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ANALYSIS OF FACTORS INFLUENCING THE DECISION OF THE SLICED TAMARIND CRAFTSMEN IN AIR HITAM VILLAGE GEBANG DISTRICT

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Abstract

Air Hitam Village in Gebang District is one of the areas in Langkat Regency that produces sliced tamarind products. The fluctuating price of sliced tamarind and the price of basic ingredients for tamarind fruit causes a dilemma for craftsmen. This research aims to analyze the factors that influence the decision of sliced tamarind craftsmen to remain as a sliced tamarind craftsmen in Air Hitam Village, Gebang District. This study uses binary logistics analysis. The results showed that the education level and income of the sliced tamarind craftsmen were factors that influenced the decision to remain as sliced tamarind craftsmen in Air Hitam Village, Gebang District.

Keywords **:** ***Air Hitam Village, Binary Logistic Analysis, Decision Making, Sliced Tamarind.***

1. INTRODUCTION

Tamarind is a cooking ingredient that is processed first into sliced tamarind which is then used to add to the taste of the dish, especially adding a sour taste to food, usually used in processed foods such as sayur asem, sautéed kates flowers, arsik and various other dishes that make the taste of the dish more delicious. Tamarind as a raw material can be processed into various kinds of products. However, the added value coming from this tamarind fruit is still not widely recognized by the public. The export of tamarind from North Sumatra reached 379.18 tons with a value of IDR 5.95 billion during the first quarter of 2021. Based on the Belawan Agricultural Quarantine IQFAST Data, the three export destination countries are India, Malaysia and China. The export of tamarind increased by 33.5 percent when compared to the same period in 2020, which was 284 tons with a value of IDR 4.6 billion (CNN Indonesia, 2021).

Air Hitam Village is the only village in Gebang District that is a producer of sliced tamarind. The business of sliced tamarind craftsmen in Air Hitam Village has been running for a long time and began to gain popularity from 2017 until now in 2023. However, in 2021 there were 11 people who chose to stop being sliced tamarind craftsmen. The number of sliced tamarind craftsmen who were initially 27 people in 2017, now in 2022 has decreased to 16 people. From 2016 to 2019, the selling price of tamarind fruit to be produced into sliced tamarind has continued to fall. In 2016, the price of tamarind fruit reached IDR 7,000/kg, but since 2017 the price has dropped to IDR 5,000/kg, in 2018 the price was IDR 3,000/kg, and in 2019 it was only around IDR 1,300/kg of tamarind fruit. In 2021, the price of tamarind fruit to be produced into sliced tamarind returned to IDR 5,000/kg. In the peak harvest season, which usually occurs in November-December, the price of tamarind fruit can be IDR 2,000-3,000/kg. In 2000, the price of sliced tamarind was IDR 17,500/kg. In 2010 the price reached IDR 30,000/kg in the market. However, in 2021 the price of sliced tamarind in Air Hitam Village is valued at IDR 14,000/kg. The fluctuating price of sliced tamarind and the price of the basic ingredients of tamarind fruit cause worries for craftsmen.

Formulation of The Problem

Based on the background description, the problem to be resolved is wether or not age, education level, experience as craftsmen, number of dependents, and income as craftsmen influencing the decision of tamarind craftsmen to remain as tamarind craftsmen in Air Hitam Village, Gebang District or not.

Research Purposes

The purpose of this research was to analyze the influence of age, education level, experience as craftsmen, number of dependents, and income as craftsmen on the decision making of tamarind craftsmen to remain as tamarind craftsmen in Air Hitam Village, Gebang District.

2. IMPLEMENTATION METHOD

Location Selection Method

The location for this research was chosen purposively (purposive sampling), namely in the area of Air Hitam Village, Gebang District with the consideration that the research location is one of the areas that produce sliced tamarind in North Sumatra.

Data Collection Method

The samples taken in this research are the residents of Air Hitam Village, Gebang District who are sliced tamarind craftsmen totaling 27 people consisting of 16 people who decided to remain as craftsmen, and 11 people who decided to stop being sliced tamarind craftsmen. If all members of the population are selected as samples, this process is called a census/saturated sample (Syaban and Ratnaningrum, 2021).

