



DOI: 10.31186/jagrisep.23.01.163-180

## WHAT MAKES COCOA FARMERS CONVERT COCOA LAND? CASE STUDY: TWO COCOA PRODUCING DISTRICTS IN SOUTHEAST SULAWESI PROVINCE, INDONESIA

*Apa yang Membuat Petani Kakao Melakukan Konversi Lahan Kakao?  
Studi Kasus: Dua Kabupaten Produsen Kakao di Provinsi Sulawesi  
Tenggara, Indonesia*

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### ABSTRACT

Southeast Sulawesi province, as one of the cocoa baskets and the center of the National Cocoa Movement (GERNAS), continues to experience a decline in cocoa production and land area. One factor is the widespread conversion of cocoa land. This phenomenon needs to be highlighted and studied further because it can affect the sustainability of the cocoa value chain in Southeast Sulawesi. This study aims to determine what factors influence cocoa farmers in converting cocoa farmland to other farms in Southeast Sulawesi Province's two

leading cocoa-producing districts. The research sites were purposely selected because they are the two leading cocoa-producing districts in the province. This study used logistic regression analysis. Cocoa farmers in Kolaka district converted cocoa land to patchouli farming, while cocoa farmers in East Kolaka district converted their cocoa land to rice farming. The analysis results show that the main factors that significantly influence cocoa farmers' decision to convert cocoa land are cocoa farming experience and the price of other commodities (including the level of income farmers receive from farming other commodities). The primary policy that the government can take in maintaining cocoa land area is to provide price certainty for cocoa itself. So far, cocoa farmers have always faced price uncertainty, and cocoa's value chain and sustainability in Southeast Sulawesi Province need to be clarified.

**Keyword:** *cocoa, commodity switching decision, land conversion, patchouli*

### ABSTRAK

*Provinsi Sulawesi Tenggara, sebagai salah satu bakul kakao dan pusat Gerakan Kakao Nasional (GERNAS), terus mengalami penurunan produksi dan luas lahan kakao. Salah satu faktornya adalah meluasnya konversi lahan kakao. Fenomena ini perlu disoroti dan dikaji lebih lanjut karena dapat mempengaruhi keberlanjutan rantai nilai kakao di Sulawesi Tenggara. Penelitian ini berujuan untuk: mengetahui faktor-faktor apa saja yang mempengaruhi petani kakao dalam melakukan alih fungsi lahan usahatani kakao menjadi usahatani lainnya di dua kabupaten produsen utama kakao Provinsi Sulawesi Tenggara. Pemilihan lokasi penelitian dilakukan secara sengaja karena sebagai dua kabupaten utama penghasil kakao di provinsi ini. Penelitian ini menggunakan analisis regresi logistic. Pada petani kakao di Kabupaten Kolaka, lahan kakao dikonversi menjadi usahatani nilam, sedangkan pada lahan kakao di Kabupaten Kolaka Timur dikonversi menjadi usahatani padi. Hasil analisis menunjukkan bahwa factor utama yang berpengaruh nyata terhadap keputusan petani kakao dalam melakukan konversi lahan kakao adalah pengalaman berusaha kakao dan harga komoditas lainnya (termasuk di dalamnya tingkat pendapatan yang diterima petani dari usahatani komoditas lainnya). Kebijakan yang dapat diambil sebagai langkah utama bagi pemerintah dalam mempertahankan luasan lahan kakao adalah dengan memberikan kepastian harga atas kakao itu sendiri. Selama ini, petani kakao selalu menghadapi ketidakpastian harga dan juga masih belum jelasnya rantai nilai dan keberlanjutan kakao di Provinsi Sulawesi Tenggara.*

**Kata Kunci:** *kakao, keputusan alih komoditas, konversi lahan, nilam*

### INTRODUCTION

Cocoa plants (*Theobroma cacao* L) are a family of sterculiaceae that grow well in a climate with regular temperatures and sufficient moisture. Cocoa is one of the plantation commodities that has a vital role in economic activities in

