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The Analysis of Factors That Affecttechnology Adoption in Rubber Farming Business in Patangkep Tutui District East Barito Regency Central Kalimantan Province

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Abstract: *The purpose of the study is to find out the materials, methods and counseling media used in rubber farming counseling program; to know the adoption rate of rubber farming technology; to know the influence of age, education, farming experience, rubber farming area, income, workers in the family on the adoption of rubber farming technology.*
The research was conducted in September 2018 until December 2018, in Patangkep Tutui District, East Barito Regency. The population of the study was all rubber farmers and agricultural counselors in the sub-district, in total of 775 farmers and 6 counselors. 83 farmerswere taken from the population as sample of the study and 4 agricultural counselorswere taken by using the simple random method according to Nasir (1983) who suggested a minimum of 10% of the population can be takenas the sample. The data analysis uses in this study are descriptive analysis and binary logistic regression analysis.
The results showed that there were 6 topics given by the counselors, namely the benefits of weeding to rubber plants by 100%, then balanced fertilization, rubber tapping techniques and processing and handling of bokar production yields were given at 83.33%. The material on pest control and the use of new superior varieties was given at 66.67%. The method in delivering the material entirely (100%) using the group method. There were 6 types of media used by counselors, and the most used were flash card media 30.77%, then through sound slide media 10.26%, posters 15.38%, bulletin 12.28%, brochures 15.38%, and folders 15.38%. The adoption rate of rubber farming technology is still low, with the number of farmers in the low adoption rate category is 55.42% and farmers in high adoption category is only 44.58%.
Based on the binary logistic regression model, it shows that the variables of farmer age, formal education, rubber farming experience, land area and household income significantly influence the adoption of rubber farming technology, with the lowest odds ratio of 1.267 and the highest of 4.467.
Keywords: *Technology Adoption, Rubber Farming, Patangkep Tutui.*

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I. Preliminary

National development is not only emphasized on industrial sectors or similar derivatives, but the agricultural sector is also one of the sectors to support national development. As an Indonesian country with an agricultural country background, there are many business opportunities that can be done to advance the economy through the agricultural sector. The Economic Crisis in Indonesia in 1997 gives realization that the agricultural sector has become the savior of the national economy. This can be seen from the positive growth in the agricultural sector. Based on these conditions, agricultural development needs to be continuously encouraged to support the sustainability of economic development. Agricultural development must be placed in a central position in national economic development. One of the agricultural sub-sectors that support the community's economy is the plantation sub-sector. One of the plantation commodities in the agricultural sector is the rubber plantation commodity (Hevea brasiliensis). Many people live by relying on this sap-producing commodity. Rubber is cultivated not only by large state-owned plantations that have an area of up to hundreds of thousands of hectares (ha), but also by the private sector and the general public. When compiled as a whole, the number of rubber plantations in Indonesia is so large that the business is quite decisive for the national rubber business (Setyamidjaja, 2000). However, as a country with the largest area in the world, Indonesia still faces several obstacles, namely low productivity, especially smallholder rubber which constitutes the majority (91%) of the national rubber area and a limited range of processed products, which is dominated by crumb rubber. The low productivity of rubber plantations is caused by the large number of old, damaged and unproductive areas, the use of non-superior clone seeds and the condition of the field that resemble forests. Therefore it is necessary to accelerate the rejuvenation of smallholder rubber and the development of the downstream industry (Setyamidjaja, 2000).

Rubber plantations are one of the plantation commodities that occupy an important position as a source of non-oil and gas foreign exchange for Indonesia, so they have bright prospects.

Therefore, efforts to increase the productivity of rubber farming continue, especially in the field of cultivation technology. Indonesia once controlled world rubber production, but currently Indonesia's position is being pushed by two neighboring countries, namely Malaysia and Thailand. More than half of the rubber used today is synthetic, but some natural rubber is still produced every year, and is still an important material for several industries including automotive and military (Setyamidjaja, 2000)

Rubber plantations in Central Kalimantan Province have been cultured in everyday life. Generally these rubber plantations are cultivated by small scale farmers (narrow) with a simple farming technology pattern, this is different from those cultivated by government companies and private companies, which use a more modern farming pattern.

