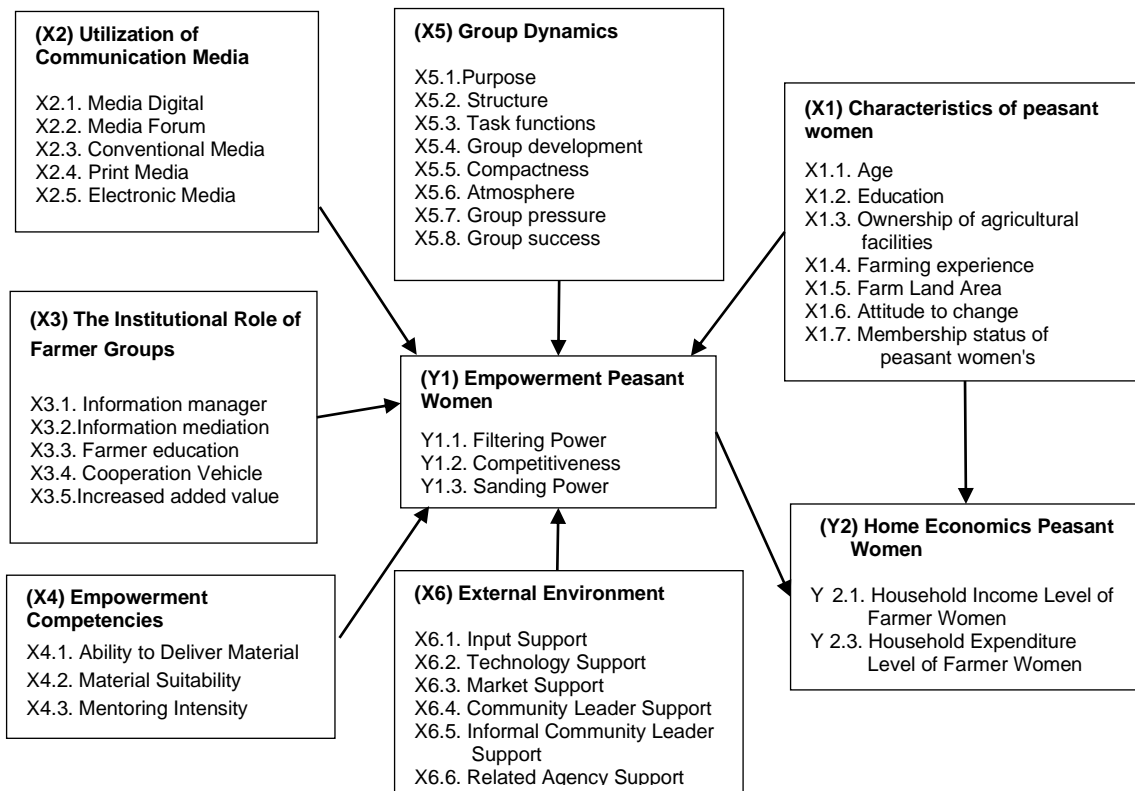


Figure 1 – SEM model of empowering peasant women

PLS evaluation models are based on predictive measurements that have non-parametric properties.

The measurement model or outer model with relative indicators is evaluated with convergent and discriminatory validity of the indicator and composite reliability for the indicator block. While the outer model formative indicator is evaluated based on its substantive content, namely by comparing the relative magnitude of weight and looking at the significance of the weight size. An individual's relative size is said to be high if it correlates more than 0.70 with the variable it wants to measure. However, for the initial stage of research from the development of a measurement scale the loading value of 0.5 to 0.60 is considered sufficient (Ghozali, 2014).



The structural model or inner model is evaluated by looking at the percentage of variance described by looking at the value for the dependent latent variable using the Stone-Geisser Q-square test measure for predictive relevance (Stone and Geisser in Ghozali 2014) and also looking at the magnitude of the structural path coefficient. The stability of this estimate was evaluated using t-statistical tests obtained through bootstrapping procedures (Ghozali 2014).