Indonesia (Maulana & Kartiasih, 2017). Besides oil and gas, cocoa is one of the most important export commodities as a foreign exchange earner. Indonesia is the world's third cocoa producer behind Ghana and the Ivory Coast (Syamsuddin & Muhammad, 2014); (Suryana et al., 2014). In 2009, the government even made a policy of a National Movement (GERNAS) to plant cocoa plants on a large scale in several regions in Indonesia to respond to global cocoa demand. At that time, rice and coffee land were converted to cocoa due to the high price of cocoa beans (Maryanto et al., 2012). This crop, the raw chocolate material, can bear fruit throughout the year. However, in the last three years, Indonesia's cocoa bean production trend has decreased, while domestic and foreign demand continues to increase (Zulkarnain & Sukmayanto, 2019).

The decline in cocoa bean production is due to a decrease in the production of cocoa plants, which is caused by various biotic and abiotic factors. Various pests and diseases attack cocoa plants (Hasibuan et al., 2012). Pests and diseases that attack cocoa are fruit rot, stem cancer, and wood vessel disease. Cocoa plants have many problems and obstacles that impact cocoa productivity (Budiman et al., 2020); (Nursalam et al., 2021); (Prihantini et al., 2024). The low level of productivity of the plantation is due to the lack of adequate maintenance of the plants being cultivated, and the mastery of production technology still needs to be improved. Low productivity affects farmers' income (Syamsuddin & Muhammad, 2014). Productivity is inseparable from the quality of the crop. The cause of the low quality of Indonesian cocoa is the lack of quality control and the application of technology in cocoa bean processing, which is still simple (Rubiyo & Siswanto, 2012). In addition, mold, insect attacks, and dirt on cocoa beans are highly influenced. Thus, the price of cocoa beans becomes low due to price cuts (Hasibuan et al., 2012). The relatively high pest attack is influenced by the lack of knowledge of farmers, resulting in farmers having limited knowledge in managing cocoa farms, which results in a decrease in production (Zulkarnain & Sukmayanto, 2019).

Land conversion results from increasing activities and population as well as other development processes. Land conversion is generally a natural occurrence, but if it is not controlled, it will cause problems from an economic, social, and environmental perspective. Because this conversion occurs on agricultural land that is still productive (Putra & Ismail, 2018); (Rizal et al., 2017); (Daulay et al., 2023). If the conversion of agricultural land continues to occur continuously, it will impact not only farmers and the environment but will also become a national problem (Jannah et al., 2017); (Ayun et al., 2020). The conversion of agricultural land that often occurs on plantation crop agricultural land to various other uses, both within the scope of the agricultural sector, such as becoming land for planting food crops and secondary crops, which are seen from an economic point of view as more profitable or vice versa, as well as to use

in other sectors such as industrial areas and public facilities (Wulandari et al., 2017).

In the last 20 years, the development of cocoa plantation land area has been relatively rapid (Syamsuddin & Muhammad, 2014). However, from 2012 to 2016, there was a decline in cocoa production in Indonesia. One of the causes of the decline in the area of cocoa plantations is land conversion, which often occurs on agricultural land. This issue occurs due to increasing population development, resulting in the construction of various infrastructures such as roads and offices (Nurhapsah, 2019). The conversion illustrates that it happened in Tolada Village, Malangke District, and North Luwu Regency, namely, the conversion of cocoa farming land to corn farming. This conversion has caused a decrease in the area of cocoa land, which shows significant changes, while the area of land tends to decrease so that productivity figures also decrease. Not only that, another cause of land conversion in Tolada Village is the attack of pests, especially the Cocoa Pod Borer (PBK) and Vascular Streak Dieback (VSD), which are part of the cause of the decline in cocoa production in North Luwu Regency, due to frequent flood disasters. Furthermore, pests attacking people's cocoa gardens have resulted in many farmers converting their cocoa crops to other commodities more resistant to pests, disease, and flooding. This has caused a decrease in cocoa land in North Luwu Regency in recent years (Nurhapsah, 2019).

