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Empowerment of Urban Farming Community to Improve Food Security in Gresik

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ABSTRACT

The purpose of this study is to determine the role of urban farming community empowerment to improve food security (A case study of RT 02 and RT 17B Awikoen village, Gending-Gresik Urban Village). The method of analyzing data in this study uses Structural Equation Modeling Partial Least Square (SEM-PLS) using Smart PLS 3 application. The results of this study shows that the variable empowerment (capacity, authority, empowerment) of urban farming community members had a real influence to improve food security in Gending urban village, Gresik Regency.

Keyword: Empowerment, Urban Farming, SEM-PLS, Food Security

INTRODUCTION

Rapid population growth tends to occur in urban Indonesia. As a result, cities are not able to support the lives of some urban communities properly (Mardiansjah *et al.*, 2018). The problems that are often faced include the availability of food, decent living facilities, especially for people with middle to lower economies. The problems of food insecurity, environmental problems such as environmental cleanliness and pollution are increasingly evident, so they need to be resolved (Fauzi *et al.*, 2016).

Food insecurity is a condition in which families experience difficulty in fulfilling food needs (Darwis, 2013). Food insecurity is also often experienced by all levels of urban society where they depend on food supplies from outside the region (Atem & Niko, 2020). This causes the food material to be obtained is of low quality and not fresh (Purwaningsih, 2008).

Food is the basic need (staple) apart from clothing and shelter. In addition,

as long as life exists, humans still need food (Laily *et al.*, 2014). However, the problem of food security in Indonesia can be said to be relatively lacking. Where there is an imbalance in the composition of the food group among people because rice consumption is still high, but food consumption for animals, vegetables and fruits is relatively low (Dekasari, 2016). In Law Number 18 of 2012, it describes the implementation of food. Where food administration itself is an activity of planning, implementing, and monitoring the availability, affordability and fulfillment of consumption of food and nutrition, as well as food safety while still involving the functions of the community itself (Laily *et al.*, 2014).

Food administration in order to achieve food security can be realized through empowerment (Darwis, 2013). Empowerment is choice, free, participating in the decision-making process, cooperation and a sense of belonging to

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a community (Gonsalves *et al.*, 2006). The principle of empowerment is where the community becomes the main actor in the whole series of development. In community empowerment, it is positioned as a subject to identify existing problems, participate in planning programs to create high independence (Darwis, 2013; Haris, 2014).

Efforts to build high self-reliance require the awareness of many parties, but are not limited to meeting awareness of maintaining a green environment, but are more than efforts to meet food needs with increasingly difficult economic conditions. Utilization of the potential of available resources with the concept of urban agriculture which is well known as "Urban Farming" (Sumardjo *et al.*, 2016).

Urban farming focuses on farming, managing, and distributing food in the city boundary (Bauw, 2015; Olivier & Heineken, 2017; Süß, 2018). So far, the tendency for the urban farming movement to emerge in various countries is based on the food insecurity that the country has experienced (Armanda *et al.*, 2019; Fauzi *et al.*, 2016). In its continuation, this activity began to transform into a collective action in urban communities in Indonesia.

Gresik is an area with agricultural land, but it is a big target to be shifted to the industrial sector. Currently, Gresik Regency is one of the largest industrial estate centers in the East Java region (Shobry, 2017). Limited land in Gresik Regency area is a challenge to build awareness of food security for households. In fact, at the national level, the challenge of building food security in Indonesia is due to limited agricultural land (Muttaqin *et al.*, 2018). On the other hand Fachriyani (2018), explained that the urban farming community in Gresik Regency has strong social capital and is in the high category. This study answers previous studies where to determine the role of urban farming community empowerment in realizing food security.

METHODOLOGY

This study is conducted in RT 02 and RT 03 Awikoen Village, Gending Urban Village, Gresik Regency. The data in this study use primary data. The primary data is obtained direct from interviews with respondents. The sampling method in this study is Non Probability Sampling. The number of samples in the study were all members of the Urban Farming community. Guidelines for determining the size of the sample size (sample size) for SEM according to Sholihin & Ratmono (2013), that the identification of problems can be estimated using a small sample size (30-50).

Data Analysis

Quantitative data is processed using the analysis method of Structural Equation Modeling Partial Least Square (SEM-PLS) using the Smart PLS 3 application.