Data Analysis Method

The data used in this study are primary data and secondary data. Primary data was obtained through direct interviews with respondents in the research area using a questionnaire. Secondary data was obtained through relevant agencies and offices such as the Badan Pusat Statistik (BPS) or data from the Air Hitam Village head office and the Gebang district office. Binary logistic regression is used if the categories in the independent variable are dichotomous (consisting of 2 categories). Multinomial logistic regression is used if the categories in the independent variable consist of more than 2 categories with a nominal measurement scale, while ordinal logistic regression is used if the categories in the independent variable consist of more than 2 categories and have an ordinal scale. The measurement scale of the independent variable used can be nominal, ordinal, interval or ratio (Sarwono, 2013).

$$\text{Ln}\left(\frac{p}{1-p}\right) = \beta 0 + \beta 1x1 + \beta 2x2 + \beta 3x3 + \beta 4x4 + \beta 5x5$$

Where:

P = Probability of craftsmen decisions

Y = Craftsmen decision

1: craftsmen keep being as sliced tamarind craftsmen

0: craftsmen stop trying to cut gelugur acid

β0 = Regression constant

β1,2,3, ...5 = Regression coefficient (sought parameters)

*X*1 = Age of craftsmen (years)

*X*2 = Craftsmen education level (years)

*X*3 = Experience as craftsmen (years)

*X*4 = Number of craftsmen's dependents (people)

*X*5 = Income as sliced tamarind craftsmen (Rp/3 months)

Hosmer and Lemeshow Test

The Hosmer and Lemeshow Test is a Goodness of Fit (GoF) test that aims to compare the distribution of observational data with the distribution of theoretical data (model fit test). A model is said to be suitable if there is no significant difference between the model and its observation value. This test is carried out at a significance level of 5% by looking at the GoF value which is measured using the chi-square value. The decision to accept the hypothesis is based on the following considerations.

H0: the hypothesized model is fit the data.
H1: the hypothesized model does not fit the data.
If the Sig value > 0.05 then accept H0 and reject H1
If the Sig value ≤ 0.05 then reject H0 and accept H1

Likelihood Ratio Test (G-Test)

The likehood ratio test or better known as the G-test is a simultaneous test used to determine the significance of parameter β on the dependent variable as a whole or simultaneously. Estimation of model suitability is carried out to determine whether the estimated model used is significant or not. Logistic model estimation can be done using the ratio likehood test with the G-test statistic.

If the Sig value > 0.05 then accept H0 and reject H1
If the Sig value ≤ 0.05 then reject H0 and accept H1

Wald Test

The Wald test is used to determine how significant each independent variable is. Independent variables that can independently have a real influence on the dependent variable.

If the significance value of the Wald statistic ≤ 0.05; accept H1 and reject H0
If the significance value of the Wald statistic > 0.05; reject H1 and accept H0

Marginal Effect Analysis

Marginal effects are used to determine the change in the probability of an event as a result of a one unit change in the value of the independent variable if the other variables are held constant. Marginal Effect tells us how the dependent variable changes when a particular independent variable changes (Hardiatmojo, 2019).

3. RESULTS AND DISCUSSION

Business Overview

The sliced tamarind business in Air Hitam Village is an individual business and the products are sold to a trader. They get their raw materials by buying through the trader, because there are no tamarind trees in the area. The production process of sliced tamarind usually takes ±4 days for the drying and cutting process. The drying process is usually done in the front yard of their houses and empty fields in the research area, and even dried on the side of the road around the research area.

Income Analysis of Sliced Tamarind Craftsmen

The total cost calculated in this study is the sum of the average total fixed costs and the average total variable costs. The average total fixed cost is IDR 54,512.50, and the average total variable cost is IDR 27,718,518.52, so it is found that the average total cost of sliced tamarind craftsmen in Air Hitam Village in 2021 is IDR 27,773,031.02 per three months. Revenue is the value obtained from the multiplication of production and the selling price of sliced tamarind in 2021 per three months. The average selling price of sliced tamarind in 2021 in Air Hitam Village is IDR 14,740/kg, and the average revenue of sliced tamarind craftsmen in Air Hitam Village in 2021 is IDR 33,566,370.37 per three months. Income is the result obtained from reducing Total Revenue and Total Cost of sliced tamarind craftsmen in Air Hitam Village per three months in 2021. The average income of sliced tamarind craftsmen in Air Hitam Village per three months in 2021 is IDR 5,793,339.35.

Analysis Results Using Logistic Regression Method

The data obtained in the field were analyzed using the Logistic Regression analysis method and using the IBM SPSS statistics 26 program. The response variable (Y) is the decision of sliced tamarind craftsmen to remain or stop being craftsmen, which is symbolized by the numbers 1 (remain) and 0 (stop). The predictor variable (X) consists of the age of the craftsman (X1), the level of education (X2), the experience of being a craftsman (X3), the number of dependents (X4), and

the income of being a craftsman (X5). The ability of the independent variables to explain the dependent variable can be seen in the Nagelkerke R-Square value in Table 1. The Nagelkerke R-Square value of 0.724 indicates that the independent variables (age, education level, experience as a craftsman, number of dependents, and income as craftsmen) in the model are able to explain the dependent variable (the decision to continue or stop being a craftsman) by 72.4%, while 27.6% is explained by other variables outside the model.

