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THE IMPACT OF SOCIO-ECONOMIC FACTORS OF HORTICULTURAL FARMERS ON ACCESS TO MICROFINANCE IN EAST JAVA

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ABSTRACT

Almost all corporate financing in the agriculture sector is dependent on interest. Because the features of the agricultural sector are incompatible with the finance sector, banks often show little interest in funding the agricultural sector. The purpose of this study were Analyze the socio-economics factors that influence the decision of horticultural farmers in East Java in accessing microfinance. The method of determining the location of the research was carried out in two locations, namely Wonomulyo Village, Poncokusumo Subdistrict, Malang Regency, dan Pacet Village, Pacet Subdistrict, Mojokerto Regency. 160 farmers were chosen as the study's sample size using the proportionate stratified sampling technique and the Slovin formula. To answer these problems descriptive analysis, logistic regression analysis (logit) was used. Formal institutions assigned to channel the funds include government banks and private banks. Informal institutions that carry out the distribution of micro-credit funds are the private sector or institutions from the farmers themselves. The majority of farmers generally know that the level of formal financing sources is indeed lower, but administrative procedures are considered difficult. Based on the results of logistic regression analysis for the factors that influence the decisions of Horiculture farmers in East Java in accessing credit, including education, length of business, land area, and income. It is recommended that in order to formulate steps for the ease of taking out agricultural loan, Field Extension Officers, regional cooperatives, government banks, and private banks should conduct specific studies and take specific approaches.

Keywords: *government banks, horticultura farmer, microfinance, private banks*

BACKGROUND

Capital is one of the most important production factors in agricultural businesses. However, not all farmers have sufficient capital to operate their businesses. The accessibility of farmers to sources of capital is still very limited, especially for farmers who control narrow land, which is the largest community in rural communities. Thus, it is not uncommon to find that a lack of funds is an obstacle that hampers farmers' efforts to manage and develop their farms (Martin & Clapp, 2015; Ng'atigwa et al., 2020).

Current business financing in the agricultural sector is almost entirely interest based. Banks generally show a lack of interest in financing the agricultural sector, which is considered to be at high risk, either because of natural disturbances such as floods and droughts, attacks by pests and plant

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http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (2): 567-577, June 2024

diseases, or fluctuations in output prices (Turner et al., 2013). The lack of bank financing for the agricultural sector is due to the incompatibility of the characteristics of this sector with the banking business (Burbano-Figueroa et al., 2022).

According to Rehman et al. (2017) due to: (a) The experience and trauma of some banks in facing the reality of non-performing loans during loan disbursement; (b) BI's strict rules for banks to be prudent in disbursing funds; and (c) Many banks (especially large banks) do not have experience in disbursing microcredit. Therefore, informal sources of capital often become another option for farmers to obtain capital loans due to easier application procedures. The government has attempted to help ease the burden of farmer capital by establishing various financing schemes that are easily accessible to smallholders. This policy is expected to have a positive impact on the development of smallholder farming in Indonesia (Hardana et al., 2021; Jha, 2021).

Previous studies related to microcredit have focused on the effectiveness of credit programs in poverty reduction as well as household and firm behavior, such as per capita consumption, labor supply, business performance, and evidence of program success (Aman et al., 2014). The magnitude of this potential makes the behavior of farmers in this area quite representative of the behavior of farmers in Indonesia in general. While the horticultural crops sub-sector, especially vegetables, is the sub-sector with the second highest growth in sectoral contribution (to Indonesia's GDP) after plantation crops (Chisasa & Makina, 2015; Stein et al., 2016; Tong & Yang, 2021).

This is based on the idea that financing programs are considered effective if they help farmers accumulate capital and improve their socioeconomic the key to the success of microfinance in the long run is to accumulate returns. Therefore, this study focused on horticultural farmers in East Java. Based on these facts, the research objective is to analyze the socio-economic factors influencing the decision of horticultural farmers in East Java to access credit.