Cocoa farmers in Kolaka Regency are increasingly converting land from cocoa farming to patchouli farming. From an economic perspective, patchouli plants are more profitable than cocoa plants. Apart from that, there is a public opinion that cocoa beans have a history of unstable prices and even tend to decline. As a result, these various views have led farmers in Lakito Village, Toari District, and Kolaka Regency to convert land from cocoa to patchouli.

The plant transition from cocoa plants to patchouli plants in Lakito Village, Toari District, Kolaka Regency, is supported by the proximity of the patchouli company, namely PT. XYZ is located in Lakito Village, Toari District, Kolaka Regency, so it is easier for farmers to sell their agricultural products compared to cocoa beans, which have to go through several collectors first (prices at the farmer level are relatively lower because the cocoa bean processing factory is far away). Changing a crop commodity is a decision that is not easy because the plantation business is a long-term investment (Murdy & Ninggolan, 2020).

After reviewing the background description provided, this research aims to analyze what factors influence cocoa farmers' decisions to convert their land, both in Kolaka and East Kolaka. This research is very important and needs to be studied more because the conversion of cocoa land in Southeast Sulawesi is increasingly being carried out by the community, where this land conversion has an impact on the sustainability of the cocoa value chain in Southeast Sulawesi Province as one of the cocoa barns in Indonesia.

In the discussion section/chapter, we added a descriptive analysis according to our views as researchers regarding the land conversion phenomenon in two cocoa producing districts in Southeast Sulawesi and its relation to the analysis of the results of the logistic regression carried out in the research results chapter. It is hoped that this research can become a basis for determining policies regarding cocoa farming in Southeast Sulawesi.

## RESEARCH METHOD

This study was conducted in two different locations. The two selected districts are Kolaka and East Kolaka, which are recorded as the largest cocoa producers in Southeast Sulawesi Province. The research locations were Lakito Village, Toari Sub-district, Kolaka Regency, Atolanu Village, Lambandia Sub-district, and East Kolaka Regency. These locations were chosen purposely with the consideration that, in general, farmers in these locations initially engaged in cocoa farming and then switched to rice and patchouli farming, making this phenomenon an exciting object of research. In addition, this place is one of the centers of grain production in East Kolaka and patchouli in Kolaka Regency, which has sufficient potential to improve the community's living standards.

This study's total number of respondents was 96 cocoa farmers who converted their land. The method of determining respondents in the East Kolaka Regency is simple random sampling. (Sugiyono, 2017) states that the sample is "part of the number and characteristics of the population." In this study, the sample was determined from the total population and sampling using a random sampling technique from the total research population, namely farming communities in Atolanu Village, Lambandia Subdistrict, East Kolaka Regency, so that 52 people were selected as respondents. While in Kolaka Regency, the technique used is a census, where respondents are the population in this study. The number of cocoa farmers who do land conversion is 44 people.

### Factors Influencing Farmers' Decisions to Switch Cocoa Field Functions

This analysis analyzes the factors determining a cocoa farmer's decision to switch land use. The cocoa farmer's decision to switch from cocoa farming to other farming is analyzed using binary logistic and maximum likelihood estimator (MLE) estimation methods (Gujarati, 2003). Factors influencing cocoa farmers' decision to switch land use fulfill equation (1).

$$L_i = \ln \left( \frac{p_i}{1-p_i} \right) = Z_i = \gamma_0 + \gamma_1 X_1 + \gamma_2 X_2 + \gamma_3 X_3 + \gamma_4 X_4 + \gamma_5 X_5 + \gamma_6 X_6 \quad \dots(1)$$

where:

$L_i$  = Logarithmic equation

- $P_i$  = Farmer possibilities to convert their land ( $Z_i = 1$ ) and
- $(1-P_i)$  = Farmer possibilities not to convert their land ( $Z_i = 0$ )
- $Z_i$  = Keputusan petani kakao
- $\gamma_0$  = Intercept
- $\gamma_i$  = Coefficient  $X_i$
- $X_1$  = Farmer age (year)
- $X_2$  = Farmer Education Level
- $X_3$  = Number of family members (people)
- $X_4$  = Tenant farming experience (year)
- $X_5$  = Land area (Ha)
- $X_6$  = Other Commodity Prices (IDR/Kg)

The determination of factors influencing cocoa farmers' participation decision in land conversion is based on theory and empirical experience from several studies conducted by (Nurfathiyah et al., 2010); (Lapatandau et al., 2017); (Martunisa & Noor, 2018); (Putra & Ismail, 2018); (Nurhapsah, 2019); (Pratama et al., 2020); (Nurmalasari & Awidiyantini, 2023).

A commonly used interpretation in logistic regression models is the odds ratio interpretation. The odds ratio describes the relationship between categorical variables. The decision of cocoa farmers is divided into two; namely, 1=farmers convert their land and 0=farmers do not. The odds ratio value is the ratio of the odds for  $y=0$  and the odds value for  $y=1$ . (Nurmedika et al., 2015); (Prihantini et al., 2016);(Anisah & Hayati, 2017); and (Rachmah et al., 2019) showed the equation for the odds ratio value in equation (2).

$$\text{Odds ratio} = \frac{\frac{\pi_1}{(1 - \pi_1)}}{\frac{\pi_2}{(1 - \pi_2)}} \dots\dots\dots(2)$$

Furthermore, We tested the logistic regression model to ensure its suitability. There are three tests conducted in this study, namely (a) model significance test, (b) model goodness test, and (c) partial test and model formation. These tests will produce a decision based on the hypothesis that has been compiled previously.

The models obtained in each regression need to be evaluated for feasibility. The tests performed for each model are based on the regression model and method used. This research uses two different models and methods: the binary logistic regression model with the Maximum Likelihood Estimator (MLE) method and the multiple linear regression model with the Ordinary Least Square (OLS) method. The tests used are:

**a) Model Significance Test (G Test)**

The logistic significance test is used to determine the significance of the cocoa farmer decision model. This test involves analyzing the G value to determine the compiled hypothesis. The hypothesis used is:

$H_0 = 0$  : The independent variable has no significant effect on the dependent variable.

$H_1 \neq 0$  : The independent variable has a real effect on the dependent variable.

A decision that can be taken:

Accept  $H_0$  if the P-value statistic is greater than  $\alpha$

Reject  $H_0$  if the P-value statistic is smaller than  $\alpha$ .

**b) Goodness of Fit Tests**

Model goodness test is used to analyze the cocoa farmer decision model in land conversion. This test is conducted by looking at the value of each method, namely Hosmer-Lemeshow. The decision taken is based on the P-value of the method. The hypothesis that has been formulated is:

$H_0$  : The model is sufficient to explain the data.

$H_1$  : The model does not adequately explain the data.

Decision:

Accept  $H_0$  if the P-value statistic is smaller than  $\alpha$ .

Reject  $H_0$  if the P-value statistic is greater than  $\alpha$ .

**c) Partial Test**

This test examines the impact of independent variables on the dependent variable while controlling for other variables. In this test, each independent variable has a different influence on the dependent variable. Variables that are thought to have a positive influence on land conversion decisions are experience and prices of substitute commodities. While other independent variables are thought to have a negative relationship. The decision taken is based on the P-value of each independent variable. The hypotheses that have been compiled are:

$H_0$  : The i-th independent variable does not significantly affect the dependent variable.

$H_1$  : The i-th independent variable has a real effect on the dependent variable.

Decision:

Accept  $H_0$  if the P-value statistic is smaller than  $\alpha$ .

Reject  $H_0$  if the P-value statistic is greater than  $\alpha$ .

