

The Chance Of Working In Agricultural Sector In South Kalimantan Province Based On Demography Data (The Analysis of Sakernas Survey in February 2019)

Sigit Purnomo, Hamdani, M. Husaini

¹(Lambung Mangkurat University, Banjarbaru – South Kalimantan)

Abstract: *Agriculture is a sector that dominates population incomes in South Kalimantan. This is because most of the population work both in business and agricultural sector as farmers. There are 31.89 percent workers, working in agriculture in South Kalimantan, where entrepreneur agricultural workers as much as 49.0 percent and non-entrepreneurs as many as 51.0 percent. This study aims to analyze the effect of the relationship with the head of the household, educational attainment, regional classification, sex, age, attending training activities, and certificate ownership on the opportunities of the population in the agricultural sector. To find out whether the factors that have been explained above have an effect on the population trying to farm will be approached with logistic regression analysis. The result shows that the factors affecting the population working in the agriculture sector are marital status, relationship with the head of the household, educational attainment, regional classification, sex, age, attending training activities, and certificate ownership at a significance level of 1% - 10%.*

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I. Introduction

Henry Kissinger, 50 years ago, stated that if a country can control the food security, then it can control the society (Zurayk, 2013). Now, it is proven. So far, the need of food for the population shows a high sensitivity, especially for countries with a large population such as Indonesia. This condition is related to the role of agriculture as a source of food which holds a strategic position and requires serious handling from the government.

Indonesia has abundant and diverse natural resources that useful for agricultural sector. The agricultural sector is a sector that is quite attractive to the population and most of the population depends on it. Natural resources in the form of tropical climate, vast and fertile land, availability of water and abundant human resources, so that the agricultural sector has a major contribution in encouraging economic development and as a source of food needs for the population.

Based on data from the National Land Agency of the South Kalimantan Province, South Kalimantan has a lot of potential resources which are useful for the agricultural sector. It can be seen from the land use in South Kalimantan, mostly agricultural land which includes forests (30.16%), plantations (26.09%), and rice fields (10.98%) (BPS, 2020). However, the South Kalimantan Province has a less fertile soil for agriculture. These conditions forced the government of South Kalimantan Province to innovate in the development of agricultural technology.

The share of the agricultural sector is one of the pillars in boosting the economy of South Kalimantan Province during the period 2014-2018 showing that the agricultural sector is the second largest contributor reaching 14.66% to 14.39%, after the mining sector in the South Kalimantan economy.

South Kalimantan has a sleeping giant in the form of a swamp of around 200,000 hectares that can be used as productive agricultural land. However, according to the results of the Central Balitbangtan study, swamps in South Kalimantan that have the potential to be used as productive agricultural land are only around 120,000 hectares. One of the goals of the use of idle land is to increase productivity that is not optimal, which is only about 1.5 - 2 tons per hectare. The low quality of human resources is one of the factors causing the lack of agricultural productivity. The quality of human resources is influenced by demographic factors in agricultural processes and products.

The Labor Force Participation Rate (TPAK) is one of the indicators used to find a picture of the working age population who play an active role in the economy. TPAK is obtained by comparing the size of the population of the workforce with the size of the working-age population. The TPAK is used by the Government as a basis for consideration in planning and policy making related to labor supply and labor market in the region, so that labor can be optimally absorbed and on target.

The participation of the population in an actualized area of participation in development is increasingly felt necessary in this modern era. Seeing the potential of the population as a resource so it needs efforts to include the population as subjects in the development process. Besides being the subject of development, the population also plays an active role in economic activities such as earning a living in various sectors in accordance with their education and expertise and the availability of jobs.

Based on the results of the projected population of South Kalimantan in 2015-2025, the population of South Kalimantan in 2019 was 4.21 million people. Based on the composition of the population by age group, there was a growth of 1.74 percent per year for the population included in the productive age category (15-64 years) during the 2010-2019 period. Most of the population work both as entrepreneurs and workers in the agricultural sector as farmers. There are 31.89 percent of the population working in agriculture of the entire population working in South Kalimantan, where agricultural workers are only 49.0 percent as entrepreneurs and 51.0 percent are non-entrepreneurs. This situation shows that, the population is a social asset and potential capital that needs to be increased participation. Improvement of the labor market climate is one of the efforts in increasing the Labor Force Participation Rate (TPAK), especially in relation to expanding employment opportunities in various sectors, improving wage systems, and increasing working hours (Ritonga, 2014).

