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SOCIO-ECONOMIC FACTORS AFFECTING CORN FARMING INCOME AND ITS CONTRIBUTION TO HOUSEHOLD INCOME. CASE STUDY OF PUKDALE VILLAGE, EAST KUPANG DISTRICT, KUPANG REGENCY

(Faktor Sosial Ekonomi Yang Mempengaruhi Pendapatan Usaha Jagung Dan Kontribusinya Terhadap Pendapatan Rumah Tangga. Studi Kasus Desa Pukdale, Kecamatan Kupang Timur, Kabupaten Kupang)

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ABSTRACT

Maize plays an important role as a source of food and income for farmers in East Nusa Tenggara (NTT), Indonesia. However, maize is not yet a major economic pillar for rural households. This study aims to analyze the influence of socioeconomic factors on maize farming income and assess its contribution to household income in Pukdale Village, East Kupang Subdistrict, Kupang Regency. Although maize is the main agricultural commodity in this area, it has not yet provided an optimal economic impact for farming families. This study used a quantitative approach using a survey and multiple linear regression analysis. The sample consisted of 60 maize farmers randomly selected from a total population of 400 farmers. Primary data were collected through structured questionnaires and direct interviews. The results showed the regression equation model as follows: Ln Y = 19.923 + 0.232 Ln_X1 + 0.076 Ln_X2 + 0.480 Ln_X3 + 1.284 Ln_X4 + 0.332 Ln_X5 - 0.343 Ln_X6. Simultaneously (f test) together the independent variables have a significant effect on corn farm income. Partial test (t test) shows that the variables of land area and fertilizer price have a significant effect on corn farm income, while age, non-formal education, farming experience and labor have no significant effect. The coefficient of determination (Adjusted R2) of 68.4% shows that the independent variables are able to explain the dependent variable, corn farming income. The contribution of maize farming to household income is 44.00% and is classified as moderate.
Keywords: maize; income; social; economic; households

ABSTRAK

Jagung berperan penting sebagai sumber pangan dan pendapatan bagi petani di Nusa Tenggara Timur (NTT), Indonesia. Namun, jagung belum menjadi pilar ekonomi utama bagi rumah tangga pedesaan. Penelitian ini bertujuan untuk menganalisis pengaruh faktor sosial ekonomi terhadap pendapatan usahatani jagung dan mengkaji kontribusinya terhadap pendapatan rumah tangga di Desa Pukdale, Kecamatan Kupang Timur, Kabupaten Kupang. Meskipun jagung merupakan komoditas pertanian utama di daerah ini, jagung belum memberikan dampak ekonomi yang optimal bagi keluarga petani. Penelitian ini menggunakan pendekatan kuantitatif dengan survei dan analisis regresi linier berganda. Sampel penelitian terdiri dari 60 petani jagung yang dipilih secara acak dari total populasi 400 petani. Sampel terdiri dari 60 petani jagung yang dipilih secara acak dari total populasi 400 petani. Data primer dikumpulkan melalui kuesioner terstruktur dan wawancara langsung. Hasilnya menunjukkan model persamaan regresi sebagai berikut: ***Ln Y = 19.923 + 0.232 Ln_X1 + 0.076 Ln_X2 + 0.480 Ln_X3 + 1.284 Ln_X4 + 0.332 Ln_X5 - 0.343 Ln_X6.*** Secara simultan (uji f), variabel-variabel independen secara bersama-sama berpengaruh signifikan terhadap pendapatan usahatani jagung. Uji parsial (uji t) menunjukkan bahwa variabel luas lahan dan harga pupuk berpengaruh signifikan terhadap pendapatan usahatani jagung, sedangkan usia, pendidikan nonformal, pengalaman bertani, dan tenaga kerja tidak berpengaruh signifikan. Koefisien determinasi (R2 yang Disesuaikan) sebesar 68,4% menunjukkan bahwa variabel-variabel independen mampu menjelaskan variabel dependen, yaitu pendapatan usahatani jagung. Kontribusi usahatani jagung terhadap pendapatan rumah tangga sebesar 44,00% tergolong sedang.

Kata kunci: Jagung; pendapatan; sosial; ekonomi; rumah tangga

INTRODUCTION

National economic development is highly dependent on the strength of the agricultural sector, especially in rural areas of Indonesia. Agriculture is not only the driving force of the rural economy, but also the main provider of employment, food security, and household welfare. In the context of a developing country such as Indonesia, the contribution of the agricultural sector cannot be underestimated, as historically and structurally it is the sector that absorbs the most labour and is the mainstay of livelihood for the majority of the rural population.