To introduce rubber farming technology such as spacing, fertilization dose, tapping technique, pest control, use of superior seeds to farmers, counseling is needed. Counseling is the process of changing the behavior, attitudes and skills of the main actors (farmers) and business actors towards the desired conditions towards better farmer welfare. According to Mardikanto (1993), counseling is defined as the process of delivering information from communicators to communicants so that diffusion and adoption occur. Thus, the role of extension workers is very important in technology transfer

Based on the background that has been described previously, the formulation of research problems are:

Counseling materials, methods and media were used in rubber farming counseling program in Patangkep Tutui District, East Barito Regency.

What is the adoption rate of rubber farming technology in Patangkep Tutui District, EastBarito Regency.

Is there any influence between age, education, farming experience, farm area, income, number of workers in the family on the adoption of rubber farming technology in Patangkep Tutui District, East Barito Regency.

Based on the background and problem formulation above, this study aims to:

Find out the material, methods and media of counseling used in rubber farming counseling program in Patangkep Tutui District, East Barito Regency.

Determine the adoption rate of rubber farming technology in Patangkep Tutui District, East Barito Regency.

Determine the influence of age, education, farming experience, rubber farming area, income, labor in the family to the adoption of rubber farming technology in Patangkep Tutui District, East Barito Regency.

Benefits

As one of the literatures for the benefit of further research, especially in the development of rubber farming in a better direction.

As one of the recommendations / input for rubber farming development for the community and government.

II. Research Methods

Venue and time of research

This research used a survey method and was carried out in Patangkep Tutui District, East Barito Regency, Central Kalimantan Province. The location selection was based on the consideration that in this sub-district the population of rubber plantations was the largest among other districts. The implementation time of this research starts from September 2018 to December 2018, starting from preparation, conducting preliminary surveys, collecting information and data to the stages of data processing and report writing.

Types and Sources of Data

The types of data collected in this study consisted of primary data and secondary data. Primary data were obtained directly from interviews with agricultural counselors (PPL) and selected rubber farmers who were guided by a list of questions or questionnaires that had been prepared in advance. Meanwhile, secondary data were obtained from institutions or agencies related to research such as the East Barito Regency Agriculture Office, the Agricultural Counseling Center (BPP) and previous research.

Sample Withdrawal Method

The population of this study were all rubber farmers and agricultural counselors in the Patangkep Tutui district, in total 775 farmers and 6 agricultural counselors. From each of these numbers, a sample of at least 10% of the population was taken from farmers, and4 agricultural counselors were taken by using a simple random method, so that the number of farmers sampled in this study was 83 farmers and 4 agricultural counselors.

Data analysis

Tabulation analysis that carried out descriptively is used to find out the first objective, namely the materials, methods and media of the extension used in the rubber farming counseling program in Patangkep Tutui District, East Barito Regency, and then explained in detail.

To answer the second objective of this study, namely to determine the level of technology adoption using the following interval formula (Suparman, 1983: 29):
Interval = range / number of classes = 12/2 = 6
Range = highest score - lowest score
= 18 - 6 = 12
Highest score = number of questions x weighted highest score
= 6 x 3 = 18
Lowest score = number of questions x weighted lowest score
= 6 x 1 = 6
Category Determination:
TAT High: (highest score - interval)
: 18 - 6
:> 12
Low TAT: (High TFK - interval)
: 12 - 6
: 6 or (6 to 12)
Information :
TAT = Adoption Rate of Rubber Farming Technology
To determine the level of adoption of farming technology, a statistical hypothesis is used, namely:
H0: TAT = 12
H1: TAT> 12
Decision-making :
H0 is rejected if, t count> t table
H0 is accepted if, t count ≤ t table
To test the statistical hypothesis the t test is used with the following formula:
t count = (TAT - ⟦TAT⟧ _0) / (s√n)
by:
TAT = The average score of the adoption rate of rubber farming technology
TAT0 = The minimum score limit for TAT if it is said to be high (12)
s = sample standard deviation
n = number of samples

To find out the third objective, namely the influence of age, education, farming experience, rubber farming area, income, labor in the family on the adoption of rubber farming technology, the multiple logistic regression analysis model is used, because the dependent variable (adoption of rubber farming technology) is data that is categorical. In this study, farmers who were categorized as adopting rubber farming technology were given a value of 1, whereas if the level of technology adoption was low, it was given a value of 0.