Where the structural equation model formulation is formulated as follows

1. The structural model equation (*inner model*):

$$\eta_1 = \gamma_1 \xi_1 + \gamma_2 \xi_2 + \gamma_3 \xi_3 + \zeta_1 \tag{1}$$

2. Equation of measurement model (*outer model*)

a. Measurement of Exogenous Variables

$$X_1 = x_1 \xi_1 + \epsilon_1 \tag{2}$$

$$X_2 = x_2 \xi_2 + \epsilon_2 \tag{3}$$

$$X_3 = x_3 \xi_3 + \epsilon_3 \tag{4}$$

b. Endogenous Variable Measurement

$$Y_1 = \gamma_1 \eta_1 + \epsilon_1 \tag{5}$$

$$Y_2 = \gamma_2 \eta_1 + \epsilon_2 \tag{6}$$

$$Y_3 = \gamma_3 \eta_1 + \epsilon_3 \tag{7}$$

Where η_1 is the endogenous latent variable of food security, γ is the coefficient of the structural equation model relationship, ζ is the error component, ξ_1 is the exogenous latent variable of capacity, ξ_2 is the exogenous latent variable of authority, ξ_3 is the exogenous latent variable of empowerment, X_1 is capacity indicator variable, X_2 is the authority indicator variable, X_3 is the

empowerment indicator variable, Y_1 is the food availability indicator variable, Y_2 is the food accessibility indicator variable, Y_3 is the food consumption indicator variable, $\lambda_{x1,2,...,n}$ is the load factor of the indicator variable in latency exogenous, $\lambda_{y1,2,...,n}$ is the factor load of indicator variables on endogenous latency, and δ, ϵ are errors in the indicator variable relationship model (Figure 1).

RESULTS AND DISCUSSION

Evaluation of the Measurement Model (Outer Model)

Evaluation of the measurement model (outer model) is carried out for each PLS scheme used, namely the path scheme, the centroid scheme, and the factor scheme. Then the evaluation of the measurement model for reflective indicators consists of assessing the results of the validity and reliability tests on each indicator against its latent variables (Aprildahani dkk., 2017; Fachriyani, 2018).

Validity and Reliability Test

In this model of study, the convergent validity test shows that the results of the analysis of the loading factor value obtained from all indicator variables have a value (> 0.5) and the analysis results of the Average Variance Extracted (AVE) value of the exogenous latent variables

have a value of > 0.5 (Table 1). From the discriminant validity test, the analysis results from the cross loading test show that the loading score has a higher value on its own construct, when compared to other constructs it shows that the loading score has a higher value on its own construct when compared to other exogenous latent variables.

Reliability is a coefficient value that shows the level of data consistency. A study is said to be reliable if there are similarities in data at different times. A measure that states that a variable is said to be reliable if the variable has a composite reliability (CR) value that is greater than 0,7 (Fachriyani, 2018). In addition, the reliability test is strengthened by Cronbach Alpha (CA), the expected value was more than > 0.6 for all constructs (Table 2).

Evaluation of the Structural Model (Inner Model)

The inner model aims to determine the relationship between latent variables that have been hypothesized previously. Tests are carried out to determine the value of the coefficient of determination (R^2) for endogenous latent variables, the relevance of predictions through the procedure is calculated from the Q-square predictive relevance value, the goodness of fit (GOF) value, and the estimated path



Figure 1
Model Structural Equation Modeling

Table 1
Validity Test Results Based on Average Variance Extracted (AVE) Value

Variable	Average Variance Extracted (AVE)
Empowerment of Urban Farming (X)	0.671
Food security (Y)	0.674

Source: Primary Data Processed, 2019

coefficient based on the T-statistics value obtained from bootstrapping procedure in hypothesis testing (Aprildahani *et al.*, 2017) Kabupaten Malang is one of the suburban areas. Urban sprawl is conversion of agricultural land in the suburbs. Find out about the character of farmers and set up positive mental are step that must be taken to preserve agricultural land. This study determines the influence of agricultural social, environmental, economic and policy on the farmer motivation to preserve agricultural land. The research uses statistical methods which is structural equation modeling (SEM).

Value of Determination Coefficient (R²)
The coefficient of determination (R²) is the value of the variance of the endogenous variable that is able to explain exogenous variables. Fachriyani (2018) explains that the endogenous latent variables in the structural model are 0.082, 0.673, 0.120 indicating weak, good, and weak.