Income inequality in the agricultural sector is often a major issue in rural economic development. Research by Bathla & Kumar (2018) emphasises that income disparities between farming households are closely related to the distribution of resources, such as land ownership and access to productive assets. This inequality has an impact on the slow process of inclusive development in the agricultural sector, particularly in areas that are still geographically and infrastructurally underdeveloped, such as East Nusa Tenggara.

One of the commodities that is the backbone of Indonesian agriculture is corn. Corn occupies a strategic position after rice and wheat as a source of food and feed. Data from the Ministry of Agriculture's Centre for Data and Information Technology (2020) shows that national demand for corn continues to increase, both for human consumption and as raw material for the livestock industry. The 2.21% increase in corn productivity between 2015 and 2019 indicates improvements in cultivation and technology adoption, such as the use of hybrid seeds.

Indonesia ranks eighth in the world in corn production, with an average harvest area of 4.66 million hectares per year and a contribution to the world's corn harvest area of 2.42%. However, this achievement does not fully reflect an equitable improvement in farmers' welfare in all regions, especially in areas with great potential but limited resources.

In East Nusa Tenggara Province (NTT), the agricultural sector experienced quite interesting dynamics between 2020 and 2023. Based on data from the Central Statistics Agency (2023), the area of agricultural land fluctuated, from 107,094.89 hectares in 2020 to 99,065.5 hectares in 2023. Productivity remained stable at around 25 quintals per hectare, but the decline in harvest area also put pressure on total production.

Kupang Regency, one of the main centres of corn production in NTT, contributes the highest production in the province. However, data shows a downward trend. Corn production from 64,017 tonnes in 2019 has declined dramatically to only 29,831 tonnes in 2023. The harvest area also decreased from 25,976 hectares to 11,385 hectares in the same period. This indicates that although corn is still a leading commodity, its management is not yet optimal.

Income from corn farming is often insufficient to meet basic needs. Research by Yusnita et al. (2022) shows that corn's contribution to total household income is only 40.61%. In fact, in other studies, its contribution is even lower, at only 16.48% (Ningsih et al., 2022) and 11.02% (Saragi et al., 2021).

This shows that even though farmers grow corn, they still depend on other sources of income outside the agricultural sector. In other words, corn farming is not yet fully capable of supporting farmers' families economically.

The novelty of this study lies in its simultaneous approach to six local socio-economic variables in Pukdale Village, with a focus on analysing household income contributions, which is rarely studied in detail in the NTT region. In addition, the novelty also arises from the combination of social dimensions (such as non-formal education and farming experience) with economic factors (fertiliser prices and land area) in a comprehensive analysis model. With a focus on the micro context in Pukdale Village, the results of this study are expected to provide practical recommendations for farmers, village governments, and policy makers in their efforts to increase farmers' income and achieve sustainable rural development.

RESEARCH METHODOLOGY

Place and Time of Research

This research was conducted in Pukdale Village, East Kupang Subdistrict, Kupang Regency. The research was conducted from February to March.

Sample Determination

Sampling was conducted using simple random sampling, whereby each sample had an equal chance of being selected. According to Arikunto (2006), if the population exceeds 100, then 10-15% or 20-25% of the population can be used as the sample. From a total of 400 corn farmers in Pukdale village, based on considerations of data representativeness and research efficiency, 15% of the total population was used, with the following formulation:

$$= \frac{15}{100} \times 400$$
$$= 0{,}15 \times 400$$
$$= 60$$

so that the sample used was 60 corn farmers.

Types and Sources of Data

The data used in this study was sourced from primary and secondary data. Primary data consisted of interviews and direct observations with corn farmers in Pukdale Village based on questionnaires, while secondary data was sourced from relevant agencies, such as books, the Central Statistics Agency, and the Department of Agriculture.

Data Collection Techniques

1. Observation
2. Interview
3. Documentation

Data Analysis Methods

Objective 1: to identify factors affecting corn farming income

To answer the first objective, which is to identify the socioeconomic factors that influence corn farming income, multiple linear regression analysis was used with the following formula:

$$\boldsymbol{Y = \beta^0 + \beta^1 X^1 + \beta^2 X^2 \ldots\ldots\ldots + \beta_n X_n + \varepsilon}$$

To begin with, it is important to conduct classical assumption tests to prove that the data used meets statistical analysis standards, including:

1. Normality test
2. Multicollinearity test
3. Heteroscedasticity test

The relationship between corn farming income and the variables that influence it was analysed using multiple linear regression analysis transformed into natural logarithm (LN) form, with the following linear equation:

$$Ln\,Y = Ln\beta^0 + \beta^1 Lnx^1 + \beta^2 Lnx^2 + \beta^3 Lnx^3 + \beta^4 Lnx^4 + \beta^5 Lnx^5 + \beta^6 Lnx^6 + \varepsilon$$