Binary logistic regression (binary logistic) is a tool to analyze in order to explain the effect of the dependent variable in the form of a dichotomous variable (binary scale) with one or more independent variables that are on a category or continuous scale. According to Hosmer and Lemeshow (2000), the determination of the logistic regression model is formed with a value E (Y = 1 / x) as P, where P is denoted as follows: P = (exp⟦(g (x))⟧ / (1 + exp (g (x)))]

Furthermore, the model transformation is carried out to model the initial regression function, so that it becomes a linear function (Agresti, 1990):

Logit [π (x)] = ln [π (P / (1-P)] = g (x) ..... (4)
g (x) = α + β1X1 + β2 X2 + β3X3 + β4X4 + β5X5 + β6X6 …… (5)
Information
α: intercept
β: logistic coefficient (from 1,2, ..., 6)
X1: Age (years)
X2: Education (years)
X3: Farmer's Experience (years)
X4: Area of rubber farming (Hectares)
X5: income (rupiah)
X6: labor in the family (HKO)

According to Hosmer & Lemeshow (2000), to test the simultaneous effect of all independent variables through the test statistic - G.The hypothesis tested is:

H0: β1 = β2 = ... = βp = 0
H1: there is at least one βi ≠ 0, i = 1,2, ..., p
The G test statistic is defined as:
G = -2 Ln [Lo / Lp]… ..... (6)

Where L0 is a function before the independent variable is entered, and Lp is a function that has been entered by the independent variable. The null hypothesis is rejected if G> X2 (α, v) or sig. <real test level (α) (Hosmer & Lemeshow 2000). To test the effect of each - each independent variable on the dependent variable through the Wald test statistics. The formula used in the Wald Test statistic is:
W = (β j) / (SE (β j)) …… ..... (7)
The null hypothesis is rejected if W> Z α / 2 or sig. <A

The coefficient interpretation of the binary logistic regression model is to look at the odd-s ratio value. odd-s (ψ) is the comparison of the odds of being successful with the incidence of unsuccessfulness from the independent variable with the dependent variable. The coefficient obtained from the calculation of the logit model (βi) shows the change in the value of the binary logistic function, namely g (x) for changes in one unit of the independent variable (x). Odds Ratio can be defined as follows:
Odds Ratio = P / (1-P) = exp [α + β x] e α (eβ) x …… (8)
Odds Ratio for numeric scale variables, so the interpretation is that every one unit increase in the independent variable (x), then there is a possibility for y = 1 to increase by ψ times.
The use of multiple logistic regression modeling strategies is carried out in several steps. The steps are:
Selection of Multivariate Candidate variables

To create a multivariate model for the 6 independent variables (independent variables) that are thought to be related to the dependent variable (rubber farming technology adoption), a bivariate analysis (Pearson correlation) is first performed. If the bivariate test result has p <0.05 then this variable can be used as an independent variable that will be included in the multivariate analysis.

Making Model Determinants of Adoption of Rubber Farming Technology

Multivariate analysis is used to form the best logistic regression model in determining in determining the determinants of the adoption of rubber farming technology. In this modeling all candidate variables are tried out together. A fit model will consider two assessments, namely the assessment by looking at the significance value of the ratio -2 log - likelihood (simultaneously) (p ≤ 0, 05) and the significance value of p - Wald (partially) (p ≤ 0, 05). The fit model is known through the independent variables that have passed the sensor which are entered into the model.

Vareabel Devinition

1. Counseling materials are materials that will be delivered by counselors to key players and businessmenin the form of information, technology, social engineering, management, economy, law and environmental sustainabilitywith the aim to fill the needs and interests of agriculturalkey players and businessmen by paying attention to the utilization and preservation of agricultural resources (%)
2. Counseling media is an object packaged in such a way as to facilitate delivery of material to targets, so that targets can absorb messages easily and clearly (unit)
3. Counseling method is a method used to get counselors closer to their counseling targets (units).
4. Farmers' education can be defined as a conscious and systematic effort to achieve a standard of living or for better progress (years)
5. Income per capita per month is total household income divided by the number of household members (rupiah / month).
6. Farmers' experience is calculated starting from planting until now which is measured in years
7. Age of farmer is the length of life of the farmer (which is measured in years)
8. Rubber farming area is the area of land planted with rubber by farmer households (measured in hectares).
9. Workforce in the family is the number of workers available in the family which is measured in HKO

III. Results And Discussion

Agricultural counseling materials

Counseling material is very important in any counseling program. Generally, the counseling material provided is knowledge only, which will then be carried out by farmers under the guidance of agricultural counselors. Counseling material is the spirit in every counseling program that is made based on the problems and conditions faced by farmers in rubber farming, so that their farming will be better.