RESEARCH METHODS

Data collection was conducted in two locations, namely: (a) Wonomulyo village, Poncokusumo sub-district, Malang district; and (b) Pacet village, Pacet sub-district, Mojokerto district. These two locations were chosen purposefully because they are horticulturally producing centers in East Java with the most financial institution. The number of financial institutions, easy access to financial institutions, the variety of vegetable commodities, and the high potential for vegetable commodity development were the reasons for selecting the research locations(Aini et al., 2020; Gunawan & Agustina, 2021). The determination of the number of samples in this study was carried out using the Slovin formula on the total population in each location (Mweshi & Sakyi, 2020). The following below is the slovin formula used.

$$n = \frac{n}{1 + Ne}$$

Information:
n : Number of samples
N : Total population
e : Error rate

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (2): 567-577, June 2024

According to the data needs of this study, the population was divided into three groups: (a) farmers who do not access credit; (b) farmers who access formal credit; and (c) farmers who access non-formal credit. Therefore, respondents were selected using proportional stratified sampling to obtain a balanced sample for each category of farmers.

1. Sample withdrawal in Wonomulyo Village, Poncokusumo District, Malang Regency. The total population of horticultural farmer households in this area amounted to 307, with a proportion of 95 non-credit user farmers, 70 formal credit user farmers, and 142 non-formal credit user farmers. Using the Slovin formula at an error rate of 10%, a qualified sample size of 76 respondents was obtained.
2. Sampling in Pacet Village, Pacet Sub-district, Mojokerto District. The total population of horticultural farmer households in this area amounted to 530, with a proportion of 175 non-credit user farmers, 165 formal credit user farmers, and 191 non-formal credit user farmers. Using the Slovin formula at an error rate of 10%, a qualified sample size of 84 respondents was obtained.

Data collection methods can be done by interview using a questionnaire tool. Questions in the questionnaire are made openly. structured interviews with questionnaire tools and equipped with research notes. Characteristics of respondents, Fixed costs (equipment depreciation, land rent, land tax), variable costs (seeds, fertilizers, pesticides, labor).

The logit model is a regression model specifically designed to handle regression analysis with the dependent variable being a probability variable, i.e., a variable whose value ranges from 0 to 1. The logit model allows the estimation of regression equations that can keep the predicted result of the dependent variable in the range of values between 0 and 1. The values range 1 for farmers who decided to join formal financial institutions for their farm capital and the values range 0 for farmers who did not decide to join formal financial institutions for their farm capital. This study uses logit model regression analysis to answer what factors influence farmers' decisions to use credit from formal financial institutions for their farm capital. The independent variables in the model are nominal and ratio data, as follows:

1. Age: Age of the respondent farmer at the time of the interview (years) in ratio
2. Edu: Base of formal education that has been passed by the respondent (years) in ratio
3. Fresp: Number of dependent family members (people) in ratio
4. Exp: The length of experience of farmers in horticulture farming (years) in ratio
5. Ownl: Land area owned by farmers, as a proxy for business scale (ha) in ratio
6. Status: The status of the land owned by the farmer in nominal
7. Inc.: Total net income earned by farmers from horticulture in ratio

Empirically, the Logistic Regression Model formula is prepared based on the equation below, as follows:

$$Ln\frac{\pi_i}{(1+\pi_i} = \alpha + \sum_{j=1}^{n} \beta_i X_{ji} + e$$

$$Ln\frac{\pi_i}{(1+\pi_i} = \alpha + \beta_1 Age + \beta_2 Edu +$$

$$\beta_3 Fresp + \beta_4 EXP + \beta_5 Ownl + \beta_6 Status + \beta_7 Inc$$

The Logistic Regression estimation in this discussion is completed by the Maximum Likelihood estimator method using the Minitab Version 16 program.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (2): 567-577, June 2024

RESULT AND DISCUSSION

Characteristic of Respondent

Respondents in this study were horticultural farmer households residing in Wonomulya Village, Malang Regency, and Ngadirejo Village, Pasuruan Regency. Respondents are also members of farmer Groups that use or do not use credit services to support farming activities. Characteristics of research respondents can be described based on age group, education level, land status, land area, formal and informal institutions, interest, and loan size.