Description:

Y	: Corn farming income
β_0	: Constant/intercept
β_6	: Regression coefficient of each variable
LnX_1	: Age
LnX_2	: Non-formal education
LnX_3	: Farming experience
LnX_4	: Land area
LnX_5	: Number of workers
LnX_6	: Fertiliser price
X_{1-6}	: Explanatory variables

As a final step, statistical tests were conducted to examine the significance of the regression model constructed using a series of statistical tests, such as:

1. Partial Test (t-test)
2. Simultaneous Test (F-test)
3. Coefficient of Determination

Objective 2: Analysis of the Contribution of Farmers' Household Income

For this purpose, calculations were made of income from corn farming, non-corn farming and non-farming activities to determine the total household income of farmers. According to Soekartawi (2002), the formula for total household income is as follows:

$$\boldsymbol{Prt = p^1 + p^2 + p^3}$$

Description:

P_{rt} : Farm household income
P_1 : Income from farming
P_2 : Non-farming income
P_3 : Income from outside the agricultural sector

Next, to calculate the contribution of corn farming to farmers' household income, the following formula can be used:

$$\boldsymbol{KPj = \frac{Pj}{PRT} 100\%}$$

Description:

KPj : Contribution of corn farming income
Pj : Corn farming income
PRT : Total household income

Soekartawi 2006 explains that in farming, income contributions can be grouped into three categories: low, ranging from 0-33.3%; medium, ranging from 33.3%-66.6%; and high, ranging from more than 66.6%.

RESULTS AND DISCUSSION

1. Respondent Characteristics

Age of respondent farmers

90% of farmers are in the productive age group (15–64 years), according to the BKKBN age classification. This indicates that most farmers are still within the ideal physical and mental working age range to develop their farming businesses; only six of these farmers (10%) are of non-productive age, i.e. over 65 years old.

Formal Education of Respondents

Based on the estimation of the characteristics of respondents in Pukdale Village, it is known that the most common level of formal education is elementary school, which is 30%. This reflects that most farmers only completed basic education. A total of 28.33% of respondents had completed junior high school, and another 23.33% had completed senior high school. Meanwhile, 11.67% of farmers had not completed primary school, while only 6.67% had reached university level.

Area of Respondents' Farmland

Of the 60 respondents in this study, the majority were smallholder farmers (45%), followed by medium-scale farmers (26.7%), small farmers (25%) and large farmers (3.3%), indicating the dominance of small farmers in corn farming in the study area. This reinforces the characteristics of small-scale farming in the region.

Farming Experience of Respondents

Based on the frequency distribution results, the respondents' farming experience in this study ranged from 3 to 40 years. Most respondents, namely 23 people (38.33%), had 15–20 years of experience. This shows that the majority of farmers have considerable farming experience and are classified as intermediate to experienced farmers.

2. Socio-economic factors affecting corn farming income

Classical assumption test

A. Normality test

The test results show an Asymp. Sig. (2-tailed) value of 0.200, which is above the significance level of 0.05. Based on the test criteria, if the significance value is greater than 0.05, then the residual data is normally distributed.

B. Multicollinearity Test

The results of the multicollinearity test show that all tolerance values are > 0.10 and all VIF values are < 10, where the non-formal education variable has a value of 2.780 and a tolerance of 0.360, the farming experience variable has a tolerance value of 0.157 and a VIF of 6.365, while land area has a tolerance value of 0.120 and a VIF of 8.303. Labour and fertiliser prices have tolerance values of 0.291 and 0.176 and VIF values of 3.434 and 5.697, respectively, although the age variable (VIF = 9.505) shows a high value and a tolerance of 0.105. However, these values are still within the permissible tolerance limits, so statistically there is no serious multicollinearity between the independent variables.

C. Heteroscedasticity Test

Based on the White test results, an R^2 value of 0.049 was obtained from the residual square regression against six independent variables. With a total of 60 respondents, a calculated Chi-Square value of 2.94 (0.049 × 60) was obtained. This value is smaller than the chi-square table value of 11.070 (at a degree of freedom of 5 and a significance level of 5%). Therefore, it can be concluded that there are no signs of heteroscedasticity in the regression model, so the model meets the assumption of homoscedasticity.