RESULTS AND DISCUSSION

The initial model used consisted of 6 exogenous latent variables and 2 endogenous latent variables. The description of the latent variable and its manifest variable is as follows:

- The individual characteristic exogenous latent variable (X1) has seven manifest variables (indicators) namely, age (X1.1); education (X1.2); ownership of agricultural facilities (X1.3); farming experience (X1.4); area of agricultural land (X1.5); Attitude towards change (X1.6); and membership status of peasant women's groups (X1.7);
- The exogenous latent variable of communication media utilization (X2) has five manifest variables (indicators), namely digital media (X2.1); media forum (X2.2); conventional media (X2.3); print media (X2.4); and electronic media (X2.5);
- The exogenous latent variable of the institutional role of the peasant women's group (X3) has five manifest variables (indicators), namely information managers (X3.1); information mediation (X3.2); farmer education (X3.3); cooperation vehicle (X3.4); and increased added value (X3.5);
- The exogenous latent variable of empowerment competence (X4) has three manifest variables (indicators), namely the ability to convey material (X4.1); material suitability (X4.2); and mentoring intensity (X4.3);
- The exogenous latent variable of peasant women's group dynamics (X5) has eight manifest variables (indicators), namely the purpose of BUMDes (X5.1); structure (X5.2); task function (X5.3); group development (X5.4); compactness (X5.5); atmosphere (X5.6); group pressure (X5.7); and group success (X5.8);
- The external environment exogenous latent variable (X6) has six manifest variables (indicators): input support (X6.1); technology support (X6.2); market support (X6.3); formal public figure support (X6.4); informal community leader support (X6.5); and related service support (X6.6);
- Endogenous latent variables of empowerment of peasant women groups (Y1);
- The latent endogenous variable of peasant women's household economics (Y2), consists of two indicator variables including the level of farmer women's household income (Y2.1) and the level of farmer women's household expenditure (Y2.2).

Evaluation of measurement models aims to see the relationship between latent variables and indicators. At this stage, validity and reliability testing is carried out consisting of reliability testing using Cronbach's Alpha and Composite Reliability, convergent validity using Loading Factor and Average Variance Extracted (AVE) values.

A construct is considered reliable if it has Cronbach's Alpha and Composite Reliability values above 0.7. An indicator can be declared to meet convergent validity when the outer loadings value > 0.70 , or the Average Variance Extracted (AVE) value > 0.50 (Hair et al, 2014). The results of the validity and reliability testing are presented in Table 1.

Based on the data presented in table 1, it can be seen that the Cronbach 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 10 also show that the loading factor value of each indicator has a value greater than 0.7 and an AVE value greater than 0.5, so it can be concluded that the research variable indicators have met the criteria of convergent validity.

After validity and reliability testing is carried out by meeting all criteria, collinearity testing is carried out on the structural model. To assess collinearity can be seen from VIF. If the VIF value is above 7.00, 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 done, the value of the Variance Inflation Factor (VIF) for each item ranges from 1.332 to 5.528, lower than the provision value of 7.0. This means that the structural model has no multicollinearity and no negative influences between items or predictors.

Table 1 – The results of reliability and validity testing converge after any indicators are eliminated