Table 1 Logistic Regression Analysis Results

							95% C.I.for EXP(B)	
		B	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*	*Lower*	*Upper*
Step 1[a]	X1 (Age)	-.236	.191	1.522	1	.217	.790	.543	1.149
	X2 (Education Level)	.776	.383	4.107	1	.043	2.173	1.026	4.602
	X3 (Experiences)	.846	.601	1.979	1	.159	2.330	.717	7.567
	X4 (Number of Dependents)	.926	.789	1.376	1	.241	2.523	.538	11.844
	X5 (Income)	.993	.459	4.677	1	.031	2.700	1.098	6.640
	Constant	-8.394	7.161	1.374	1	.241	.000		

Nagelkerke R-Square = 0,724
Chi-Square = 11.253 (df = 7 ; Sig = 0,128)
Uji-G = 20,775 (Sig = 0,001)
Overall Percentage = 88,9

Source: Processed Data, 2023

Hosmer and Lemeshow Test

Based on table 1 above, it is known that the Chi-Square value is 11.253 and the Sig value is 0.128. The calculated Chi-Square value is 11.253, this value is smaller than the Chi-Square table value (at df = 7 and α 5%) of 14.067, indicating that the logistic regression model has met the assumptions of model feasibility (11.235 < 14.067). The Sig value is greater than α (0.128 > 0.05), it can be concluded that H0 is accepted and H1 is rejected, which means that there is no significant difference between the model and its observation value or the model made is fit or appropriate.

Likelihood Ratio Test (G-Test)

In table 1, it can be seen that the G value is the test result of the influence of all independent variables on the dependent variable simultaneously or together. The G value is 20.775 with a significance value of 0.001. The significance value obtained from the analysis is smaller than α (0.001 < 0.05). So, H1 is accepted and H0 is rejected, which means that simultaneously or together, the independent variables affect the dependent variable.

Wald Test/Partial Test

Table 1 explains that the overall percentage is 88.9, which indicates that the binary logistic regression model used is good because it is able to correctly estimate 88.9%. Partial or individual influence of the independent variable on the dependent variable in this research can be seen from the results of the wald test. From table 1, it can be seen that the level of education and income as craftsmen has a significant effect, while age, experience, and the number of dependents do not have a significant effect on the decision to remain a craftsman of sliced tamarind in Air Hitam Village.

The coefficient value (β) of age (X1) is -0.236. So it can be concluded that the age of the craftsmen has a negative effect on the craftsmen's decision, with a minus coefficient value, this shows that the higher the age of the craftsmen, the possibility of craftsmen choosing to stop being sliced tamarind craftsmen in Air Hitam Village is increasing. The Sig value for the age variable is 0.217> α (0.05), so age does not significantly affect the craftsmen's decision to continue or stop being sliced tamarind craftsmen. This is in line with the statement of Siregar (2015) which says that

the age variable has no real effect on farmers' decision making. Young or old farmers do not affect the decisions of these farmers.

The coefficient value (β) of the education level (X2) is 0.776. So it can be concluded that the craftsmen's education level has a positive effect on the craftsmen's decision, with a positive coefficient value, this shows that the higher the craftsmen's education level, the possibility of craftsmen choosing to remain as sliced tamarind craftsmen in Air Hitam Village is increasing. The Sig value for the education level variable is 0.043 < α (0.05), so the level of education has a significant effect on the craftsmen's decision to continue or stop being sliced tamarind craftsmen. This is in line with Soekartawi's (2006) opinion that education will generally influence a person's mindset in accepting innovations and implementing ideas. In line with this, farmers with higher education will be smarter in negotiating with traders so that the higher the education of craftsmen will be wiser in making decisions.

The coefficient value (β) of experience (X3) is 0.846. So it can be concluded that the experience of craftsmen has a positive effect on the decision of craftsmen, with a positive coefficient value, this shows that the higher the experience of craftsmen, the possibility of craftsmen choosing to remain as sliced tamarind craftsmen in Air Hitam Village is increasing. The Sig value for the experience variable is 0.159> α (0.05), so experience does not have a significant effect on the craftsmen's decision to continue or stop being sliced tamarind craftsmen. This contradicts Ferwina's (2017) statement which states that the longer farmers are in farming, the more skillful and faster they will be in handling farming risks.

The coefficient value (β) of the number of dependents (X4) is 0.926. So it can be concluded that the number of dependents of craftsmen has a positive effect on the decision of craftsmen, with a positive coefficient value, this shows that the higher the number of dependents of craftsmen, the possibility of craftsmen choosing to remain as sliced tamarind craftsmen in Air Hitam Village is increasing. The Sig value for the variable number of dependents is 0.241> α (0.05), so the number of dependents does not have a significant effect on the craftsmen's decision to continue or stop being sliced tamarind craftsmen. This is in line with the statement of Santika et al (2014) which states that the increase in the number of farmer family members will have an impact on the increase in the number of family dependents so that the burden of dependents to meet family needs is also getting bigger.

