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Factors Affecting The Income of Orange Farmers in Junrejo, Batu City

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INDEXING

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ABSTRACT

This research aims to determine several factors that influence the income of orange farmers in Junrejo District, Batu City. The research method used is quantitative, with data collection methods in the form of observation, documentation and questionnaires. From the results of multiple regression data processing, it shows that the factors that have a positive and significant influence in this research are farmers' capital and labor (farm laborers), while the length of farming business does not significantly influence the increase in income of orange farmers in Junrejo District, Batu City. Thus, the length of business cannot guarantee an increase in the income of orange farmers in Junrejo District, Batu City, the dominant one is farmer capital.

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INTRODUCTION

Agricultural development in rural areas is increasingly being intensified. This is in accordance with research by Gunawan et al (2021) regarding the need for serious government in villages to increase infrastructure development and farmer skills. With these efforts, the agricultural economy will increase significantly in line with the efforts of farmers and the government to increase farmers' income.

For information, based on a report from the Batu city Agriculture Service (2022), one of the agricultural bases in Batu city is the orange commodity. Junrejo District is a citrus center which can contribute more than 1000 tons/ha every year. This contribution is of course inseparable from farmers' efforts to increase the productivity of the planting system, production process and orange storage.

Farmer income is the amount of money or economic value obtained by a farmer from agricultural production or other agricultural activities. Farmers' income can come from selling agricultural products such as plants, fruit, vegetables and livestock. Farmers' income can also come from other activities related to agriculture, such as planting, maintenance and harvest services for other parties (Hidayat et al, 2017). The size of farmers' income depends on various factors, such as the type of crops or livestock produced, selling prices on the market, land productivity, production costs, and other factors (Donkor and Anane, 2016; Naveed and Hassan, 2021; Assad et al, 2019 ; Cui and Liu, 2022).

Several studies have studied farmers' income, including the income risk of orange farmers in Sambas Regency (Kurniati et al, 2014), the income of orange farmers in Bangli Regency (Alitawan and Sutrisna, 2017) in Central Kuantan District (Mahrani and

Trinopsagiarti, 2020), Income of orange farmers after the eruption of Mount Sinabung (Saragih, 2022), as well as income of orange farmers in Petungsewu Village, Dau, Malang (Asnah et al, 2022). However, there are still few who discuss farmers' income from the orange commodity side. From this background, researchers are interested in studying in more depth the factors that influence the income of orange farmers in Junerjo sub-district, Batu city.

LITERATURE REVIEW

Agricultural income pertains to the revenue generated through agricultural pursuits, such as the selling of crops, livestock, and other agricultural commodities. It can arise from a variety of agricultural practices, encompassing crop cultivation, animal rearing, fishing, and forestry. This income may also originate from the manufacture of food, animal feed, biofuel, fiber, wood, and diverse other products derived from the agricultural sector. For numerous farmers worldwide, agricultural income serves as the primary source of livelihood and holds significant prominence in the global economy (Singh *et al*, 2020). Nevertheless, agricultural income often encounters fluctuations resulting from factors like weather conditions, natural calamities, fluctuations in commodity prices, production expenses, and governmental policies that impact the agricultural market in Indonesia (Andani *et al*, 2022).

Farmers' income is subject to variations due to factors such as the type of crops or livestock they engage in, the size of their land holdings, the availability of resources like water, and the demand for agricultural products in the market (Belay *et al*, 2017). They can generate income by selling their produce directly to consumers or through local and national markets. Moreover, they can also derive income from land rental or agricultural services they provide. Unfortunately, many farmers, particularly in developing countries, face challenges in generating sufficient income to support their livelihoods (Adenuga *et al*, 2021). These challenges stem from factors such as inadequate infrastructure, limited access to profitable markets, and the negative impacts of climate change on citrus agricultural production. Consequently, it is crucial to implement programs and policies that support orange farmers and enhance their well-being. These initiatives play a vital role in ensuring food security and alleviating poverty in rural areas

RESEARCH METHOD

Types of research

According to Sugiyono (2014; 13), this type of research is a quantitative research method which can be interpreted as a research method based on the philosophy of positivism, used to research certain populations or samples, data collection using research instruments, quantitative/statistical data analysis, with the aim of to test the established hypothesis.

