El-Mãl | Jurnal Kajian Ekonomi & Bisnis Islam

Vol 7 No 3 (2026) 1383 - 1390 P-ISSN 2620-295 E-ISSN 2747-0490
DOI: 1047467/elmal.v7i3.10392

Analysis of Working Capital, Labor, Technology, and Land Ownership on Rice Farmers' Income

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ABSTRACT.

This study aims to examine the influence of working capital, labor, technology, and land ownership on the income of rice farmers in the Setyo Bhakti Watualang Farmers Group, Ngawi. This research uses a quantitative research design. The population of this study consists of 103 rice farmers in the Setyo Bhakti Watualang Farmers Group, Ngawi. The sampling technique used in this study is a census with a total sample of 103 respondents. Data collection is carried out using questionnaires. The data analysis techniques used include statistical analysis, namely multiple linear regression test, F test, t test, and the coefficient of determination. Research results indicate that working capital, labor, technology, and land ownership simultaneously and significantly affect the income of rice farmers in the Setyo Bhakti Watualang Farmer Group, Ngawi. Recommendations from this study suggest that the government can prioritize providing working capital at low-interest rates to farmers. In addition, members of the Setyo Bhakti Farmer Cooperative in Watualang village can utilize technology to increase agricultural production, and to obtain additional capital, it is recommended for farmer group members to actively participate in programs organized by the government, related agencies, and the Farmer Group management so that their income can increase and improve compared to before.

Keywords: Farmers' Income, Working Capital, Labor, Technology, Land Ownership

INTRODUCTION

In Indonesia, business sectors or economic sectors can be divided into several categories based on the type of production or service activities. In general, the main economic sectors in Indonesia include the primary sector (natural resources), the secondary sector (manufacturing industry), the tertiary sector (services), the quaternary sector (knowledge and innovation) and the creative and cultural economy sector. The primary sector, related to the processing and utilization of natural resources directly taken from nature, such as: agriculture, fisheries, livestock, forestry and mining. This sector plays a very important role in the Indonesian economy because it is directly related to the exploitation and management of natural resources, which are the basis for many industries and other economic activities. Some of the roles of the primary sector in the Indonesian economy include providing employment, driving the regional economy, contributing to Gross Domestic Product (GDP) and having a direct contribution to food security.

As a country with a large territory and diverse geographical conditions, Indonesia has great potential in the agricultural sector, both in food production and agro-tourism. According to data from the Central Statistics Agency (BPS), in 2022, there were 30,020,675 hectares of productive land supporting agricultural production, consisting of food crops and horticulture. Indonesian agriculture is tropical agriculture because most of its territory is located in the tropics, directly influenced by the equator. The agricultural sector supplies raw materials for the industrial sector and provides a source of foreign exchange. The structural transformation of the Indonesian economy towards industrialization does not automatically establish an agrarian atmosphere. Various classical economic growth

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theories indicate that the successful development of a country's industrial sector is always accompanied by improvements in productivity and sustainable growth in the agricultural sector. In addition to providing food for the population and absorbing labor, the agricultural sector supplies raw materials for the industrial sector.

One food crop with excellent prospects for development is rice, given the current situation where demand for rice is increasing along with the increasing population density due to the high birth rate. The community has many opportunities in the rice farming sector to produce rice. Rice is a food crop that plays a very important role in the economy, producing food to meet the community's basic needs and as a livelihood. Rice farmers in Indonesia can be classified into various socioeconomic classes, which are often influenced by factors such as land size, access to resources such as capital, technology, and markets, and involvement in the agricultural system that includes labor. The majority of rice farmers are poor or low-income, and the average household income of farmers is also still low. Low rice farmer income is a major problem in the Indonesian agricultural sector.

Various indicators in economics can describe the level of well-being of individuals, households, or countries. This is also true in the agricultural sector. One indicator of farmer well-being is income level. According to experts, income can be defined as the income received by an individual or household in the form of money or goods from various sources during a specific period. This income can come from various sources, such as salaries, wages, business profits, interest, rent, and others. Many factors influence farmers' income levels, including capital, technology, labor, land area, and the selling price of agricultural products.

Rice has become a strategic commodity in the economic life of a nation. East Java is a province known as one of the largest rice producers in Indonesia. Based on rice production figures from the Central Statistics Agency, East Java Province will become the nation's largest rice producer in 2023. This achievement has been achieved by East Java for four consecutive years since 2020. The provisional figure for rice production in 2023 was 9.591 million tons of Dry Milled Grain (GKG), or the equivalent of 5.538 million tons of rice. This production figure is 64.9 thousand tons higher than the fixed production figure for 2022, which was 9.526 million tons. This achievement makes East Java the highest rice producer for four consecutive years.