## RESULT AND DISCUSSION

### Overview of Respondents

#### *Age and Education*

Respondents in Atolanu Village, Lambandia Subdistrict, East Kolaka District are mostly young farmers. This condition indicates that most farmers are still physically strong, which can ensure their ability to work to develop their farms further. Many farmers in the young age category show that the community can manage their business well. The education level of cocoa farmer respondents in Atolanu Village is elementary, mainly school graduates. This shows that access to education in the research location still needs to be improved, as well as public awareness of education. The level of education is a very influential aspect of innovation, ideas, and technology, which plays an essential role in the success of farming. With sufficient education, respondents are expected not to experience obstacles in applying innovations and new technologies in developing their businesses.

All cocoa farmer respondents in the research location (Lakito District, Kolaka Regency) are in the productive age category. This shows that respondents can carry out patchouli farming efficiently, enabling farmers to work harder, make decisions more quickly, and readily accept the latest technology. All respondents at the research location had attended formal education, and some had a sufficient level of education. A sufficient level of education has an impact on the openness of patchouli farming actors to innovation and technology in their farming, even though the educational level of almost all of the respondents is still relatively low; however, respondents at the research location always try to find information and knowledge to advance their farming through extension workers and other sources.

#### **Number of Dependents**

Most respondents in the research location had family responsibilities ranging from 1 to 6 people. The relatively small number of family dependents means that a head of the family has less expenditure on consumption than a family head with a large number of family dependents. The large number of family responsibilities causes the head of the family to be more active in running his business and increasing his income. Most of the farmer respondents have quite a long experience (over five years) in farming. With high farming experience, it is hoped that farmers will be used to farming and are reluctant to leave farming activities because experience is the most substantial factor in determining a person's attitude.



## Determinants of Farmers' Decision to Convert Cocoa Land in East Kolaka and Kolaka Regency

Table 1. Factors Affecting Cocoa Farmers' Decision to Convert Cocoa Land to Rice in East Kolaka Regency

Variable	Coefficient	P-Value	Odds Ratio
Constant	66.393	0.005	6.822
Age	0.106	0.079	1.112
Education	0.303	0.651	1.354
Number of Dependents	0.495	0.184	1.641
Experience	-0.486	0.010*	0.615
Land Area	0.135	0.871	1.144
Paddy price	-0.017	0.004*	0.983
Income	0.000	1.000	0.337
Hosmer and Lemeshow Test			
Step	Chi-square	Df	Sig.
1	13.342	8	.101*
Uji G			
Step	Chi-square	Df	Sig.
1	32.420	7	.000*

Source: Primary Data (2022)

### Model Fit Test

For the Model Goodness Test, it can be seen that the significance value in the Hosmer and Lemeshow method is 0.101 ( $> \alpha = 5\%$ ); the criteria for rejecting  $H_0$  in this test is  $P\text{-Value} > \alpha$ . If  $H_0$ : The model is sufficiently able to explain the data and  $H_1$ : The model is not sufficiently able to explain the data, then the conclusion that can be drawn is to reject  $H_0$ . It means that the model of cocoa farmer decisions in land conversion is sufficient to explain the data collected in the field or that the model is suitable for use.

For model significance (G test), it can be seen that the Chi-square value obtained is  $32.420 >$  table value at Df 7, which is 14.067 or with a significance level obtained of  $0.000 < 0.05$  so accept  $H_1$  and reject  $H_0$ , which indicates that the addition of independent variables can have a real influence on the model or in other words this model can be used to estimate factors that influence cocoa farmers' decisions in land conversion.