The coefficient value (β) of the income as a craftsman (X5) is 0.993. So it can be concluded that the income as a craftsman has a positive effect on the craftsman's decision, with a positive coefficient value, this indicates that the higher the craftsman's income, the possibility of craftsmen choosing to remain as sliced tamarind craftsmen in Air Hitam Village is increasing. The Sig value for the income as a craftsman variable is 0.031 < α (0.05), then the income as a craftsman has a significant effect on the craftsman's decision to continue or stop being a sliced tamarind craftsman. This is in line with the statement of Siregar (2015) which says that the price and income as farmers have a real effect in decision making for farming because farm income is a source of motivation and is a strong factor that encourages the emergence of willingness, ability, and the realization of participation performance.

Marginal Effect Analysis

The marginal effects in this study were carried out to see changes in age, education level, experience as a craftsman, number of dependents, and income as a craftsman on their decision to remain or stop being a sliced gelugur tamarind craftsmen in Air Hitam Village.

Table 2 Marginal Effect

Variable	dy/dx	Std. Err.	z	P>z	X
Umur (X1)	-0.044	0.032	-1.370	0.170	-0.107
Tingkat Pendidikan (X2)	0.145	0.074	1.970	0.049	0.001
Pengalaman (X3)	0.158	0.110	1.430	0.151	-0.058
Jumlah Tanggungan (X4)	0.173	0.145	1.190	0.233	-0.111
Pendapatan (X5)	0.186	0.085	2.190	0.029	0.019

Source: Processed Data, 2023

The age variable has a Marginal Effect of -0.044. Because the value is negative, it means that when the age of the craftsmen increases by one unit, the possibility of the craftsmen's decision to stop being sliced gelugur craftsmen in Air Hitam Village will increase by 0.044 or 4.40%. The education level variable has a Marginal Effect of 0.145. This means that when the craftsmen's education level increases by one unit, the possibility of the craftsmen's decision to remain as sliced tamarind craftsmen in Air Hitam Village will increase by 0.145 or 14.5%.

The experience variable has a Marginal Effect of 0.158. This means that when the craftsman's experience increases by one unit, the possibility of the craftsman's decision to remain a sliced tamarind craftsman in Air Hitam Village will increase by 0.158 or 15.8%. The variable number of dependents has a Marginal Effect of 0.173. This means that when the number of dependents of craftsmen rises by one unit, the possibility of craftsmen's decisions to remain as sliced tamarind craftsmen in Air Hitam Village will increase by 0.173 or 17.3%. The income as craftsman variable has a Marginal Effect of 0.186. This means that when the craftsman's income increases by one unit, the possibility of the craftsman's decision to remain as sliced tamarind craftsman in Air Hitam Village will increase by 0.186 or 18.6%.

4. CONCLUSION

Based on the results of the analysis, it can be concluded that the variables of education level and income as craftsmen have a significant effect on craftsmen's decision to remain or stop being sliced tamarind craftsmen in Air Hitam Village, while the variables of age, experience, and number of dependents do not have a significant effect on craftsmen's decision to remain or stop being sliced tamarind craftsmen in Air Hitam Village.

REFERENCES

CNN Indonesia. 2021. CNNIndonesia.com

Ferwina. 2021. Analysis of Factors Affecting Farmers' Decisions in Carrying out Salak Pakkat Farming. Thesis. Universitas Sumatera Utara. Medan.

Hardiatmojo, F. N. and Fazaalloh, A. M. 2019. Analysis of Factors Affecting Consumers in Online Purchasing Decisions (Case Study of Students of the Faculty of Economics and Business, Universitas Brawijaya).

Santika N, Suwandari A, Titin A. 2014. Analysis of Factors Affecting Farmers' Decision Making to Farm Long Bean Seeds (Case Study of Long Bean Seed Farming Partnership with PT. Benih Citra Asia, PT. Matahari, and PT. Bisi. Berkala Ilmiah Pertanian x(x): 1-7

Sarwono, J. 2013. Multivariate Statistics Applications for Thesis Research. Yogyakarta: Andi Yogyakarta Publisher.

Siregar, K. F. 2015. Factors Affecting Farmers' Decisions to Engage in Soybean Farming. Case Study: Beringin District, Deli Serdang Regency. Thesis. Universitas Sumatera Utara.

Soekartawi. 2006. Blended E-Learning: An Alternative Distance Learning Model in Indonesia. Fire Engineering, 156(5), 16-18

Syaban, M and Ratnaningrum, E. 2021. Research Statistics. Bandung. Informatics Bandung.