According to the East Java Provincial Development Planning Agency (Bappeda) website in 2023, using data from the Central Statistics Agency (BPS), several regencies and cities are the largest rice producers and mainstays in East Java. These areas are Lamongan Regency, Ngawi Regency, Bojonegoro Regency, Jember Regency, and Tuban Regency. Lamongan Regency produced 920,935.59 tons of rice and 531,766.74 tons of rice in 2022. Ngawi Regency produced 785,037.99 tons of rice and 453,269.74 tons of rice, respectively, in 2022. Bojonegoro Regency produced 715,198.84 tons of rice and 412,970.22 tons of rice in 2022. Jember Regency succeeded in producing 613,237.38 tons of rice and 354,095.62 tons of rice and Tuban Regency with a record of 502,136.24 tons of rice and 289,943.58 tons of rice.

Rice farming in Ngawi Regency is a leading sector and a major contributor to the regional economy. Ngawi Regency boasts a favorable natural environment for rice farming, with extensive rice paddies, particularly in fertile lowland areas and well-maintained irrigation systems, particularly along the Bengawan Solo River. According to data from the Central Statistics Agency (BPS) of Ngawi Regency, thousands of hectares of rice paddies are cultivated annually. Most of these areas are technically irrigated, regularly supplied with water from irrigation channels, both rivers and

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groundwater. The regency has three rice harvest seasons a year (the gadu planting season, the rending planting season, and the apitan planting season). Rice production in Ngawi is generally quite stable, although several factors such as extreme weather, pests, and plant diseases can affect yields.

The Setyo Bhakti Watualang Farmers Group is one of the farmers' groups in Ngawi Regency, East Java. The name "Setyo Bhakti" signifies enthusiasm and commitment to working together to improve the welfare of its members. This farmer group is located in Watualang Village, a sub-district in Ngawi. Farmer groups like Setyo Bhakti play a crucial role in developing the agricultural sector in their region, particularly rice farming.

The majority of the income of the members of the Setyo Bhakti Watualang farmer group relies solely on the agricultural sector. Therefore, this income can also be called seasonal income. Seasonal income for members of this farmer group varies and is relatively small, averaging only between Rp 5,000,000 and Rp 10,000,000 per season. This means that the monthly income of these farmers only ranges from Rp 1,250,000 to Rp 2,500,000. When compared to the 2024 Regional Minimum Wage in Ngawi, which is Rp 2,241,054, this income is clearly very unequal. This is due to various factors, such as the availability of capital, labor, use of technology, and land ownership status in carrying out their agricultural activities. Most of their operational capital comes from loans and the use of labor according to the stages of the agricultural process, from seed provision and soil cultivation, planting, maintenance, and harvesting. Most use labor from farm laborers, although some people carry out the farming process themselves. The technology used is still rudimentary. For example, the planting process still relies on manual labor. Regarding land ownership, most members of the Setyo Bhakti Watualang farming group employ a land lease system.

RESEARCH METHODS

This study uses a quantitative approach. The author chose to use a quantitative descriptive method to determine the magnitude of the influence and significance between the variables of working capital, labor, technology and the selling price of rice on the income of rice farmers. This study was conducted at the Setyo Bhakti Farmer Group, Watualang Village, Ngawi District, Ngawi Regency. The research period was carried out for 6 (six) months from February 20, 2025 to August 19, 2025). The population in this study were farmers who are members of the Setyo Bhakti farmer group, Watualang Village, totaling 103 people. The sample taken in this study was the entire existing population, namely 103 people. From these samples, 20 people were taken as instrument trials, while 103 were used for research. Sampling for instrument trials was carried out using a random sampling technique, namely random sampling. The variables used in this study consisted of 2 variables, namely independent variables and dependent variables. The independent variables consisted of working capital, labor, technology, and the selling price of unhusked rice, while the dependent variable was rice farmer income. The collected data was processed using multiple linear regression analysis with SPSS 26 software.

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RESULTS AND DISCUSSION

Table 1 Multiple Linear Regression Results

Variables	Regression coefficient	t statistics	Sig. T
Constant	-5,638		
Working capital	.033	3,086	.003
Labor	.055	3,004	.003
Technology	.033	4,440	.000
Land ownership	.080	5,625	.000
R square	0.699		
F statistic	60,330		
Sig. F	0,000		

Source: Processed primary data, 2025

Based on calculations using the SPSS 26 for Windows program, the results for the values a, b1, b2, b3 and b4 are as follows.