Based on the results of the National Labor Force Survey (Sakernas) during the 2008-2019 period by BPS, the TPAK in South Kalimantan is already above 70 percent. TPAK can be used as an indicator in showing the success of government programs in providing space for residents to play an active role in the economy and employment opportunities for residents. In addition, it shows how high the motivation of the population to work in the formal and informal sectors in rural and urban urban-rurals.

TPAK in rural urban-rurals is higher than TPAK in urban urban-rurals. TPAK in rural urban-rurals is 74.58 percent, while TPAK in urban urban-rurals is 72.09 percent. There are differences in TPAK between men and women residents over the past ten years ranging from 20-35 percent. This condition illustrates the percentage of men population actively participating in the labor market is higher than the participation of the women population. Sakernas results February 2018 noted, 85.31 percent of men's TPAK and 61.22 percent of women's TPAK. Women's TPAK can still be optimized again, so that the role of the population in active participation in the labor market allows for improvement.

The role of the entrepreneur is very strategic. It indirectly affects the ups and downs of economic growth in a region. Entrepreneurs always create employment opportunities, innovate in the fields of knowledge and technology, and make production expansion capable of increasing the acceleration of the country's economic growth (Schumpeter, 2009).

Many factors influence the population in the agricultural sector, one of which is demographic or population factors. It is assumed that social factors of labor with relationship with the head of the household (KRT), educational attainment, regional classification, sex, age, and participation in training also have an affect on the population working in the agricultural sector.

This study aims to analyze the affect of household heads, educational attainment, regional classification, sex, age, and training participation on the opportunities of the population who works in agriculture. This study should give information and input to local governments and related agencies in formulating regional development strategies to improve the quality of human resources in an effort to create employment opportunities by creating farms and references in conducting further studies for parties interested in continuing study by utilizing other analytical tools or other problem reviews.

II. Materials And Methods

Places And Time of Study

The study was conducted in South Kalimantan Province from August 2019 to April 2020, which began from making proposals, processing data, analyzing data, to completing study reports.

Data Types And Source

This study uses secondary data, namely the National Labor Force Survey (Sakernas) in February 2019 for the South Kalimantan Province. Sakernas is specifically designed to collect data of employment on an ongoing basis. The data in this study are in the form of categorical and nominal data for the independent variables, while the dependent variables are ordinal scale data.

Sakernas data for February 2019 is a cross section data with sample units is household. A total of 1,240 sample households were obtained from 124 census blocks. In each census block 10 households were sampled by systematic sampling.

The results in February 2019 succeeded in gathering information on individual population aged 15 years and over as many as 2,997 samples. The number of individual populations who worked in the agricultural sector was 1,189 samples spread across all regencies and municipalities in South Kalimantan Province.

Operational Definition of Variables

For the inferential analysis purpose, it is necessary to make operational definitions of variables that are hypothesized of having an affect for entrepreneurs in the demographic-based agricultural sector.

1. The dependent variable in this study were population aged 15 years and over who were defined into 2 categories namely:
 - a. People aged 15 years and over who work in the agricultural sector with the status of entrepreneurs (self-employed, trying to be assisted by non-permanent / unpaid workers and trying to be assisted by permanent / paid workers) coded as 1.
 - b. Population aged 15 years and over who work in the agricultural sector with non-employer status (Workers / employees, casual workers, family workers / unpaid) coded as 0.
2. Independent variables
 - a. Head of household status; head of household (category 0), non head of household (category 1).
 - b. Educational Attainment; Higher education (senior high school) and above (category 0), low education (junior high school) and below (category 1).
 - c. Urban-rural classification; rural (category 0), urban (category 1)
 - d. Sex: men (categorized 0), women (categorized 1).
 - e. Age is the age of the population at the time of enumeration.
 - f. Participation in training which obtaining certificates; yes (category 0), no (category 1).