Research sites

The research location is a place or area where research will be carried out. The research location that will be carried out by researchers is located in Junrejo District, Batu City.

Population

Population is a generalization area consisting of objects or subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn (Sugiyono, 2011: 61). The population in this study were all active orange farmers who had their own land totaling 30 people.

Sample

The sample is part of the number of characteristics possessed by the population (Sugiyono, 2017). The sample used in this research was 30 taken using the census method (the entire population was taken).

Data source

The data collection procedure used in this research is to group them into two groups, namely: Primary data, According to Sugiyono (2015:137), primary data is defined as follows: "Primary sources are data sources that directly provide data to data collectors." In this research, data was obtained directly from the research location through interviews with informants related to the research problem, and also through direct observation or observation of the research object, namely orange farmers in Junrejo District, Batu City. and Secondary Data According to Sugiyono (2015: 137), secondary data is defined as follows: "Secondary sources are sources that do not directly provide data to data collectors." In this case, the data obtained is based on references and literature related to the material and results of distributing questionnaires to orange farmers in Junrejo District, Batu City.

Method of collecting data

The data collection method used in this research is as follows: Documentation; The documentation method is a method or method for obtaining data by examining written remains, especially in the form of archives and including books about opinions, or laws related to problems. Documentation is needed in research to view various archives stored and also notes that are relevant to this writing. Second Interview; Interviews are used as a data collection technique, if the researcher wants to conduct research to determine the problems that must be researched, and also if the researcher wants to know things from respondents in more depth and the number of respondents is small. Data collection techniques are based on self-report or at least on personal knowledge and beliefs. Last Questionnaire; A questionnaire is a data collection technique that is carried out by giving respondents a set of questions or written statements to answer. A questionnaire is a data collection technique with the aim of obtaining relevant information regarding the research variables that will be measured in the research.

Operational Definition of Variables

According to Sugiono (2018), a research variable is anything in the form of anything that is determined by the researcher to be studied so that information about it is obtained, and then conclusions are drawn. According to Hatch and Fardahany (Sugiono, 2018), theoretically variables themselves can be defined as attributes of a person or object that vary from one person to another or one object to another. This research uses four variables, namely: Independent variable (X) Both positive and negative influences. In

script analysis, it will be seen that the variables that explain the path or way a problem is solved are none other than independent variables (Ferdinand, 2006). The independent variables in this research are farmer capital (X1), labor/farm laborers (X2) and length of farming business (X3). Dependent variable (Y) In script analysis, the nuances of a problem are reflected in the dependent variable. The nature of a problem is easily visible by recognizing the various dependent variables used in a model. The variability of or on this factor is what a researcher tries to explain (Ferdinand, 2006). In this research, the dependent variable used is Increase in Income (Y).

Data Quality Test

Validity test

To test the validity of the data, the researcher used a construct validity test. A questionnaire can be said to be valid if the questions from the questionnaire are able to reveal something that will be measured by the questionnaire itself. This can be seen if r results are greater than r table. Where the r result is the number in the Correlated Item Total Correlation column and the r table is the result of calculations using degrees of freedom (df) with a significance level of 5%.

Reliability Test

To test the reliability of the questionnaire, researchers tested the Cronbach Alpha formula. This formula can provide relatively no different results if the same symptoms are measured again at different times. Measures of data reliability are as follows: Cronbach alpha <0.6 means poor reliability; Cronbach alpha 0.6 – 0.8 means acceptable reliability and Cronbach alpha >0.8 means good reliability.

Classic assumption test

In connection with this research analyzing the influence of more than one independent variable on the dependent variable, the researcher carried out a classic assumption test. Multiple linear regression analysis can be carried out. The data obtained does not occur multicollinearity, does not occur heteroscedasticity and is normally distributed.

Multicollinearity Test

If the tolerance value is greater than 0.01 then it can be concluded that there is no multicollinearity, whereas if the tolerance value has the opposite value then multicollinearity occurs. If the VIF value is smaller than 10.00, it can be concluded that multicollinearity does not occur, whereas if the VIF value has the opposite value, multicollinearity occurs. If the standard error value is less than 1, then multicollinearity does not occur and if the B coefficient value is less than 1, then multicollinearity does not occur. Apart from these techniques, researchers can look at the eigenvalue and condition index. If the eigenvalue is more than 0.01 and/or the condition index is less than 30, it can be concluded that the symptoms of multicollinearity do not occur.