Y = -5.638 + 0.033 X1 + 0.055 X2 + 0.033 X3 + 0.080 X4 + e

The interpretation of the regression equation is:

a. α = -5.638, shows that if the variables of working capital, labor, technology and land ownership have a value of 0, then the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency (Y) is -5.638.

b. b1 = 0.033, shows that the working capital coefficient (X1) gives a positive value, which means that if the working capital (X1) improves, assuming other variables remain constant, then the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency (Y) will increase by 0.033.

c. b2 = 0.055, shows that the labor coefficient (X2) gives a positive value, which means that if the labor force (X2) is stronger, assuming other variables remain constant, the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency (Y) will increase by 0.055.

d. b3 = 0.033, shows that the technology coefficient (X3) gives a positive value, which means that if technology (X3) becomes stronger, assuming other variables remain constant, then the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency (Y) will increase by 0.033.

e. B4 = 0.080, shows that the land ownership coefficient (X4) gives a positive value, which means that if land ownership (X4) becomes stronger, assuming other variables remain constant, the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency (Y) will increase by 0.080.

Model Accuracy Test

F test

The test results above show that the calculated F value> F table (60.330> 2.46) and the significant value of the F test of 0.000 is smaller than 0.05, meaning that Ho is rejected, meaning that working capital, labor, technology, and land ownership

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simultaneously have a significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency.

Coefficient of Determination Test (R2)

Based on the results of the table above, it can be seen that the adjusted R Square (R2) value in this study is 0.699. So it can be interpreted that the variation of independent variables consisting of working capital, labor, technology, and land ownership on the dependent variable, namely the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency, is 69.9% while the remaining 30.1% is influenced by other factors.

Hypothesis Test (t-Test)

The following is the calculation to test the significance of the partial linear regression coefficient using the t-test:

a. The results of the significance test of the influence of working capital (X1) on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency (Y) obtained a calculated t value, while the value > t table (3.086 > 1.660) and a significant value of 0.003 is smaller than 0.05, meaning Ho is rejected and Ha is accepted, meaning that working capital has a significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency.

b. The results of the significance test of the influence of labor (X2) on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency (Y) obtained a t-value of 3.004, thus t-value > t-table (3.004 > 1.660) with a significant value of 0.003 (less than 0.05), meaning Ho is rejected and Ha is accepted, meaning that labor has a significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency.

c. The results of the significance test of the influence of technology (X3) on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency (Y) obtained a calculated t value, while the value > t table (4.440 > 1.660) and a significant value of 0.000 is less than 0.05, meaning Ho is rejected and Ha is accepted, meaning that technology has a significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency.

d. The results of the significance test of the influence of land ownership (X4) on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency (Y) obtained a calculated t value, while the value > t table (5.625> 1.660) and a significant value of 0.000 is less than 0.05, meaning Ho is rejected and Ha is accepted, meaning that land ownership has a significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency.

Discussion of Results

1. The influence of working capital, labor, technology, and land ownershipon the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency

The results of the study explain that working capital, labor, technology, and land ownership simultaneously have a significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency.

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The coefficient of termination is 0.699 (69.9%), meaning that the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency is influenced by working capital, labor, technology, and land ownership by 69.9%, while the remaining 30.1% is influenced by other variables. This proves that the hypothesis that states: There is an influence of working capital, labor, technology, and land ownership on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency is proven true.

The proof of this hypothesis means that the variables of working capital, labor, technology, and land ownership together influence the income of rice farmers in the Setyo Bhakti Farmers Group in Watualang Village, Ngawi District, Ngawi Regency. This indicates that the higher the level of working capital, labor, technology, and land ownership, the higher the income of rice farmers. Conversely, if the level of working capital, labor, technology, and land ownership is lower, the income of rice farmers will be lower. Thus, the results of this study support the research of Putra & Sudibia (2023).