Table 1. Characteristics of Horticultural Farmer Respondents

Indicators	Non-credit user	Informal Credit User	Formal Credit user
Age (Years)			
< 14	-	-	-
14-55	35	27	31
>55	20	27	20
Education Level (Years)			
Not in School	2	-	-
Not graduated from elementary school	8	10	8
Elementary School	28	27	12
Junior High School	12	8	20
Senior High School	4	5	10
Undergraduate	1	4	1
Length of Farming (Years)			
<10	5	8	11
10-20	25	22	29
>20	25	24	11
Land Status			
Self-Owned	32	16	27
Land Rent	23	38	24
Land Area Cultivated (Acres)			
< 0.5	29	32	25
0.5-1	22	18	21
>1	4	4	5
Number of dependent family members (People)			
1-3	18	21	16
4-6	28	23	32
>6	9	10	3
Income (Rp)			
<5,000,000	18	15	11
5,000,000-10,000,000	29	31	38
>10,000,000	8	5	2

The age of farmers is part of the level of respondents who are expected to be able to work and generate income. The age of farmers in terms of work productivity ranges from 14 to 55 years. This condition is closely related to the level of labor productivity in farming. It is known that the majority

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http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (2): 567-577, June 2024

of farming activities are related to physical ability. Farmers in their productive years generally have a higher level of productivity (Adetiloye, 2012).

Based on Table 1, the results of the age distribution of farmer respondents show that the majority of respondents are in the working age category. This shows that there is a balance of regeneration in working age. However, younger farmers generally have less experience and skills than older farmers but have a more progressive attitude towards new innovations (Seven & Tumen, 2020). The progressive attitude of young farmers towards new innovations will shape their behavior toward more courageous decision-making in farming. The age condition of farmers is also related to the process of introducing technological innovation adoption activities, and in general, young farmers tend to be more progressive in the process of transferring various new innovations so as to accelerate the process of technology transfer. Based on the results of Table 1 above, it can be concluded that age can also affect farmers' management of their farming activities (Krikser et al., 2019).

The last education of respondents has an influence on farming activities. This can be seen from the ability and skills of farmers in absorbing information and new technologies that come frm groups and extension workers. Some studies on farmers with relatively low levels of education will result in the ability and absorption of farmers to technology and information in the form of agricultural development and cultivation to be slower. Unlike the case if farmers have a relatively high level of education, it is able to adjust to various information related to technology for development for agricultural activities (Njeri, 2021). The distribution of respondents based on education level can be seen in Table 1. Based on the results of the distribution of education levels among farmer respondents in research areas, it can be seen that most respondents are educated up to the primary level. The level of education possessed by farmers is a benchmark that can be used as a reference to measure the level of a person's ability in terms of the power of capture to be able to interpret any information received. Stratification at the education level also influences the ability of farmers to accept new innovations and is closely related to their ability to think scientifically (Henisz & McGlinch, 2019).

Experience in farming for farmers will have a positive impact on the implementation of agricultural activities. Farmers who have experience carrying out farming activities can have real knowledge in the field. This experience will provide ideas for handling various problems in farming. Based on Table 1, it can be seen that the farming experience of local respondents is generally in the range of less than 20 years. This experience provides a logical reason why, apart from good education, experience in farming is also needed. Farmers' farming experience influences the total amount of produce produced. Farmer respondents in the study area have long made a living as farmers. The reason respondents farm rice is because it is hereditary or has been inherited from their family (Li et al., 2022).