Heteroscedasticity Test

This test is carried out by making a scatterplot between the residuals and the predicted values of the standardized independent variables. If the distribution of points in the scatterplot does not form a particular polar or plot, then the data obtained does not have heteroscedasticity. If the opposite condition occurs, heteroscedasticity occurs.

Normality test

Normality Test is a test of the normality of data distribution. The use of the normality test is because in parametric statistical analysis, the assumption that the data must have is that the data is normally distributed. Data that has a normal distribution means that it also has a normal distribution. To find out whether the data we have is normal or not, we use the Kolmogorov-Smirnov (KS) statistical test. Santoso (2001) provides guidelines for decision making regarding data that approaches or is a normal distribution which can be seen from: The significance or probability value is <0.05, then the data is distributed non-normally; The significance or probability value is >0.05, then the data is normally distributed.

Data analysis technique

Multiple Linear Regression Analysis

The next step is to carry out multiple linear regression analysis to test the research hypothesis, namely:

H1: Farmer capital has a positive and significant effect on increasing income

H2: Labor has a positive and significant effect on increasing income

H3: Length of farming business has a positive and significant effect on increasing income

There are four stages that need to be carried out, namely the model reliability test (F test), regression coefficient test (t test), analysis of the coefficient of determination (R2), then interpretation of the model obtained through the coefficient table obtained through SPSS 24. Through this table, the equation This research's multiple linear regression can be seen. The general equation of multiple linear regression is as follows:

$$y = a + b1X1 + b2X2 + b3X3 + e$$

Where

y = Farmer's Income X1 = Capital

X2 = Labor X3 = Length of Farming Business

a = Constant

b1-b3 = regression line coefficient

e = Error

Model Reliability Test (f Test)

The f test is used to determine whether the independent variable is significant or not for the dependent variable individually for each variable. To interpret the results of significance test calculations, the following criteria are used: When Sig. < α then Ho is rejected then When Sig. > α then Ha is accepted. The use of α = 5%, to indicate whether the constant value or regression coefficient is significant or not. The F test is used to determine whether there is an influence of the independent variable on the dependent variable. Interpret the results of the F test calculation, using similar criteria to the

significance test. In this case, α = 5% is used to show the influence of the independent variables jointly or partially on the dependent variable.

Regression Coefficient Test (t Test)

The t test is used to determine whether the independent variable is significant or not for the dependent variable partially for each variable. After obtaining the calculated t value for each independent variable, the following conditions apply:

If t count > t table then Ho is rejected (significant); If t count < t table then Ha is accepted (not significant)

To find out t table, the n-2 condition is used at a level of significance of 5% (error level of 5% or 0.05) or a confidence level of 95% or 0.95. So if the error rate for a variable is more than 5%, it means the variable is not significant.

Determinant Coefficient Analysis (R-square)

The multiple coefficient or R square (R2) is used to determine the magnitude of the contribution or contributions of all independent variables, their influence on the dependent variable (Y), while the rest is influenced by the independent variables (X) which are not included in the model.

RESULT AND DISCUSSION

Validity test

The validity test is a tool to test whether each item really reveals the factor or indicator that you want to investigate. The higher the validity of a measuring instrument, the more precisely the measuring instrument hits the target. Validity testing uses the Pearson's correlation technique. The question instrument will be said to be valid if each question has a score with a significant value of <0.05. The following are the results of the validity test:

Table 1. Validity Test Results

Variable	Question Items	*Pearson Correlation*	Significance	Information
Farmer Capital (X1)	1	0.703	0,000	Valid
	2	0.736	0,000	Valid
	3	0.757	0,000	Valid
	4	0.803	0,000	Valid
Labor (X2)	1	0.953	0,000	Valid
	2	0.691	0,000	Valid
	3	0.902	0,000	Valid
	4	0.501	0.002	Valid
Length of Farming Business (X3)	1	0.912	0,000	Valid
	2	0.704	0,000	Valid
	3	0.531	0.003	Valid
	4	0.912	0,000	Valid
Farmer Income (Y)	1	0.738	0,000	Valid
	2	0.589	0.001	Valid
	3	0.774	0,000	Valid

Source: Processed Data, 2023

Based on table 1 of the validity test presented above, it is known that all questions have a significant value of <0.05, so all questions in this study are declared valid.