Variable	Indicators	Loading Factor	Cronbach's Alpha	Composite Reliability	Average Extracted (AVE)	Variance	VIF					
Individual characteristics (X1)	X1.1	0,772	0,915	0,932	0,663		2,036					
	X1.2	0,851					3,907					
	X1.3	0,815					4,532					
	X1.4	0,813					3,117					
	X1.5	0,847					3,514					
	X1.6	0,816					5,369					
	X1.7	0,783					2,976					
Communication media utilization (X2)	X2.1	0,901	0,855	0,903	0,701		3,616					
	X2.3	0,794					1,660					
	X2.4	0,768					1,573					
	X2.5	0,878					3,295					
	X3.1	0,782					2,045					
Institutional role of peasant women's group (X3)	X3.2	0,770	0,856	0,896	0,634		2,238					
	X3.3	0,803					1,863					
	X3.4	0,781					2,182					
	X3.5	0,843					2,624					
	X4.1	0,769					1,408					
Empowerment competencies (X4)	X4.2	0,784	0,715	0,840	0,637		1,332					
	X4.3	0,839					1,520					
	X5.1	0,790					2,413					
Group dynamics of peasant women (X5)	X5.2	0,862	0,933	0,945	0,682		4,442					
	X5.3	0,864					4,643					
	X5.4	0,770					2,701					
	X5.5	0,856					4,145					
	X5.6	0,791					2,444					
	X5.7	0,866					5,528					
	X5.8	0,799					3,944					
	X6.1	0,813					2,176					
External environment (X6)	X6.2	0,862	0,892	0,918	0,650		2,936					
	X6.3	0,824					2,258					
	X6.4	0,776					1,995					
	X6.5	0,753					1,716					
	X6.6	0,806					2,200					
	Empowerment of peasant women groups (Y1)	Y1.1					0,791	0,764	0,864	0,681		1,440
	Y1.2	0,811					1,595					
Y1.3	0,871	1,865										
Peasant women's household economics (Y2)	Y2.1	0,912	0,786	0,903	0,824		1,721					
	Y2.2	0,903					1,721					

Source: Primary Data Processing, 2023.

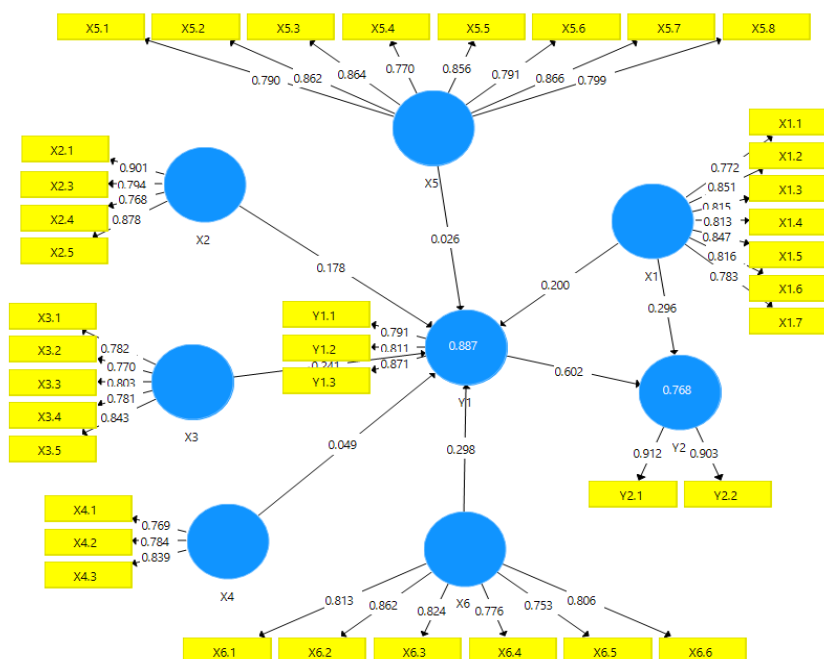


Figure 2 – Model Structural Estimation



Evaluation of structural models is carried out using R^2 , Stone-Geisser Q-square test (Q^2) and the value of the path coefficient or t-value of each path. The value of R^2 is used to measure the variation of change in exogenous variables to endogenous variables. The value of Q^2 implies how well the value of the observation is produced. A Q^2 value of more than 0 indicates the model has predictive relevance (Hair et al, 2014). The values of R-Square (R^2) and Q^2 are presented in table 2.

Table 2 – R-Square (R^2) and Q-square (Q^2) values

Variable	R^2	R^2 Adjusted	Q^2
Y1	0.887	0.880	0.576
Y2	0.768	0.764	0.616

Source: Primary Data Processing, 2023.