Land tenure status is the condition of land ownership used for sugarcane farming. In farming activities, the status of cultivated land ownership affects the management of the farm. The status of land tenure is divided into self-owned land, rented land, sublet land, and profit-sharing land. Table 1 shows that all farmer respondents in research area own their land. Landowners have the freedom to cultivate the land and have full satisfaction with the results of the production obtained. The status of land tenure owned by each farmer is generally passed down from generation to generation, or mawaris, from his family (Pariasa & Hardana, 2023). Agricultural land area is part of one of the renewable resources. Land cultivated by farmers as a place to carry out farming activities and produce various agricultural products desired by farmers with commodity products sold to consumers. Based on Table 1, it can be seen that the majority of the arable land area in respondent farmers is above 0.5

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (2): 567-577, June 2024

Ha. The area of cultivated land is one of the factors that influence the motivation of respondent farmers to apply innovations for the development of agricultural activities in the study area. The land area is used to support the livelihood activities of respondent farmers in the cultivation of food crops that have a rotation of rice-paddy-corn or peanuts.

The number of family members who are dependent on farmers will affect the motivation to work in farming activities to be able to improve the welfare of their families by achieving the fulfillment of daily needs. The number of family members of the respondents who have been recorded ranges from 1 member to 6 family members. Based on the data in Table 1 above, it can be seen that the average farmer consists of a small family consisting of 2 parents and 1-4 children. This number of family members can help farmers who act as the head of the family manage their farms, so as to increase farmers' income. However, in the study area, most farmers use outside labor in the form of piecework. This is because most farmer family members prefer to work in non-agricultural sectors such as industry and trade rather than continuing to work as farmers in the farmer's family (Zhang et al., 2018).

Net farm income is the difference between gross income and farm expenses to measure the rewards obtained by farmers as a result of the use of factors of production. Net farm income measures the rewards received by farm families from the use of production factors such as labor, management, and own or borrowed capital invested in the farm (Krikser et al., 2019). The performance of small farms is assessed by measuring the net farm income obtained from the deduction between net income and interest paid on borrowed capital, imputed costs, and depreciation. A person's income certainly plays an important role in satiating his needs related to the purchasing decisions that will be made.

Logit Analysis Results

Goodness of Fit (R^2)

Goodness of Fit (R^2) is used to determine the accuracy of the model used. The goodness of Fit (R^2) is expressed by the percentage of the dependent variable included in the logit model. The R^2 value can be seen from the Nagelkerke R-Square value. Based on the Nagelkerke R-Square value, it is 0.665. This can be interpreted as meaning that 66.5% can be explained by the variables in the model, namely the variables of age, education, number of family members, length of business, land area, land status, and income, while 33.5% is explained by other variables outside the model.

Simultaneous Test (G Test)

The simultaneous test is used to determine whether all parameters / variables can be included in the model by looking at the $\chi 2$ value. If the value of $\chi 2$count> $\chi 2$table then all variables can be included in the model. The analysis results of the simultaneous test based on the Omnibus Test of Model Coefficients show that the sig. value is 0.000 (<0.005). It can be interpreted that the whole model can explain or predict the chances of the influence of age, education, number of family members, length of business, land area, land status, and income on farmers' decisions to use credit. The calculated $\chi 2$count value of 96,976 > $\chi 2$table value of 14,067 (df = 7 and $\alpha = 0.05$), so it can be concluded that the variables of age, education, number of family members, length of business, land area, land status, and income can be included in the model.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (2): 567-577, June 2024

Log Likelihood Test

The log Likelihood test is used to assess the entire model (overall fit model). The log Likelihood test results are based on Iteration History (b, c) and Model Summary. log likelihood values in blocks 0 and 1. The value of -2 log likelihood block 1 is 91.038, compared to the value of -2 log likelihood block 0, which is 188.068, so it can be said that the logistic regression model is good to use. This is because the independent variables consisting of age, education, number of family members, length of business, land area, land status, and income can explain the dependent variable, namely the farmer's decision to use credit.

Partial Test (Wald Test and Significance Test)

The Wald test is a test used to determine the significance of the logistic coefficient used by comparing the magnitude of the Wald statistic obtained from logistic regression analysis with the Chi Square table at the level of freedom (Df) 1 and 95% confidence level, namely 3.841. The results of the Wald and Significance tests can be seen in Table 2.