Reliability Test

The purpose of this reliability testing is to test whether the questionnaire distributed to respondents is truly reliable as a measuring tool. This test is only carried out on question items that have been tested for validity and have been declared valid items. An instrument is declared reliable if the Cronbach's Alpha value is > 0.60.

Table 2. Reliability Test Results

Variable	*Cronbach's Alpha*	Information
Capital (X1)	0.741	Reliable
Labor (X2)	0.779	Reliable
Length of Business (X3)	0.769	Reliable
Increase in Revenue (Y)	0.884	Reliable

Source: Processed Data, 2023

Based on table 2, the reliability test shows that all variables in the study have a Cronbach Alpha coefficient value > 0.60, so it can be concluded that all variables in this study are declared reliable.

Normality test

The normality test aims to test whether in the regression model, the confounding or residual variables have a normal distribution. The data normality test is carried out to see whether the data is normally distributed or not. The data normality test was carried out using the Kolmogorov test. Smirnov stated that the data normality test is seen from this, if the Asymp.Sig (2-tailed) value is greater than 0.05, then the data is normally distributed.

Based on table 3, it can be seen that the Normality Test results state the Asymp value. Sig.(2-tailed) is 0.172 > 0.05. Based on these results, it can be stated that the data used in this research has a normal distribution. To strengthen the results above, a normal probability plot is used. If the points on the normal probability plot are collected around a straight line, it can be concluded that the residuals of the regression model are normally distributed.

Figure 1. Normality Test Results

		Unstandardized Residual
N		30
Normal Parameters[a,b]	Mean	,0000000
	Std. Deviation	,67011903
Most Extreme Differences	Absolute	,081
	Positive	,081
	Negative	-,059
Test Statistic		,071
Asymp. Sig. (2-tailed)		,172[c,d]

Source: Processed Data, 2023

Multicollinearity Test

The Multicollinearity Test aims to test whether the regression model finds a correlation between the independent variables (independent variables). A good regression model should have no correlation between independent variables (Ghozali, 2013). Multicollinearity can be seen from the Tolerance value and the Variance Inflation Factor (VIF) value. If the Tolerance value is > 0.1 or the same as the VIF value < 10, then it can be concluded that there is no multicollinearity between the independent variables in the regression model in this study.

Table 3. Multicollinearity Test Results

Variable	*Tolerance*	VIF	Information
Capital (X1)	0.533	1,875	No Symptoms of Multicollinearity Occur
Labor(X2)	0.533	1,877	No Symptoms of Multicollinearity Occur
Length of Business (X3)	0.999	1,001	No Symptoms of Multicollinearity Occur

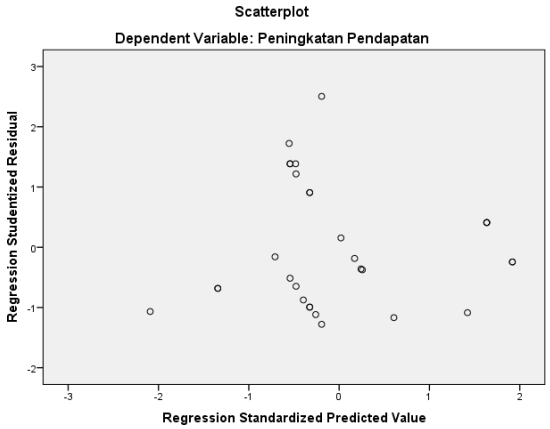
Source: Processed Data, 2023

Based on table 3, it can be seen that the Capital (X1) tolerance value is 0.533> 0.1 and the VIF value is 1.875 <10, the Labor Variable (X2) has a tolerance value of 0.533> 0.1 and the VIF value is 1.877 <10, while the Length of Business Variable (X3) tolerance value 0.999>0.1 and VIF value 1.001<10 values. So it can be concluded that there are no symptoms of multicollinearity between the independent variables in the regression model.