Study Hypothesis

The following hypothesis used :

1. Head of Household Status
 $H_0 : b_1 = 0$ (Head of household status does not affect the tendency of the people who work in the agricultural sector to be entrepreneurs).
 $H_1 : b_1 \neq 0$ (Head of household status affects the tendency of the people who work in the agricultural sector to be entrepreneurs).
2. Educational Attainment
 $H_0 : b_2 = 0$ (Educational attainment does not affect the tendency of the people who work in the agricultural sector to be entrepreneurs).
 $H_1 : b_2 \neq 0$ (Educational attainment affects the tendency of the people who work in the agricultural sector to be entrepreneurs).
3. Urban-rural classification
 $H_0 : b_3 = 0$ (Urban-rural classification does not affect the tendency of the people who work in the agricultural sector to be entrepreneurs).
 $H_1 : b_3 \neq 0$ (Urban-rural classification affects the tendency of the people who work in the agricultural sector to be entrepreneurs).
4. Sex
 $H_0 : b_4 = 0$ (Sex does not affect the tendency of the people who work in the agricultural sector to be entrepreneurs).
 $H_1 : b_4 \neq 0$ (Sex affects the tendency of the people who work in the agricultural sector to be entrepreneurs).
5. Age
 $H_0 : b_5 = 0$ (Age does not affect the tendency of the people who work in the agricultural sector to be entrepreneurs).
 $H_1 : b_5 \neq 0$ (Age affects the tendency of the people who work in the agricultural sector to be entrepreneurs).
6. Participation in training which obtaining certificates
 $H_0 : b_6 = 0$ (Participation in training which obtaining certificates does not affect the tendency of the people who work in the agricultural sector to be entrepreneurs).
 $H_1 : b_6 \neq 0$ (Participation in training which obtaining certificates affects the tendency of the people who work in the agricultural sector to be entrepreneurs).

Data Analysis

The analytical method used in this study is inferential analysis. To find out the purpose of the study analyzing the affect household heads, educational attainment, regional classification, sex, age, and participation in training which obtaining certificates for population who work in the agricultural sector the inferencing analysis method is used. Binary logistic regression statistics are used in this study. Use this model because the dependent variable is a categorical variable. Using the model to see the extent of the relationship between the dependent variable and the independent variables, what are the most significant variables affecting entrepreneurs in the agricultural sector in South Kalimantan.

Logistic Regression Model

The logistic regression model is formulated as follows (Agresti, 1996) :

$$\ln\left(\frac{P_1}{P_0}\right) = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6$$

Keterangan :

P_1 = The probability of Population aged 15 years and over who work in the agricultural sector as an entrepreneur

P_0 = The probability of Population aged 15 years and over who work in the agricultural sector as an employer

b_0 = Constant

b_i = Constants of the i-th independent variable

X_1 = Non heads of households are compared to entrepreneurs as heads of households

X_2 = Low-educated entrepreneurs (junior high school) and below compared by high-educated entrepreneurs (senior high school)

X_3 = Entrepreneurs live in urban urban-rurals compared to entrepreneurs living in rural urban-rurals

X_4 = Entrepreneurs who are women compared to entrepreneurs who are men

X_5 = Age

X_6 = Entrepreneurs have never attended training and received certificates compared to Entrepreneurs who have never attended training and received certificates

III. Result

Influence of Population Demographic Conditions on probability for population in the Agricultural Sector

Dependent variable is the population aged 15 years and over who worked a week ago, which was divided into 2 (two) categories, namely the population aged 15 years and over who worked in the agricultural sector as workers with code 0 and population aged 15 years and over who work in the agricultural sector as entrepreneur coded as 1.

The independent variables used were 7 (seven) variables, namely the head of the household status (X_1), educational attainment (X_2), urban-rural classification (X_3), sex (X_4), age (X_5), and following training which obtaining certificates (X_6). Age (X_5) is a ratio while 6 (six) other variables are nominal with the category of each variable has been explained previously.