From table 2, it can be seen that the value of R^2 for variable Y1 is 0.887 while the value of R^2 for variable Y2 is 0.768. Referring to Hair (2014), the value of R^2 is more than 0.76; stating that the model used is substantial. The R^2 value of Y1 empowerment of the farmer women's group of 0.887 can mean that 88.7% of the empowerment of the farmer women's group is influenced by its exogenous latent variables, while 11.3% is influenced by other variables outside the model. While the value of R^2 for Y2 of the household economy of farm women of 0.768 can be interpreted that 76.8% of the household economy of farm women is influenced by its exogenous latent variables, while 24.2% is influenced by other variables outside the model.

The Q^2 value of the analysis results showed 0.576 for the empowerment variable of the farmer women group and 0.616 for the household economic variable of farm women. Both Q^2 values are produced more than 0 so that it can be concluded that the model has a good observation value.

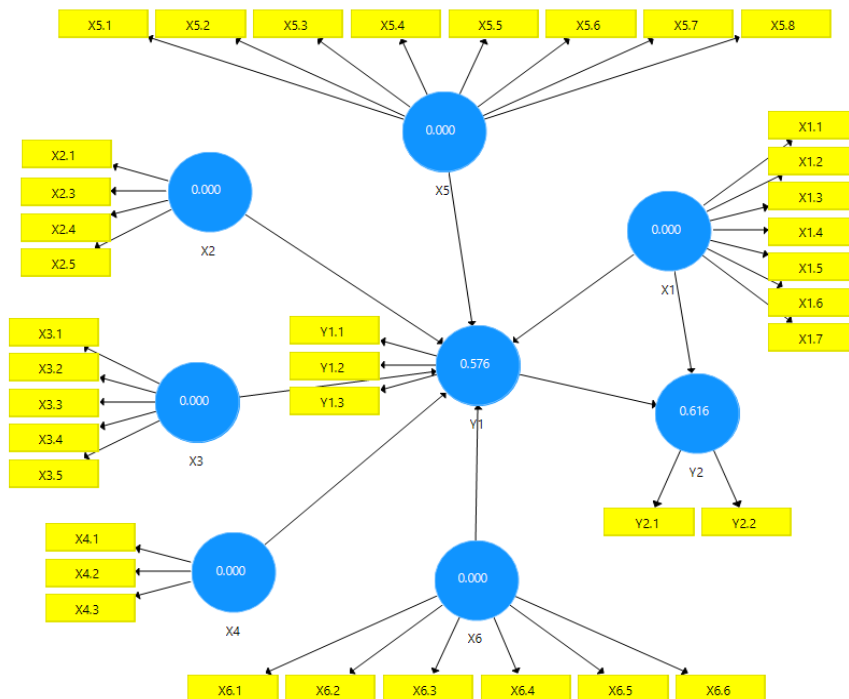


Figure 3 – Q-square Value Structural Model

The next step in the evaluation of the model structure is to look at the value of path coefficients, that is, the estimation of path relationships for the structural model between latent variables in the model. The PLS-SEM algorithm produces a path coefficient value t



with a value range of -1 to +1. A *path coefficient* value close to +1 indicates a strong positive relationship and vice versa shows a strong negative relationship if the value is -1. The estimated value of the path coefficient is acceptable if the statistical t value is greater than the table t value at a significance level of 10%, which is 1.65 or has a p value smaller than 0.10. The results of estimating the path coefficient and significance can be seen in table 3.

Table 3 – Estimation of path coefficients and significance on structural models

Line	Path Coefficient	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	Insignificant
X3 -> Y1	0,241	2,801	0,005	Significant
X4 -> Y1	0,049	0,472	0,637	Insignificant
X5 -> Y1	0,026	0,207	0,836	Insignificant
X5 -> Y2	0,298	2,555	0,011	Significant
Y1 -> Y2	0,602	5,768	0,000	Significant

Source: Primary Data Processing, 2023.