Statistical Test

A. Partial Test (Uji t)

Table 1. Results of the t-Statistic Test

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.923	2.617		7.614	.000
	Ln_X1	.232	.426	.121	.545	.588
	Ln_X2	.076	.194	.047	.393	.696
	Ln_X3	-.480	.260	-.335	-1.847	.070
	Ln_X4	1.284	.251	1.060	5.112	.000
	Ln_X5	.332	.201	.221	1.655	.104
	Ln_X6	-.343	.160	-.369	-2.146	.036

t tabel = 2,006

Source: SPSS Regression Output Results, 2025

From the results of multiple linear regression analysis, the following multiple linear regression equation was obtained:

$$\text{Ln } Y = 19.923 + 0.232LnX_1 + 0.076LnX_2 - 0.480LnX_3 + 1.284LnX_4 + 0.332LnX_5 - 0.343LnX_6 + \varepsilon$$

1. Age (Ln_X1)

   Partially, age (Ln_X1) with a t-value of 0.545 and a t-table of 2.006 and a significance value of 0.588 > 0.05, age does not have a significant effect on corn farming income.

2. Non-formal education (X2)

   Non-formal education has a t-value greater than the t-table value, namely 0.393, and a significance value of 0.696 > 0.05, so non-formal education does not have a significant effect on corn farming income..

3. Farming experience (X3)
   From the partial analysis results, farming experience did not have a significant effect on corn farming income, as evidenced by the t-value of – 1.847 and significance of 0.070.
4. Land area (X4)
   Statistically, land area has a calculated value of 5.112 > 2.006 and a significance value of 0.000 < 0.05. In this context, this explains that land area is one of the factors that has a positive effect on increasing corn farming income.
5. Labour (X5)
   Labour variables based on partial testing did not show a significant effect on corn farming income, as evidenced by the t-value (1.655) being greater than the t-table and the significance value of 0.104 > 0.05.
6. Fertiliser prices (X6)
   Based on the partial test, fertiliser prices have a significant effect on corn farming income, with a t-value of -2.146 and a significance value of 0.036.

B. Simultaneous test (Uji F)

Table 2. Simultaneous Test Results

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	55.805	6	9.301	23.005	.000[b]
	Residual	22.236	55	.404		
	Total	78.041	61			
	F tabel = 2,28					

Source: SPSS Regression Output Results, 2025

Based on the table above, which shows the results of the ANOVA test, a significance value of 0.000 was obtained, which is smaller than 0.05, and the calculated F value of 23.005 is greater than the calculated F table value of 2.28. This indicates that simultaneously, the variables of age, non-formal education, farming experience, land area, labour, and fertiliser prices have a significant effect on corn farming income.

C. Coefficient of Determination

Table 3. Adjusted R Square Results

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.846[a]	.715	.684	.63584

a. Predictors: (Constant), Ln_X6, Ln_X3, Ln_X2, Ln_X5, Ln_X4, Ln_X1
b. Dependent Variabel: Ln. Y

Source: SPSS Regression Output Results, 2025

A total of 68.4% of the variation in farming income can be explained by the independent variables in the model, namely age, non-formal education, farming experience, land area, labour, and fertiliser prices. The remaining 31.6% is explained by other variables outside the model.

3. Contribution of Corn Farming Income

Table 4. Household Income

Sources of income	Average income (Rp)	Percentage (%)
Corn farming	Rp.4,308,545	44,00
Other farming activities	Rp.5,285,833	53,99
Non-agricultural activities	Rp.196.667	2,01
Household income	Rp. 9,791,045	100

Source: Processed Primary Data, 2025

Based on the table above, it can be seen that corn farming contributes 44.00% to household income, while other farming activities, namely rice farming, contribute around 53.99% to household income and non-agricultural businesses contribute 2.01%. Referring to Soekartawi 2006, who states that a contribution range of 33.3–66.6% indicates that the contribution of corn farming income is in the moderate category.

CONCLUSION AND RECOMMENDATION

Conclussion

1. The socio-economic factors that influence corn farming income in Pukdale Village, East Kupang District, Kupang Regency are: land area and fertiliser prices. Meanwhile, the variables of farmer age, non-formal education, farming experience and number of workers do not show a significant influence.
2. The contribution of corn farming income to the total household income of farmers is moderate, at around 44.00%.

Recommendation

1. For corn farmers in Pukdale Village, it is recommended to improve land management efficiency through the application of appropriate cultivation technologies. Take advantage of non-formal training or agricultural extension services.
2. For local governments or related institutions, it is recommended to provide support in the form of ongoing technical training for farmers, encourage the formation of farmer groups that control fertiliser prices and ensure their distribution runs smoothly so as not to burden farmers.
3. For future researchers, it is hoped that they can conduct further research by adding other variables such as market access, institutional support, or technology use. Expand the coverage area.

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