Based on the conditions and problems faced by farmers in rubber farming in East Barito, there are 6 topics of relevant counseling material based on the results of research conducted by researcher. The 6 topics of the counseling material are control of rubber pests (Plant Pest Organisms), rubber balanced fertilization, usage

of new superior varieties (VUB) of rubber, the benefits of weeding to rubber plants, rubber tapping techniques and processing and handling of bokar production.

The counseling material is given 4 times in a month or once a week, meaning that each agricultural counselor provides 24 counseling materials to the farmers every month. It is hoped that the intensity of providing material by the agricultural counselors can increase farmers' comprehensionin rubber commodities.

From the several counseling materials presented, the most widely conveyed to farmers by agricultural counselor was the material on weeding rubber plants. Whereas from 6 counselors, all counselors (100%) provided the material. This is due to the fact that farmers' rubber plants are generally rarely weeded, so that it can interfere the growth and absorption of fertilizer for rubber plants. The next sequence, material on balanced fertilization of rubber plants, rubber tapping techniques, and handling of Bokar (Rubber Processed Material) provided by the agricultural counselors were 83.33% respectively. These three materials are significant to delivered to farmers, so that the rubber farming carried out by the farmers is better.

Finally, the material on controlling rubber pests (Plant Pest Organisms), as well as the benefits obtained if farmers use New Superior Varieties (VUB) provided by agricultural counselors are 66.67% each. The relatively small percentage of material on New Superior Varieties (VUB) is because farmers have planted new Superior Varieties (VUB) of rubber plants, so that as information only if later the farmers do Replanting (plant rejuvenation). The same thing with the material for controlling pests and rubber diseases delivered by the agricultural counselors is a relatively small percentage, because the rubber farmers have carried out control (Plant Pest Organisms) Rubber,

so as information only if later the farmers do Replanting (plant rejuvenation). The same thing with the material for controlling pests and rubber diseases delivered by the agricultural extension agents is relatively small, because the rubber farmers have carried out control of Rubber (Plant Pesting Organisms), so the farmers get additional information about controlling the Rubber Plant Pesting Organisms.

Agricultural Counseling Materials are prepared based on the needs and interests of Main Actors and Business Actors by taking into account the benefits, preservation of agricultural resources, and development of agricultural areas. Agricultural Counseling Materials contain elements; a) human resource development; b) increasing science, technology, information, economy, management, law, and environmental sustainability and; c) strengthening farmer institutions (Setyamidjaja, 2000).

Agricultural Counseling Materials as intended are directed at developing the capacity of Main Actors and Business Actors in managing profitable and environmentally friendly farming businesses to increase income and welfare. Agricultural Counseling Materials that contain technology as intended can include technological innovations that come from traditional knowledge (Setyamidjaja, 2000).

Agricultural counseling methods

The Counseling methods used by agricultural counselors to deliver counseling materials consist of individual counseling methods (anjangsana), group methods and mass methods. The use of this counseling method depends on the material or the nature of the material presented. The results showed that all counselors in delivering counseling materials used (100%) the group method. This is due to the condition of rubber farmers who are mostly in groups. In addition, this method is more efficient and effective in delivering counseling materials. It is very rare for counselors to use mass and individual methods.

Agricultural Counseling Methods as intended are tailored to the needs and conditions of the Main Actors and Business Actors. Agricultural Counseling methods are determined by the Agricultural Counselors with reference to the activities in the Agricultural Counseling program and the Agricultural Counselor annual work plan. Further provisions regarding the Agricultural Counseling Method are regulated by a Decree of the Head of the PPSDMP Agency on behalf of the Minister of Agriculture (Permentan No.3, 2018).

Agricultural counseling media

The counseling media used by agricultural counselor in ounseling activities include 6 types of agricultural counseling media, namely flash cards 30, 77%, sound slides 10, 26%, posters 15, 38%, Bulletin 12, 82%, Brochure 15, 38%, folder 15, 38%.Among the 6 counseling media used Express Cards had the highest percentage as media used for counseling media, namely 30, 77%, this is because flash cards are media that are very easy to make, more concise and easier to digest by the farmers who are memberswithin farmer groups, as well as other reasons, namely that flash cards are easier to carry around or in other words, they are more flexible, do not require electricity.