2. The influence of working capital on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency

The results of the study explain that working capital has a significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency. Thus, the hypothesis that states that working capital has a positive and significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency is proven correct. The results of the study show that the regression coefficient value of the effect of working capital on rice farmers' income is 0.033, this can be interpreted that an increase in working capital by 1% will be followed by an increase in rice farmers' income by 0.033%, a positive coefficient means that there is a unidirectional influence between working capital on rice farmers' income, meaning that if working capital increases, it will be followed by an increase in rice farmers' income. Thus, the results of this study support the research of: Amabarwati Luthfi, Dewi Tria Rosana, Solikah Umi Nur, (2022); Widyastria, Rahman S Nurdin, Arifin M Taufik, (2022); Sari Devi Yana, Harmain Hendra, Atika, (2023); Kusmiyati Diyah, Utami Wikan Budi, Suprihati, (2022), and research by Febrianti Anggi, (2024)

3. The influence of labor on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency

The results of the study explain that labor has a significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group in Watualang Village, Ngawi District, Ngawi Regency. Thus, the hypothesis that stated labor has a positive and significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group in Watualang Village, Ngawi District, Ngawi Regency is proven true. This can be interpreted as meaning that the better the labor, the higher the income of rice farmers. The results of the study show that the regression coefficient value of the influence of labor on rice farmers' income is 0.055, this can be interpreted that an increase in labor by 1% will be followed by an increase in rice farmers' income by 0.055%, a positive coefficient means that there is a unidirectional influence between labor on rice farmers' income, meaning that if the labor force increases, it will be followed by an increase in rice farmers' income. Thus, the results of this study support the research of: Amabarwati Luthfi, Dewi Tria Rosana, Solikah Umi Nur, (2022); Sari Devi Yana,

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Harmain Hendra, Atika, (2023); Kusmiyati Diyah, Utami Wikan Budi, Suprihati, (2022)

4. The influence of technology on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency

The results of the study explain that technology has a significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency. Thus, the hypothesis that technology has a positive and significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency is proven correct. This can be interpreted as meaning that the better the technology, the higher the income of rice farmers.

The results of the study show that the regression coefficient value of the influence of technology on rice farmers' income is 0.033, this can be interpreted that a 1% increase in technology will be followed by an increase in rice farmers' income by 0.033%, a positive coefficient means that there is a unidirectional influence between technology and rice farmers' income, meaning that if technology increases, it will be followed by an increase in rice farmers' income. Thus, the results of this study support the research of: Rusydi Bahrul Ulum, Rusli M, (2022) and research by Febrianti Anggi, (2024).

5. The influence of land ownership on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency

The results of the study explain that land ownership has a significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency. Thus, the hypothesis that land ownership has a positive and significant effect on the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency is proven correct. This can be interpreted as meaning that the better the land ownership, the higher the income of rice farmers.

The results of the study show that the regression coefficient value of the influence of land ownership on rice farmers' income is 0.080, this can be interpreted that an increase in land ownership by 1% will be followed by an increase in rice farmers' income by 0.080%, a positive coefficient means that there is a unidirectional influence between land ownership and rice farmers' income, meaning that if land ownership increases, it will be followed by an increase in rice farmers' income. Thus, the results of this study support the research of: Amabarwati Luthfi, Dewi Tria Rosana, Solikah Umi Nur, (2022); Barkah Shandy, Masdari, (2020); Lestari Retna Dewi, Winahyu Nastiti, (2022); Sari Devi Yana, Harmain Hendra, Atika, (2023); Kusmiyati Diyah, Utami Wikan Budi, Suprihati, (2022); and the research of Yulianawati, Dewi Tria Rosana, Solikah Umi Nur (2022).

CONCLUSION AND SUGGESTIONS

The study was conducted to determine the effect of working capital, labor, technology and land ownership on the performance of farmer income in the Setyo Bhakti Watualang Ngawi Farmer Group. Using the census method, a sample of 103 respondents was obtained and the data analysis used was multiple linear regression test. Based on the results of the hypothesis testing and the discussion that has been done, it can be concluded as follows: Based on the results of the research and

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discussion as described in the previous chapter, several conclusions can be drawn as follows: Working capital, labor, technology, land ownership have a significant effect on the income of rice farmers in the Setyo Bhakti Farmer Group, Watualang Village, Ngawi District, Ngawi Regency. Working capital, labor, technology and land ownership have a simultaneous and significant effect on the income of rice farmers in the Setyo Bhakti Farmer Group, Watualang Village, Ngawi District, Ngawi Regency. The determination or contribution of the variables of working capital, labor, technology, and land ownership to the income of rice farmers in the Setyo Bhakti Farmers Group, Watualang Village, Ngawi District, Ngawi Regency is 69.9%, while 30.1% is influenced by other variables.

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