

# Determinant Factors of Gaharu Farmers Income at East Oku South Sumatera Indonesia

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**Abstract:** *Gaharu began to be known to the Indonesian people around the year 1200 which is shown by the history of trade in the form of exchange (barter) between the people of South Sumatra and West Kalimantan with traders from mainland China, Kwang Tung. East OKU Regency is one of regencies in South Sumatera Indonesia, which is currently developing gaharu wood farming as a leading commodity. This studies aims to analyse the determinant factors of gaharufarmers income at East OKU Regency, South Sumatera Indonesia. The research methods used is a case study method and the sampling method uses is simple random sampling with a population of 120 and a percentage of 50% to obtain the number of samples of 60 gaharu farmers. Data processing method is multiple linear regression, and the results showed that land of area ( $X_1$ ), farmer's age ( $X_2$ ), education time ( $X_3$ ), duration of cooperation ( $X_4$ ) significantly influenced the income of gaharu farmers at East OKU Regency, South Sumatera Indonesia.*

**Keywords:** Determinant factors, gaharu, farmers income

## 1. Introduction

Gaharu (*Aquilaria malaccensis* lamk) or better known as Agarwood is one of the non-timber forest products (HHBK). As one of the commodities of Non-Timber Forest Products (HHBK), this plant initially has a limited use value only for the completeness of religious ritual ceremonies of Islamic and Hindu society and scent the body and room. This plant is found in many areas of Borneo is known to have many benefits, especially its super high economic value. In line with the development of science and technology of the chemical and pharmaceutical industries and supported the development of the paradigm of medicine and medicine to re-utilize the natural plant material (back to nature), gaharu products besides needed as perfume and cosmetics industry, also much needed as herbal medicine, stress treatment, asthma, rheumatism, kidney and stomach inflammation, anti-biotic tuberculosis, and tumors and cancer (Gusmailina, 2010).

Gaharu began to be known to the Indonesian people around the year 1200 which is shown by the history of trade in the form of exchange (barter) between the people of South Sumatra and West Kalimantan with traders from mainland China, Kwang Tung. Communities obtain gaharu as a result of collecting from natural forests by utilizing natural dead trees in the form of clumps, debris and powders which are waste cleaning process (Ronarahma, 2012).

East OKU regency is one of regencies in South Sumatera Indonesia, which is currently developing gaharu wood farming as a leading commodity. East OganKomeriUlu Regency has a land area that is used for gaharu wood farming area of 72 ha with the number of farmers as many as 295 gaharu farmers, the largest number of farmers in BuayMadang District, where there are 110 gaharu farmers with a land area of 53 ha, in East OKU Regency is relatively new but high price attracts farmers to open gaharu plantations, high income is the main factor of farmers to open gaharu plantation area, but many obstacles in this gaharu farming, some factors that influence income such as (1) land area, because the greater the land the more

production will be, then (2) the age of the farmers, the older farmers generally have more mature farming capacity because they have a lot of experience, (3) education, formal education can influence the level of thought or mindset farmers gaharu in every process in gaharu farming. Some farmers mentioned that initially they were confused to manage this gaharu plant due to several obstacles such as seed provision, technical guidance and marketing of gaharu. Following up on gaharu marketing conditions one of the solutions of gaharu development strategy is through general contract, general contract is needed to be able to reduce the existence of asymmetric information. The general contract is also an instrument that can be used to design compensation to eliminate asymmetric information, where asymmetric information is generally the seller who has more information about the product than the buyer, although the opposite may also occur (Yustika, 2012).

A sub-contract has been done by SaiNyelai farmer group in East OKU Regency with CV BintangMutuara. Partnership in the form of cooperation between SaiNyelai farmer group with CV BintangMutuara, where the farmer group SaiNyelai acts as the owner of the land and is obliged to maintain the gaharu plant while CV BintangMutuara acts as an Investor provider of production facilities and responsible for all treatments, technology to gaharu production process and bear all operational cost up to marketing. Viewed from the side of partnership, gaharu plantation farming in East OKU Regency is so many obstacles in the process of gaharu production. For gaharu farmers, it is not easy to achieve high production without government support and cooperation with big entrepreneurs to achieve maximum production but some farmers sell their produce without the knowledge of the company selling outside the company, so the partnership is one strategies and tricks to improve the entrepreneurship ability and entrepreneurship of gaharu wood farmers' income, productivity and yield quality, technology mastery and management mastery and job creation in turn partnership is one of small community empowerment strategy (Zakaria, 2015). From this view the importance of the partnership, the interesting things to be studied is

determinant factors of gaharu farmers income at East OKU Regency, South Sumatera Indonesia.

### Purpose

The purpose of this study is to identify the determinant factors that effect the income of Gaharu farmers at East OKU Regency, South Sumatera Indonesia

## 2. Research Method

This research conducted at East OKU Regency, South Sumatera Indonesia from August to December 2017. The research methods used is a case study method and the sampling method uses is simple random sampling with a population of 120 and a percentage of 50% to obtain the number of samples of 60 gaharu farmers (Sriati, 2014). Data processing method is multiple Linear Regression where the analysis with the following formula (Wibowo, 2000):

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + e$$

Where:

$b_i$  = coefficient of regression equation or regression parameter (for  $i = 1, 2, \dots, k$ )

$X_i$  = independent variable (for  $i = 1, 2, \dots, k$ )

$e$  = error or disturbance in the equation

$Y$  = revenue (Rp)

$b_0$  = constants

$b_i$  = coefficient of regression equation or regression parameter (for  $i = 1, 2, 3, 4, 5$ )