The logistic regression analysis in this study uses the Enter method. This method will enter all the independent variables into the model simultaneously so that the best model is obtained based on the theories. The results reveal the model of probability for entrepreneurs in the agricultural sector in South Kalimantan as follows:

$$\ln\left(\frac{P_1}{P_0}\right) = -1,918 - 1,411X_1 + 0,593X_2 - 0,565X_3 - 0,856X_4 + 0,044X_5 + 0,572X_6$$

The equation above is a model formed from logistic regression analysis. It can be interpreted that the factors that affecting the working age population who work in the agricultural sector are the head of the household status, educational attainment, urban-rural classification, sex, age, and attending training activities.

Hosmer Lemeshow Test

The Hosmer-Lemeshow method is most often used in testing the goodness of the model (Hosmer, 2000). This test is conducted to determine whether the resulting regression model is able to explain the data. The results of the Hosmer-Lemeshow test on α 0.05 shows that the null hypothesis (H_0) is accepted and the alternative hypothesis (H_1) is rejected. This means that the model used is in accordance with its empirical data, so that the model can be analyzed further.

Nagelkerke R-Square

Cox and Snell's R Square tries to know the size of R^2 in multiple regression based on a probability estimation technique with a maximum value that is difficult to interpret. Nagelkerke R Square is a modification of the cox and snell coefficients to ensure values from 0 to 1. This is done by dividing the value of cox and snell's R Square by their maximum values.

The Cox & Snell's R Square value is 0.286 and the Nagelkerke R Square value is 0.382, which means the variability of the dependent variable that can be explained by the independent variable is 38.2 percent. The remaining 61.8 percent is explained by the variability of variables outside the independent variables included in this logistic regression model. In other words, 38.2 percent of the independent variables used determine the variation of the population's probability to be entrepreneur in the agricultural sector.

Simultant Test

Simultant test can be seen in the SPSS results for the Iteration History table. With $\alpha = 0.01$ and degree of freedom (df) = K = 6, where k is the number of independent variables, we get $\chi^2 (p)$ from the chi-square table of 16,812. Because $-2 (L-0-L1) > \chi^2 (p)$, (401,283) > (16,812), it can be concluded that all independent variables in last step have a significant effect on the dependent variable, simultaneously.

Overall Test

Overall test can be seen from the G^2 value of 401,283 with a p-value of 0,000. This means that the null hypothesis (H_0) is rejected at $\alpha 0.01$ and the alternative hypothesis (H_1) is accepted, so it can be concluded that the model can be used for further analysis.

Partial Test

Wald test is used in partial testing of variables. When the sample is large, the binomial distribution can be approached with a normal distribution so that the statistical tests used are formed and evaluated using a normal distribution (Azen & Walker, 2011). The variables use in the model are all the variables illustrated in last step showing the significance of the model. Below is a table of partial test results of variables in step 1 detailing the results of partial tests of all independent variables. Partial test results, all independent variables that are used have a significant effect on the dependent variable.

Tableno 1. The results of the logit model analysis of the dependent variable

Variabel	Koef	S.E.	Wald	Sig.	Exp(B)
Constant	-1.980	0,407	22,217	0,000 ***	0,147
X_1	-1,411	0,199	50,086	0,000 ***	0,244
X_2	0,593	0,205	8,344	0,004 ***	1,810
X_3	-0,565	0,249	5,141	0,023 **	0,568
X_4	-0,856	0,203	17,804	0,000 ***	0,425
X_5	0,044	0,006	48,524	0,000 ***	1,045
X_6	0,572	0,331	2,982	0,084 *	1,771

Sources : BPS, Sakernas in February 2019

Notes : * = significantwith a 10%

** = significantwitha 5%

*** = significantwitha 1%

Head of household status

The working age population aged 15 years and over who work in the agricultural sector as non-household heads of the working age population aged 15 years and over who work in the agricultural sector with the status of head of the household (X_1) obtained a coefficient value of 1.411 and negative and significant different from zero at $\alpha 0.01$, so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. The negative sign indicates that the working-age population working in a relationship as non-household head has a smaller tendency to work in the agricultural sector, with the status of working employment compared to the working-age population working in the agricultural sector as the head of the household.

The tendency of the working-age population as non-head of the household, to work in the agricultural sector is relatively small which is 0.244 times compared to the working-age population working in the agricultural sector as the head of the household. This can be interpreted that the working-age population which is a head of household working in the agricultural sector has a greater opportunity than the working-age population status as non-household heads. The head of the household must be responsible for the needs of the household, so it is preferred to work as an entrepreneur in agricultural sector to fulfill the needs of household.