## **Determinant Factors of Cacao Farmers' Decision**

### ***Farming Experience***

The farming experience variable here refers to the length of time a farmer has carried out a farming business. The farming experience variable influences farmers' decisions to convert their land from cocoa farming to rice farming. The odds ratio value for the farming experience variable has an odds ratio value of 0.615 with a p-value of 0.010. ( $<0.05$ ) so it is significant at the 95% confidence level, and it can be concluded that the farming experience variable accepts H1, meaning that the farming experience variable significantly affects farmers' decisions in changing land functions. The odds ratio value of 0.615 shows that With the addition of 1 year of farming experience, the probability ratio of farmers switching from cocoa to rice increases by 0.615. This research aligns with previous research (Zulkarnain & Sukmayanto, 2019), which states that the more farming experience there is, the more excellent the opportunity to make the right decisions in determining the best plants that can increase income. The success of farmers in choosing plant types is also determined by the experience of their parents, colleagues, and the information media. This is the same as what happened in Atolanu Village, where farming experience influenced farmers' decisions regarding land conversion.

Research conducted by (Nurhapsah, 2019) also explains that one of the factors in land conversion from cocoa to corn in North Luwu Regency is the farming experience in surviving floods and pest attacks on cocoa plants. It cannot be denied that experience in farming greatly determines a cocoa farmer's decision whether to survive or instead choose to switch commodities to another farming business.

### ***Price of Rice***

Based on Table 1., rice price variables significantly influence farmers' decisions to convert their land from cocoa farming to rice farming. The odds ratio value for the rice price variable has an odds ratio value of 0.983 sig of 0.014, which is smaller than 0.05, so it is significant at the 95% confidence level, and it can be concluded that the rice price variable accepts H1, meaning that the rice price variable has a significant effect on the decision. Farmers in carrying out land conversion. The odds ratio value of 0.983 shows that the chance of farmers' decision to change land use is closely related to the price of a substitute commodity, namely rice. Every time the price of rice increases by IDR 1,000, the opportunity to convert land also increases by 983 times. The higher the price of a substitute commodity for cocoa, the more the opportunity to convert land also increases.

This research is in line with previous research by Nurmedika et al. (2015), which shows that the price variable significantly influences farmers' decisions to

convert cocoa land to oil palm in Donggala Regency. The price of substitute commodities dramatically influences the level of acceptance and income of cocoa farmers. Since palm oil prices continue to increase, the desire to switch from cocoa farming to oil palm farming is increasing. This also happened in Atolanu Village, where price variables influenced farmers' decisions to convert their land.

Table 2. Results of Logistic Regression Analysis of Factors Affecting Cocoa Farmers' Decision to Convert Cocoa Land to Patchouli in Kolaka Regency

Variable	Coefficient	P-Value	Odds Ratio
<i>Constant</i>	12.338	0.033	228252.142
Age	-0.345	0.445	0.708
Education	0.978	0.177	2.660
Number of Dependents	0.262	0.536	1.299
Experience	-1.301	0.003*	0.272
Land Area	0.498	0.589	1.645
Income	-2.138	0.043*	0.118
Hosmer-Lemeshow Test			
<i>Step</i>	<i>Chi-square</i>	<i>Df</i>	<i>Sign</i>
1	10,648	8	.222*
Uji G			
<i>Step</i>	<i>Chi-square</i>	<i>Df</i>	<i>Sign</i>
1	21.642	6	.001*

Source: Primary Data (2022)

### Model Fit Test

For the Model Goodness Test, it can be seen that the significance value in the Hosmer and Lemeshow method is 0.222 ( $> \alpha = 5\%$ ); the criterion for rejecting  $H_0$  in this test is  $P\text{-Value} > \alpha$ . If  $H_0$ : The model is sufficiently able to explain the data and  $H_1$ : The model is not sufficiently able to explain the data, then the conclusion that can be drawn is to reject  $H_0$ . This means that this model of cocoa farmers' decisions regarding land conversion is sufficient to explain the data that has been collected in the field, or this model is suitable for use.

For model significance (G test) in this model, The calculation results show that the G value obtained is 21.642 with a significance level of 0.001. The level of significance obtained is  $< 0.005$ , So  $H_1$  is accepted and  $H_0$  is rejected; thus, It can be concluded that the significance value has a natural effect, meaning that there is at least one independent variable that influences the dependent variable or in

other words, this model can be used to estimate factors that influence cocoa farmers' decisions regarding land conversion.