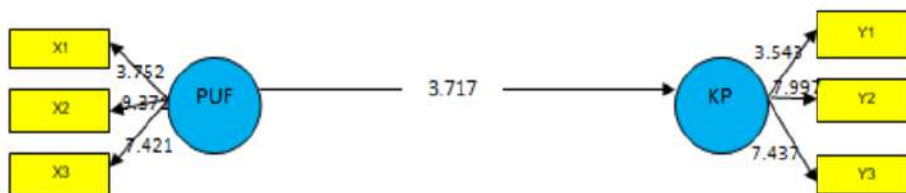
The R² value for the latent variable of food security is 0.999 percent, in which

the variation in the food security variable can be explained by 99.9 percent, by the variation empowerment of urban farming. Meanwhile, 0.1% (percent) is influenced by other variables outside the model.

Overall, the results of the structural model analysis that illustrate the effect of urban farming empowerment on social capital (trust, normality, and social networks) in Gending Urban Village can be seen in Table 4.

Analysis of the Influence Empowerment of Urban Farming Community on Food Security

The results of the significance test show that the empowerment of urban farming community variable has a significant and significant effect on food security with the T test results of 3,717 > 1.96 or 0.747 > 0.05. This shows that the variable empowerment of members of the urban farming community has a significant effect on food security in Gending Village, Gresik Regency (Table 5 and Table 6). It can be seen that indicators



Source: Primary Data Processed, 2019

Figure 2
Loading Factor, Average Variance Extracted, dan Composite Reliability

Table 2
Reliability Test Results Based on CR and CA Values

Variable	Composite Reliability	Cronbach Alpha
Empowerment of Urban Farming (X)	0.858	0.753
Food security (Y)	0.861	0.753

Source: Primary Data Processed, 2019

Table 3
R² Value of Endogenous Latent Variable

Latent variable	R ²	Criteria
Food Security (Y)	0,999	Good

Source: Primary Data Processed, 2019

Table 4
Results of Model Significance Test after Respecification

	Original Sample	Sample Mean	Standart Deviation	T-Statistics
X1 <-- PUF	0,719	0,693	0,192	3,872
X2 <-- PUF	0,789	0,777	0,091	8,643
X3 <-- PUF	0,935	0,924	0,119	7,873
Y1 <-- KP	0,774	0,745	0,218	3,551
Y2 <-- KP	0,751	0,736	0,100	7,498
Y3 <-- KP	0,929	0,917	0,118	7,850

Source: Primary Data Processed, 2019

Table 5
Total Effect

	PUF	KP
16	0,747	0,747

Source: Primary Data Processed, 2019

Table 6
Total Effect Bootstrapping

	Original Sample	Sample Mean	Standart Deviation	T-Statistics
16	0,747	0,757	0,201	3,717

Source: Primary Data Processed, 2019

in empowering members of the urban farming community including capacity, authority, and empowerment have an effect of 99% in increasing food security in household members of the urban farming community in Gerong Village, Gresik Regency, while 1% is influenced by other indicators outside the model (Table 3).

It is known that empowerment plays an important role in addition to capacity and authority in empowering urban farming communities to improve food security. High motivation from within the members of the urban farming community must be supported by facilities and infrastructure. This is because the facilities and infrastructure are the main targets of support in carrying out the empowerment of the urban farming community. The final goal is when these two factors are met, food security in household members of the urban farming community can be realized (Sumardjo *et al.*, 2016).

Shobry (2017), explains that the urban farming program implemented by the Agricultural, Fisheries and Forestry Agency (BP4K) in Gresik Regency is running well, although it is said to be ineffective. Where the implementation process has been running and has a positive impact in its implementation. In line with Tanzihah (2011), explaining where the empowerment of urban farmers can be started from the process of developing as well as strengthening the environment, and developing cooperation in the marketing division between farmer groups.

CONCLUSION

Empowerment plays an important role in addition to capacity and authority in empowering of urban farming communities to achieve food security. It can be seen that the indicators for empowering members of the urban farming community include capacity, authority, and empowerment which have an influence of 97% in

increasing food security in household members of the urban farming community in Gending Village, Gresik Regency. This is because the facilities and infrastructure are the main targets of support in carrying out the empowerment of the urban farming community.

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