$X_1$  = land of area (ha)

$X_2$  = farmer's age (year)

$X_3$  = education time (year)

$X_4$  = duration of cooperation (year)

$X_5$  = cost of production (Rp)

## 3. Result and Discussion

The result showed that the determinant factors identified can affect gaharu farmer income at East OKU Regency are land of area ( $X_1$ ), farmer's age ( $X_2$ ), education time ( $X_3$ ), duration of cooperation ( $X_4$ ), cost of production ( $X_5$ ), and age of plant ( $X_6$ ). The result of multiple regression shows the factors related to farmers income can be seen in Table 1 below:

**Table 1:** Determinant factors of Gaharu farmers income at East OKU Regency, South Sumatera Indonesia, 2017

Variable	coef of regression	T	Sig.
(constant)	.787	.362	.746
Land of area ( $X_1$ )	2.594	-2.908	.005*
Farmers age ( $X_2$ )	-.287	7.143	.000*
Education time ( $X_3$ )	.468	-3.969	.000*
Duration of cooperation ( $X_4$ )	2.258	4.229	.000*
Cost of production ( $X_5$ )	.042	-.787	.435
$R^2 = 0,917$			
F statistic = 119,937			
$\alpha = 0,05$			

Source: Primary Data, 2017

Based on multiple linear regression analysis, the equation of estimator can be formulated as follows:

$$Y_1 = 787 + 2594X_1 - 287X_2 + 468X_3 + 2.258X_4 + 042X_5 + e$$

Where:

$b_i$  = coefficient of regression equation or regression parameter (for  $i = 1, 2, \dots, k$ )

$X_i$  = independent variable (for  $i = 1, 2, \dots, k$ )

$e$  = error or disturbance in the equation

$Y$  = revenue (Rp)

$b_0$  = constants

$b_i$  = coefficient of regression equation or regression parameter (for  $i = 1, 2, 3, 4, 5$ )

$X_1$  = land of area (ha)

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$X_3$  = education time (year)

$X_4$  = duration of cooperation (year)

$X_5$  = cost of production (Rp)

The result of regression analysis obtained by equation of estimator which show that variable which have positive effect among others of land of area, farmer's age, education time, duration of cooperation and age of plant. After F test and classical assumption test on multiple linear regression model, then t test is done to see the influence of each independent variable to dependent variable, that is gaharu farmer income. In this study, t test is done with the aim to see whether the independent variables partially influence both positively and negatively to the income of gaharu farmers in BuayMadang District.

### 1) Land of area ( $X_1$ )

Variable land area have real effect on trust level 0,05. The results showed the number 2.594 with a positive sign. This indicates that each addition of one hectare of land will increase income by Rp.2,594. In line with the results of research, some opinions in similar research, states that the large area of land greatly affects the income that can be achieved by farmers. Sumaryanto et al (2003) explains sociologically, the area of land owned by a person shows the level of one's social structure in society. Sajogyo (1999) stated that land is one important factor that determines the status of farmers, whether classified as poor farmers or peasants with higher standard of living. The extent of the farming system represents the level of welfare of farmers' communities, the larger the farming area represents the higher production and income received by the farm household. Mardikanto (2009) also stated that the more widely farmed land will usually have better economic capability. This economic capability will affect the motivation of farmers.

### 2) Farmers age ( $X_2$ )

The results showed that the age variable of farmers significantly affected 0.287 with negative sign. This shows that there is a relationship between age variable of farmer to income. The negative sign of the analysis shows that any increase in the age of the farmer will affect the farmer's income. The older the peasant age or no longer at productive age, in theory will make farmers reduce their activities to the garden. The results showed from as many as 60 farmers are still at the productive age that is at the age of 25-35 years as many as 35 people or by 58.33%. Variable of age according to result of analysis of research of Panjaitan, A., et al (2013) with Rank Spearman correlation obtained  $r_s = 0,395$  indicating correlation between age with farmer

income. The growing age of farmers will affect the activities of farmers to descend into the garden

### 3) Education time (year)

The old variables of education have a significant effect on gaharu farmer income in OKU Timur Regency with positive sign on coefficient number 0,468. This indicates that the higher the education factor will affect the amount of income obtained by farmers. Increased one year of education pursued by farmers, it will increase revenue of Rp. 0.468. The farm income is a source of motivation for farmer households and is a strong factor that encourages the emergence of the willingness, capability and realization of the participation of farmers' households and education is considered as a means to obtain quality human resources. Banoewidjoyo (2002) argued that the level of education owned by farmers can not only improve the productivity and quality of work done, but at the same time accelerate the process of completion of work cultivated. Education time of farmers will affect farmers' experience at rice farming, in terms of how to adopt an innovation, the higher an education the farmer gets the higher the level of adoption in the farm.

### 4) Duration of cooperation ( $X_4$ )

The result of the analysis shows that the factor of the duration of cooperation has significant effect on the income of the gaharu farmer, at the level of 2,258 with the positive sign. This shows that the longer age of cooperation between farmers in gaharu farming will increase farmers' income. Increasing one year of age of cooperation will increase farmers income by Rp.2, 258. Gaharu farming cooperation of farmers at East OKU regency until now only entered three years, but has been able to increase the income of gaharu farmers. The income of farmers in the two years of cooperation, had an average of 10 million per year, currently the average income earned by farmers is 12 million per year.

## 4. Conclusion

The factors significantly influenced the income of gaharu farmers at East OKU Regency, South Sumatera Indonesia are land of area, farmer's age, education time, and duration of cooperation.

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