Heteroscedasticity Test

Heteroscedasticity shows that there is a difference in variance between the residuals of one observation and another observation. To detect heteroscedasticity, a scatter plot between ZPRED and SRESID is used. If the points on the scatter plot do not form a particular pattern, and spread above and below the zero number on the Y axis, then there is no heteroscedasticity in the regression model.

Figure 2. Scatter Plot



Source: Processed Data, 2023

Based on Figure 2, it shows that the points in the scatter plot do not form a particular pattern, and are spread above and below the zero number on the Y axis, so it can be concluded that there is no heteroscedasticity in the regression model.

Multiple Linear Regression Analysis

From the classical assumption test above, it can be concluded that the existing data is normally distributed and there is no multicollinearity or heteroscedasticity, so it meets the requirements for carrying out multiple regression analysis to test the hypothesis. Farmer Capital (X1), Labor (X2), Length of Farming Business (X3), which are independent variables on Increased Income (Y) which is the dependent variable.

Table 4. Multiple Linear Regression Analysis

Coefficientsa

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	2,256	1,920		,133	,895		
Capital	,422	,076	,606	5,523	,000	,533	1,875
Labor	,252	,073	,380	3,455	,002	,533	1,877
Length of Business	,077	,097	,063	,789	,437	,999	1,001

Source: Processed Data, 2023

Based on the results of the multiple regression test in table 4, you can see the coefficients for the regression equation in this research which can be arranged in a mathematical equation as follows:

$$Y= 2.256 + 0.422\ X1 + 0.252\ X2+0.077\ X3+e$$

Based on the equation above, it can be interpreted as follows:

α = It is known that a positive constant value of 2.256 indicates that without the influence of the variables Farmer's Capital, Labor, Length of Farming Business, the Income Increase variable is 2.256.

$\beta 1$ = The regression coefficient for the Capital variable is 0.422, meaning that Capital has a positive meaning in increasing Income. That Capital has a good influence on Increasing Income.

$\beta 2$ = The regression coefficient for the Labor variable is 0.252, meaning that Labor has a positive meaning in increasing income. That Labor influences Increased Income.$\beta 3$ = Regression coefficient for the length of business variable is 0.077, meaning that length of business has a positive meaning on income level. That the length of business has a good influence on increasing income.

t test

The t test is used to determine whether in the regression model the independent variable partially has a significant effect on the dependent variable, where if tcount > ttable then the regression test is said to be significant. Or by looking at the significance number if the value is sig. < significance level ($\alpha = 0.05$), then partially the independent

variable has a significant influence on the dependent variable. This can be seen in Figure 3 below:

Figure 3. Hypothesis Test Results

Variabel Bebas	Thitung	Probabilitas	Keterangan
Modal (X1)	5,523	0,000	Signifikan
Tenaga Kerja (X2)	3,455	0,002	Signifikan
Lama Usaha (X3)	0,789	0,437	Tidak Signifikan
Ttabel = 2.055			

Source: Processed Data, 2023

H0 is accepted or H1 is rejected if t count < t table with α = 5%
H0 is rejected or H1 is accepted if t count > t table with α = 5% with probability
If probability > 0.05 then H0 is accepted or H1 is rejected If probability < 0.05 then H0 is rejected or H1 is accepted T table formula
Df (NK)=
N = Number of respondents
K = Number of Variables (free and dependent)

The Effect of Capital on Increasing Income

Based on Figure 3, it can be seen that the value of tcount > ttable which states that the Capital variable has a significant influence on increasing income with the result tcount 5.523 > ttable 2.055 therefore Ho is rejected. The significance probability value for Capital is 0.000 < 0.05 (above α), H1 is accepted, meaning Capital has a significant influence on Increasing Income.

The Effect of Labor on Increasing Income

Based on Figure 3, it can be seen that the calculated t value > t table which states that the Labor variable has a significant influence on increasing income with the result of t calculated 3.455 > t table 2.055 therefore Ho is rejected. The significance probability value for Labor is 0.002 < 0.05 (above α), H1 is accepted, meaning that Labor has a significant influence on increasing income.