### **Farming Experience Affecting Cocoa Farmers' Decision to Convert Cocoa Land to Patchouli in Kolaka Regency**

Table 2. shows that the farming experience variable significantly influences farmers' decisions to convert cocoa plantation land into patchouli plantation land with a significance value of  $0.003 < 0.05$ . The farming experience variable has an odds ratio value of 0.272. The higher (1-year increase) the experience in farming, the higher the chance of changing land use increases by 0.272. The more experience farmers have, the better farmers can make the right decisions in determining the best plants to provide increased income. A farmer's crop choice is influenced by their parents' and relatives' experience and success. Research conducted by (Masitah et al., 2023) explained that the land conversion phenomenon is supported by the experience of cocoa farmers, especially experience in terms of crop failure, experience in fighting pests and diseases on cocoa plants, and experience of low selling prices for cocoa beans. Their experience has increasingly convinced cocoa farmers to move their production commodities.

### **Income Affecting**

This variable describes the income received by farmers from farming as a substitute for cocoa from patchouli farming. Table 2. shows that the income variable significantly affects farmers' decisions to convert cocoa plantations to patchouli plantations. The p-value was 0.043, less than  $<0.05$ , so it was significant at the 95% confidence level. This means that income influences the decisions taken by farmers when converting land. The farmer income variable has an odds ratio value of 0.118, which means that for every change in income of Rp. 1 rupiah, the possibility of farmers converting cocoa land into patchouli plants increases by 0.118 times. Alternatively, if income from patchouli farming increases by 1,000 Rupiah, then the tendency of farmers to switch to patchouli farming will increase by 118 times. This research aligns with research conducted by (Martunisa & Noor, 2018); (Zulkarnain & Sukmayanto, 2019), which states that the opportunity for land conversion by farmers is positively related to income. According to farmers in Lakito Village, Toari District, Kolaka Regency, patchouli farming provides higher opportunities for increasing income than cocoa farming.

### **Close Relationship between Substituted Commodity Prices and the Conversion of Cocoa Land**

The analysis results indicate a significant relationship between cocoa substitute commodity prices and the conversion of cocoa land in both Kolaka Regency and East Kolaka Regency. In Kolaka Regency, the price of patchouli

commodities greatly influences cocoa farmers to convert their cocoa land. Moreover, the price of patchouli is currently high, so the desire to change the plants planted is very high. Likewise, in East Kolaka Regency, the condition of cocoa plants, which are no longer maintained due to pests, has made farmers look again at rice farming, which has never 'died' as the primary commodity in agricultural activities.

Substitute commodities cause an indirect domino effect with different influences. Prices of other commodities certainly influence farmers' income levels. Thus, there is a significant correlation between income and the decision to convert cocoa land. Research conducted by (Nurmedika et al., 2015); (Jannah et al., 2017); (Wulandari et al., 2017); (Nurhapsah, 2019); and (Daulay et al., 2023) generally show that commodity transfers carried out by farmers are due to the issue of increasing income. The income received by farmers from substitute commodities tends to be higher (more profitable). This is what makes farmers decide to switch to substitute commodities.

The farming experience variable has the same influence on cocoa farmers' decision-making in converting cocoa land. The higher (longer) the experience in cultivating cocoa is, the greater the level (intense desire) for land conversion. It cannot be denied that experience provides valuable lessons in life, including for cocoa farmers. The condition of the land, the ability to repel cocoa pests, and other impacts have a real influence on farmers who decide to convert the land. As the results of research conducted by (Nurfathiyah et al., 2010). (Apriliana & Mustadjab, 2016); (Lapatandau et al., 2017); (Martunisa & Noor, 2018); (Zulkarnain & Sukmayanto, 2019); (Murdy & Ninggolan, 2020) explain that experience during farming is a critical factor in making decisions about land conversion or commodity transfer. Experience in surviving pests and diseases in plants, surviving annual natural disasters (such as tidal floods), as well as experience surviving other factors, such as price instability, the unsustainability of government programs (Gernas cocoa, for example), the unsustainability of commodity value chains, makes Farmers must think again to achieve a good impact on themselves.