Table 1. Percentage of usage of media delivered in counseling

No	Media	Amount (unit)	Percentage (%)
1	Express Card	12	30.77
2	Sound Slide	4	10.26
3	Poster	6	15,38
4	Bulletin	5	12.82
5	Brochure	6	15.38
6	Folder	6	15,38
	Total	39	100.00

Adoption Rate of Rubber Farming Technology

Based on the results of the study, most respondents are in the low category in the level of rubber farming technology adoption in Patangkep Tutui District, East Barito Regency, which is 55.42% of respondents. While the remaining 44.58% of respondents are in the high category in the level of rubber farming technology adoption in Patangkep Tutui District, East Barito Regency. The initial hypothesis as a provisional assumption is that the adoption rate of rubber farming technology is already high. After doing the research, through the results of the survey the data obtained. So based on the results of the t test (one sample t test), it shows that the t value (1.526) is smaller than the t table (1.989) with a standard deviation of 2.66 and a standard error (SE) of 0.29205. So the decision was taken that H0 was accepted, because t count <t table. The decision was that the adoption rate of rubber farming technology in Patangkep Tutui District, East Barito Regency was not high. Counselors and related parties need to make effort that are more effective and intensive to distribute technological information so that it can be accepted by rubber farmers in Patangkep Tutui District.

Factors affecting technology adoption rate

Farmers' age

The highest distribution of respondents is in the age group between 35 - 44 years, which is 37.35% of respondents. Whereas in the age group between 25 - 34 years of 22.89% of respondents, in the age group between 45 - 54 years of 30.12% of respondents, and age group> 55 years of 9.64% of respondents. This means that most of the respondents are farmers in the productive age. The average age of the farmers in this study was 42 years.

Farmers'formal educational background

The distribution of respondents was mostly found at the level of high school graduation education / equivalent, which was 43.47% of respondents. Whereas for the level of education who graduated from elementary school / equivalent amounted to 24.10% of respondents, at the level of education who graduated from junior high school / equivalent was 22.89%, at the level of education undergraduate from high school was 6.02%, and those who graduated from college were 3 , 61%.

Farming experience

The distribution of the most respondents was in the experience group between 11-15 years, which was 27.71% of respondents. In the experience group between 5 - 10 years the distribution of respondents was 21.69%. While the rest, the longer the farming experience, the smaller the distribution of respondents. The average farming experience of respondents in this study was 17.72 years

Rubber farming area

The distribution of respondents in land ownership is fairly even on each scale, namely above 20% and above. On a scale of farming land area less than 1 ha of 25.30% of respondents. On the scale of farm land between 1.0 - 1.5 ha of 25.30% of respondents. On the scale of farm land between 1.5 - 2.0 ha of 21.69% of respondents. Meanwhile, on a scale of farming land area of more than 2 ha of 27.71%.

Household income

Household income is a source of finance for farmerslater it will be used to meet both food and non-food needsfood. In economics, income has an influence on demandfor goods and services as a means of fulfilling needs. The average household income of farmers is IDR 3,387,349 / month. The distribution of the most respondents in the household income group was between 3.5 - 4.0 million per month, namely 43.37% of respondents. Whereas in the household income group between 3.0 - 3.4 million it was 36.14% of respondents, in the household income group of less than 3.0 million it was 16.87% of respondents, and in the household income group of more than 4, 0 million for 3.61% of respondents.

Labor in the Family

Labor in the family is unpaid labor, because it comes from family members in the farmer's household. So that the workforce in this family is assessed as an implicit value.

The distribution of respondents was mostly found in the TKDK group between 21-30 HOK. While the distribution of the least respondents was in the TKDK group between 31-40 HOK. The average use of labor in the family (TKDK) is 27.61 HOK per month.

Bivariate Analysis

To find out the variables that affect the adoption rate of rubber farming technology in Patangkep Tutui District, East Barito Regency, bivariate analysis and multivariate analysis can be performed. For bivariate analysis, the Pearson correlation coefficient was used, while the multivariate analysis used binary logistic regression. Based on the provisional assumption that the socio-economic variables which include farmer age, formal education, rubber farming experience, rubber farming land area, farmer household income and labor in rubber farming families have an effect on the adoption rate of rubber farming technology. The results of the bivariate analysis test between socio-economic variables and the level of adoption of rubber farming technology in Petangkep Tutui District, East Barito Regency can be seen in Table 2 below.