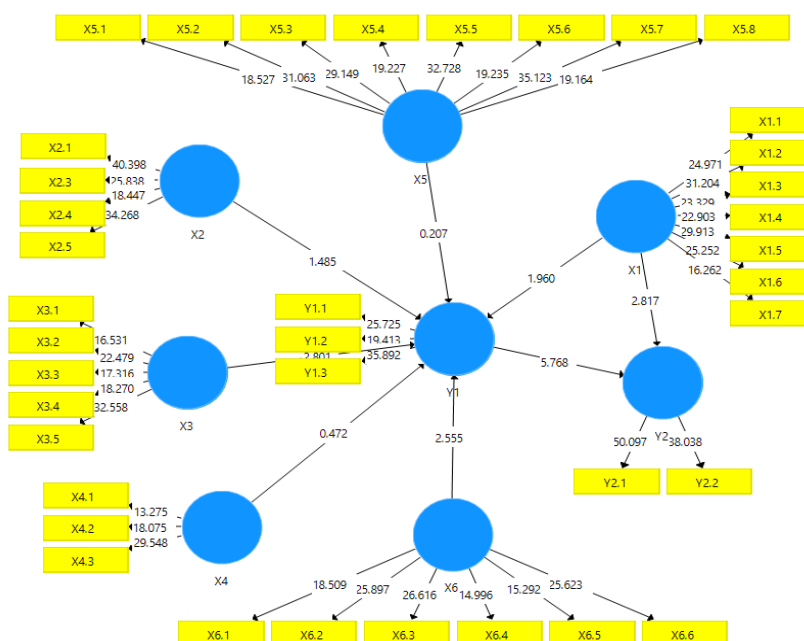


Figure 4 – T calculate Structural Model

Based on the results of the analysis of the path coefficients in the structural model, it shows that there are 5 paths that have a significant influence. The path is between X1 (individual characteristics) to Y1 (empowerment of peasant women's groups); X1 (individual characteristics) to Y1 (empowerment of peasant women's groups), X3 (institutional role of peasant women's groups) to Y1 (empowerment of peasant women's groups), X5 (external environment) to Y2 (peasant women's household economics) and Y1 (farmer women's empowerment) to Y2 (peasant women's household economics).

CONCLUSION

The value of R^2 for Y1 empowerment of the farmer women's group of 0.887 can be interpreted that 88.7% of the empowerment of the farmer women's group is influenced by its



exogenous latent variables, while 11.3% is influenced by other variables outside the model. While the value of R^2 for Y2 of the household economy of farm women of 0.768 can be interpreted that 76.8% of the household economy of farm women is influenced by its exogenous latent variables, while 24.2% is influenced by other variables outside the model.

The result of the analysis of the path coefficients in the structural model shows that there are 5 paths that have a significant influence. The path is between X1 (individual characteristics) to Y1 (empowerment of peasant women's groups); X1 (individual characteristics) to Y1 (empowerment of peasant women's groups), X3 (institutional role of peasant women's groups) to Y1 (empowerment of peasant women's groups), X5 (external environment) to Y2 (peasant women's household economics) and Y1 (farmer women's empowerment) to Y2 (peasant women's household economics).

Suggestions that can be given based on the results of research that to increase the empowerment of peasant women in an effort to encourage improvements in the household economy both in terms of household income and expenditure of farm women can be done through improving the quality of the characteristics of farm women, the institutional role of farmer groups that need to be encouraged to be even better, and the external environment that continues to be strengthened in order to create a cycle for the empowerment model of peasant women To optimize the use of yard land for the development of healthy vegetable farming in increasing the diversity of community food consumption in tidal lands.

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 PNPB Financing at the University of Lambung Mangkurat Fiscal Year 2023 Middle Cluster Number: 615/UN8/PG/2023 dated May 31, 2023.

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