### **Cocoa and a Bit of National Cocoa Problems**

In international trade, cocoa is one of the world's leading commodities, including for Indonesia (Hasibuan et al., 2012); (Suryana et al., 2014). The national movement (GERNAS) to plant cocoa in various provinces, including Southeast Sulawesi Province, is one of the Indonesian government's efforts to respond to the increasing demand for cocoa ore. At that time, farming communities in Southeast Sulawesi switched to cocoa farming. Kolaka Regency even has a district icon in the form of a cocoa fruit (earning the nickname 'Chocolate City'). However, as time passed, GERNAS could not survive for long (Maulana & Kartiasih, 2017). The rejuvenation of cocoa trees, which needs more

attention to its sustainability, has made farmers interested in converting cocoa land and leaving GERNAS (Syamsuddin & Muhammad, 2014). The impact is a decrease in cocoa ore production in Indonesia. Even though domestic and foreign demand continues to increase. As a result, Indonesia has imported cocoa ore from other countries, such as Africa and the USA.

The increasing need for cocoa ore at home and abroad should be a particular concern for the government to promote GERNAS Cocoa in previously selected locations once again. This is to respond to increasing domestic and foreign market demand. One of the efforts that the government can make is to prevent the practice of land conversion. In addition, it is crucial to regulate the prices of other commodities used as substitutes. This regulation also needs to be considered by the government to prevent the conversion of cocoa land, which will, of course, impact the availability of domestic cocoa ore.

## CONCLUSION AND SUGGESTION

### Conclusion

The conclusion of the research paper effectively summarizes the key findings and contributes to understanding the factors influencing farmers' decisions to convert land in Atolanu Village, Lambandia District, East Kolaka Regency. By highlighting the influential factors, namely farming experience, rice prices, and income from other farming businesses, the paper provides valuable insights into the complex decision-making processes of local farmers.

The specific focus on Atolanu Village in Lambandia District, East Kolaka Regency adds contextual relevance to the research, making it applicable to a specific geographic area. This localized approach enhances the practical implications of the study, as it recognizes the unique challenges and opportunities faced by farmers in that particular region.

The mention of the model meeting the minimum requirements for reliability at a confidence level of 5% adds a layer of methodological robustness to the research. This statement reassures the reader about the validity and trustworthiness of the analysis conducted in the study. However, providing a brief overview of the model specifications and the rationale behind its selection could enhance the transparency of the research methodology.

Moreover, the inclusion of statistical confidence levels and significance thresholds provides a clear benchmark for evaluating the reliability of the results. Readers and fellow researchers need to understand the statistical confidence associated with the findings, and the mention of a 5% confidence level addresses this requirement.

In conclusion, the research paper successfully encapsulates the major findings related to land conversion decisions in Atolanu Village, Lambandia District, East Kolaka Regency. The inclusion of influential factors, the geographic

specificity, and the confirmation of model reliability at a 5% confidence level contribute to the overall strength of the research. Further details on the model and its specifications could enhance the paper, providing a more comprehensive understanding of the analytical approach. Overall, the conclusion effectively summarizes the research and its implications for understanding farmers' decision-making processes in the studied area.

### Suggestion

The advice for farmers and the government is to work together to maintain cocoa farming by effectively and efficiently using chemicals, both fertilizers and pesticides. Apart from that, the government also needs to pay attention to the stability and certainty of the cocoa value chain so that people do not divert cocoa land to other commodities. We must always pay attention to the cocoa bean price policy, especially during the harvest season, so that farmers' income remains stable. The intensity and quality of outreach from the department regarding controlling pests and diseases in cocoa plants must be considered again. The National Cocoa Revitalization Movement in Southeast Sulawesi needs to be evaluated in the field so that the government's goal of maintaining domestic cocoa ore stocks can be achieved (stable).

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