Educational Attainment

Working age population aged 15 years and over who work in the agricultural sector with low educational attainment (junior high school) to working age population aged 15 years and over who work in the agricultural sector with higher education (X_2) obtained a coefficient value of 0.593 and is positive and significant different from zero at $\alpha 0.01$, so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. This means that the working-age population with low educational attainment (junior high school and below) has a greater probability than the working-age population in the agricultural sector with the

status of working employment at the higher educational attainment (senior high school and above) to work in the agricultural sector.

The tendency of the working age population to work in the agricultural sector as entrepreneur at a low educational attainment (junior high school) is 1.810 times compared to the working age population with a higher educational attainment (senior high school and above). This can be interpreted that the working-age population working in the agricultural sector with a low education (junior high school) has a greater probability than the working-age population with a high education. The population who working as entrepreneurs in the agricultural sector do not always need adequate knowledge or education in managing their businesses. Experience in business management in the agricultural sector determines a person to become an entrepreneur.

Urban-rural Classification

The population aged 15 years and over who work in the agricultural sector in urban areas compared to the working age population aged 15 years and over who work in the agricultural sector in rural areas (X_3) obtained a coefficient value of 0.565 and was negative and significantly different from zero in α 0.05, so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted.

This means that the working-age population in urban areas has a smaller tendency to work in the agricultural sector with the status of working employment compared to the working-age population in rural areas. The tendency of working age population to work in the agricultural sector as an entrepreneur living in urban areas to work in the agricultural sector is 0.568 times compared to the population of working age living in rural areas who work in the agricultural sector as entrepreneur. This can be interpreted that the working-age population working in the agricultural sector as entrepreneur who live in rural areas have greater opportunities than the working-age population living in urban areas.

Sex

The Women in working age population aged 15 years and over, who worked in the agricultural sector compared to the men (X_4), obtained a coefficient value of 0.856. It is negative and significant different from zero at α 0.01, so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. This means that the working age women population tends to have smaller probability working in the agricultural sector as an entrepreneur than that of men.

The tendency of the women who is working age population to work in the agricultural sector as an entrepreneur is 0.425 times compared to the men who work in the agricultural sector as entrepreneur. It can be interpreted that the men who is in the working age population, working in the agricultural sector as an entrepreneur has a greater opportunity than the working-age population of women.

Age

The age of people who are working age population in the agricultural sector (X_5) obtained a coefficient value of 0.044 and positive and significantly different from zero at α 0.01, so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. So that the working-age population who work in the agricultural sector as entrepreneur, has a greater tendency along with increasing age. Every increasing in age, the tendency of the working age population to work in the agricultural sector increases to 1.045 times. In other words, the opportunity for working age population to work in the agricultural sector as entrepreneur will increase with age.

Training Participation

Working age population aged 15 years and over who worked in the agricultural sector who did not receive training and did not get a certificate compared to them who had attended training and had a certificate (X_6) obtained the coefficient of 0.572 and positive and significantly different from zero at α 0.1, so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted.

This means that the working-age population who did not attend the training and did not get a certificate not tend to be more likely to work in the agricultural sector as an entrepreneur compared to those who attended the training and received the certificate. The opportunity for working age population to work in the agricultural sector as entrepreneur that does not attend training and does not get a certificate of employment to work in the agricultural sector with a status of business employment is 1.771 times compared to the population who have attended training and received a certificate.

IV. Conclusion

The relationship of the head of the household status, educational attainment, urban-rural classification, sex, age, and attending training which obtaining a certificate have a significant effect on the opportunities of population who work in the agricultural sector as entrepreneurs. This study shows that high education and training participation status have small impact to someone's probability to be entrepreneurs in Agricultural

sector. However, it does not mean that these variables are not needed for someone to be an Entrepreneur in Agriculture sector. Intelligence level shows the ability of someone to consider various choices that available and predict the benefit of technology application in Farming management. This ability is affected both by formal and non-formal education (e.g. training or counseling).

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