The Effect of Length of Business on Increasing Income

Based on Figure 3, it can be seen that the value of tcount < ttable which states that the Length of Business variable has no influence on increasing income with a tcount of 0.789 < ttable 2.055, therefore Ho is accepted. The significance probability value for Business Length is 0.437 < 0.05 (above α), Ho is accepted, meaning that Business Length has no influence on Increasing Income.

F Test (Simultaneous)

The F statistical test basically shows whether all the independent or independent variables included in the model have a joint influence on the dependent (dependent) variable. The null hypothesis (H0) to be tested is whether all model parameters = zero (Ghozali, 2013).

Table 5. F Test Results (Simultaneous)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38,891	3	12,964	43,164	,000b
	Residual	7,809	26	,300		
	Total	46,700	29			

Source: Processed Data, 2023

The calculated F value is 43.164 with a significance level of 0.000 <0.05. Thus the decision taken by H0 is rejected and H1 is accepted. This means that all the independent variables (Capital, Labor, Length of Business) together are able to influence the dependent variable (Increase in Income) significantly.

Coefficient of Determination Test (R2)

The coefficient of determination has a function to determine the magnitude of variation in the independent variable in explaining the dependent variable or to explain the extent of the variable's ability (Capital, Labor, Length of Business) to the dependent variable (Increase in Income). From the test results using SPSS 22, the coefficient of determination value can be seen, which is as follows:

Table 6. Determination Coefficient Test Results (R2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,913a	,833	,813	,54803	2,399

Source: Processed Data, 2023

Based on the results of the coefficient of determination test in table 8, it is clear that the value of R Square is 0.833, this means that 83.3% of the independent variables (Capital, Labor, Length of Business) can be explained by the dependent variable (Increase in Income) of 83.3% while the remaining 16.7% is explained by other variables not included in this study.

DISCUSSION

The Effect of Capital on Increasing Income

Based on the results of the analysis, the Capital variable has a significant influence on increasing farmers' income in Junrejo District, Batu City with a t-count value of 5.523 > ttable 2.055 with a probability value of 0.000 < 0.05. It is known that in this research the most dominant influencing factor is the Capital Factor. This research is in line with research conducted by Allam, (2023) which states that capital has a significant effect on the income of street vendors (PKL) at the Purwokerto Sunday Morning (Sunmor) Market.

Capital is all forms of wealth that can be used directly or indirectly in the production process to increase income. Capital consists of money or goods which together with the production factors land and labor produce new goods and services. Capital is a very important production factor in determining the level of income. (Firdausa, 2012; Vijayanti and Yasa, 2016).

The Effect of Labor on Increasing Income

Based on the results of the analysis, the Labor variable has a significant influence on increasing farmers' income in Junrejo District, Batu City with a t-count value of 3.455 > ttable 2.055 with a probability value of 0.002 < 0.05. This research is in line with research conducted by Maheswara, 2016 which concluded that labor has a positive and significant effect on increasing the income of SMEs in the Trade Sector in Denpasar City.

According to Manulang (2010); Lestari et al (2017), labor is every person who is able to do work to produce goods and/or services either to meet their own needs or for the community.

The Effect of Length of Work on Increasing Income

Based on the results of the analysis, the length of business variable does not have a significant influence on increasing farmers' income in Junrejo District, Batu City with a t-count value of 0.789 > t table 2,055 with a probability value of 0.437 < 0.05. So it can be said that this research is not in line with research conducted by Juliana, 2018, which stated that the length of business influences the level of business success and income from selling orange fruit in Sungailiat District, Bangka Regency.

The duration of a farming business is the length of time a person has been involved in the agricultural business he is running. Length of business can also be interpreted as the length of time a trader has spent running a business (Wibowo, 2013; Andriyani, 2021).

CONCLUSION

Based on the research results obtained through statistical testing and the discussion described in the previous chapter, the conclusions are as follows: The factors that have a positive and significant influence in this research are farmer capital and labor, while the length of farming business does not have a significant effect on increasing farmer income in Junrejo District, Batu City. Thus, the length of business cannot guarantee an increase in farmers' income in Junrejo District, Batu City; In this research, the most dominant influencing factor is Capital. Capital is a very important production factor in determining the high and low income of farmers in Junrejo sub-district, Batu city.

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