Table 2. Wald Test Results and Significance Tests

Variables	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Age	0.019	0.028	0.473	1	0.492	1.020	0.965	1.078
Edu	0.305	0.126	5.891	1	0.015	1.357	1.060	1.735
Fresp	0.244	0.268	0.829	1	0.363	1.276	0.755	2.156
Exp	-0.101	0.021	22.777	1	0.000	0.904	0.867	0.942
Ownl	6.159	1.406	19.184	1	0.000	472.953	30.052	7443.259
Status	-0.952	0.922	1.068	1	0.301	0.386	0.063	2.349
Inc	-0.901	0.356	6.399	1	0.011	0.406	0.202	0.816
Constant	9.268	5.328	3.025	1	0.082	10594.058		

Wald and significance tests were carried out by comparing the Wald statistical value of each research factor obtained from logistic regression analysis with the Chi-square table at the free degree (df)=1 and looking at the 95% significance level (α) of 3.841. If the Wald statistical value > $\chi 2$ then the factor has a real influence on decision making to choose the type of credit, while if the Wald statistical value < $\chi 2$ then the factor does not have a real influence on decision making to choose the type of credit. Based on Table 2, it can be seen that the value greater than 3.841 is the education variable with a Wald value of 5.891 and a significance level of 0.015; the variable length of business with a Wald value of 22.777 and a significance level of 0.000; the variable land area with a Wald value of 19.184 and a significance level of 0.000; and the variable income with a Wald value of 6.399 and a significance level of 0.11. This shows that the variables of education, length of business, land area, and income have a real and significant influence on farmers' decision-making when using credit.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (2): 567-577, June 2024

Impact of Socio-Economic Factors of Horticultural Farmers on Access to Microfinance in East Java

The Wald value of the age variable (0.473) < the $\chi 2$ table value at df 1 (3.841) with a 95% confidence level. This indicates that the age variable is not able to explain farmers' decision making in using credit. The significance value of the age variable is $0.492 > \alpha = 0.05$ so it can be said that age does not have a significant influence on farmers' decision making in using credit. This is not in accordance with the statement which states that age can reflect different characteristics of a person in terms of the ability to access credit. Older people have more experience in economic financing activities and have a higher level of trust in credit institutions. Younger people do not have sufficient wealth and require more funds for the adoption of new technologies (Palmioli et al., 2020).

Wald value on education variable (5.891) > $\chi 2$ table value at df 1 (3.841) with 95% confidence level. This indicates that the education variable is able to explain the decision-making of farmers when using credit. The significance value of the education variable is $0.015 < \alpha = 0.05$, so it can be said that the level of education has a significant influence on farmers' decision-making when using credit. The value of the regression coefficient (B) of 0.305 with an exp (B) value of 1.357 can be interpreted as meaning that any increase in education per year will increase the chances of farmers' decision-making in using credit by 1.357 times greater than farmers who do not use credit. This is in accordance who state that the higher a person's level of education, the higher their ability to use credit. State that education is the most important factor influencing household credit activities, and in general, people with more education are less restrictive and therefore more likely to adopt new things that can benefit their business activities (Wulandari et al., 2021).

Wald value on the variable number of family members (0.829) < $\chi 2$ table value at df 1 (3.841) with 95% confidence level. This indicates that the variable number of family members is not able to explain farmers' decision making in using credit. The significance value of the variable number of family members is $0.363 > \alpha = 0.05$ so it can be said that the number of family members does not have a significant influence on farmers' decision making in using credit. Household size is a synonym for labor contribution to the firm. The more labor available from larger family members, the greater the family income, making it less likely to use credit because capital is already available. On the other hand, farmers with large families can use more capital for labor and other family needs. This will increase the demand for credit and also increase the demand for access to credit opportunities (Rehman et al., 2017). Based on this, the number of families does not have a significant influence on farmers' decisions to use credit.

Wald value on the variable length of experience (22.777) > $\chi 2$ table value at df 1 (3.841) with 95% confidence level. This indicates that the variable length of experience is able to explain the decision-making of farmers in using credit. The significance value of the variable length of experience is $0.000 < \alpha = 0.05$ so it can be said that the length of experience has a significant influence on farmers' decision making in using credit. The value of the regression coefficient (B) is -0.101 with an exp (B) value of 0.904 which means that any increase in the length of experience per year will reduce the chances of farmers' decision making in using credit by 0.904 times greater than farmers who use credit. Decision-making based on experience has benefits for practical knowledge. A person's experience can help them estimate the state of something, pay attention to profit and loss, and decide whether or not a decision will be made (Burbano-Figueroa et al., 2022).

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http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (2): 567-577, June 2024

Wald value on land area variable (19.184) > $\chi 2$ table value at df 1 (3.841) with 95% confidence level. This indicates that the land area variable is able to explain farmers' decision making in using credit. The significance value of the land area variable is $0.000 < \alpha = 0.05$ so it can be said that the land area has a significant influence on farmers' decision making in using credit. The value of the regression coefficient (B) of 6.159 with an exp (B) value of 472.953 which can be interpreted that any increase in land area per hectare will increase the chances of farmers' decision making in using credit by 472.953 times greater than farmers who do not use credit. This is in accordance with the opinion which states that the size of agricultural land will affect the scale of the business. This means that the larger the area of land cultivated, the greater the need for capital. For this reason, the amount of credit given to farmers with large land holdings is greater than that given to farmers with narrow land (Borychowski et al., 2020; Tong & Yang, 2021)

The Wald value of the land status variable (1.068) < the $\chi 2$ table value at df 1 (3.841) with a 95% confidence level. This indicates that the land status variable is not able to explain farmers' decision-making in using credit. The significance value of the land status variable is $0.301 > \alpha = 0.05$ so it can be said that land status does not have a significant influence on farmers' decision making in using credit. The results contradict the opinion, who state that land has become the most important collateral for using credit, and farmers with more land are more likely to seek credit, and during the course of farming activities, farmers will need more capital. Based on the results of the study, the status of farmers' land does not affect the taking of credit by farmers. This is because in the research area, most of the land cultivated is not owned (rented) (Ahmed & Sallam, 2020; Hardana et al., 2021).

Wald value on income variable (6.399) > $\chi 2$ table value at df 1 (3.841) with 95% confidence level. This indicates that the income variable is able to explain farmers' decision making in using credit. The significance value of farm income variable is $0.011 < \alpha = 0.05$ so it can be said that farm income has a significant influence on farmers' decision making in using credit. The value of the regression coefficient (B) of -0.901 with an exp (B) value of 0.406 which can be interpreted that an increase in income per rupiah will reduce the chances of farmers' decision making in using credit 0.406 times greater than the farmers who use credit. Indicates that household income and asset levels are important determinants of the propensity of rural households to borrow and the amount of credit received (Adjognon et al., 2017).

CONCLUSION AND SUGGESTION

Accessibility of horticultural farmer households to microcredit is simultaneously influenced by education, length of farming, land area, and farm income. While three other factors, namely, age, number of family members, and land status, do not have a significant partial effect on access to credit. Length of farming has the biggest significant influence on farmers' decision making in using credit. Experience can assist someone in determining whether or not to decide, estimating the state of something, and considering profit and loss. Furthermore, it was reported that farmers' access to formal agricultural finance is positively correlated with their level of farming expertise, that is, as farmers' experience grows, so does their credit availability. It is hoped that the cooperation of farmer members with local government agencies engaged in horticulture can gain insight into the provision of microfinance capital. One of them requires a special review and approach from Field Extension Officers together with regional cooperatives, government banks, and private banks in formulating stages for ease in taking agricultural credit.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (2): 567-577, June 2024

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