Table 2.The results of the bivariate analysis test between socio-economic variables and the level of adoption of rubber farming technology in Petangkep Tutui District, East Barito Regency

No	**Socio-Economic Variables**	**Pearson's Correlation Coefficient**	**Sig. (2-tailed)**	**Description**
1	Age of farmer (years)	0.577	0.000	Significant
2	Formal education (years)	0.544	0.000	Significant
3	3 Farming experience (years)	0.660	0.000	Significant
4	Area of rubber farming (ha)	0.574	0.000	Significant
5	Farmer household income (IDR 100,000 / month)	0.387	0.000	Significant
6	TKDK of rubber farming (HOK)	0.525	0.000	Significant

Source: Primary Data Processing, 2020

Multivariate Analysis Using Binary Logistic Regression Model

Table 3. The results of the multivariate analysis of the factors that affect the adoption level of stage 1 rubber farming technology

The Independent Variable	Coefficient	Wald	Sig.	Odds Ratio
Constant	-48,605	9,127	0,003*	0,000
Age of farmer (years) (X1)	0.250	3,747	0.053 *	1.285
Formal education (years) (X2)	1,471	5,767	0.016 *	4,353
Farming experience (years) (X3)	0.414	5.697	0.017 *	1.513
Rubber farming land area (ha) (X4)	3.059	0.297	0.586	21.313
Farmers household income (IDR 100,000 / month) (X5)	0.363	4.399	0.036 *	1.437
TKDK of rubber farming (HOK) (X6)	-0,140	0,140	0,709	0,869

Source: Primary Data Processing, 2020

Note: *) Significant at the real test level (α) of 0.05 (5%).

If the value is sig. smaller (<) than the real test level (0.05), then it has a significant influence. work in the family. So that a second multivariate analysis test process is needed, namely by eliminating the labor variable in the family, with the consideration that the significance value is the greatest, namely 0.709. The results of the multivariate analysis test the factors that affect the level of adoption of rubber farming technology in Patangkep Tutui District, East Barito Regency in stage 2 can be seen in Table 3 below.

Table 4: The results of the multivariate analysis of the factors that affect the level of adoption of stage 2 rubber farming technology

The Independent Variable	Coefficient	Wald	Sig.	Odds Ratio
Constant	-49,849	9,233	0,002 *	0,000
Age of farmer (years) (X1)	0.237	3.956	0.047 *	1.267
Formal education (years) (X2)	1,497	5,704	0.017 *	4,469
Farming experience (years) (X3)	0.437	6.342	0.012 *	1.548
Rubber farming land area (ha) (X4)	1,020	4,089	0,043 *	2,772
Farmers household income (IDR 100,000 / month) (X5)	0,389	5,275	0,022 *	1,475

Source: Primary Data Processing, 2020
Note: *) Significant at the real test level (α) of 0.05 (5%).
If the value is sig. smaller (<) than the real test level (0.05), then it has a significant effect.
The binary logistic regression model equation obtained is as follows:
Logit [π (x)] = ln [π (P / (1-P))] =
g (x) = -49,849 + 0,237 X1 + 1,497 X2 + 0,437 X3 + 1,020 X4 + 0,389 X5

Based on the data presented in Table 3, it shows that all independent variables have a significant effect on the adoption rate of rubber farming technology. Age of farmers shows a significant effect on the level of adoption of rubber farming technology. This can be seen from the sig. Value of 0.047, which means it is smaller than the real test level (α) of 0.05 (5%). In addition, the Odds Ratio value for the farmer age variable is 1.267. This means that farmers who are older / mature, will increase the chances of the adoption of rubber farming technology to be high, amounting to 1.267 times that of farmers with low technology adoption rates.

The formal education of farmers shows a significant effect on the level of adoption of rubber farming technology. This can be seen from the sig value of 0.017, which means that it is smaller than the real test level (α) of 0.05 (5%). In addition, the Odds Ratio value on the farmer formal education variable is 4.469. This means that farmers who have a higher formal education will increase the chances of the adoption of rubber farming technology to be high, amounting to 4.469 times that of farmers with low technology adoption rates.

The experience of rubber farming shows a significant effect on the adoption rate of rubber farming technology. This can be seen from the sig value of 0.012, which means that it is smaller than the real test level (α) of 0.05 (5%). In addition, the Odds Ratio value on the rubber farming experience variable is 1.548. This means that farmers who have a longer rubber farming experience will increase the chances of the adoption rate of rubber farming technology to be high, amounting to 1.548 times that of farmers with low technology adoption rates.

The farm area shows a significant effect on the adoption rate of rubber farming technology. This can be seen from the sig value of 0.043, which means that it is smaller than the real test level (α) of 0.05 (5%). In addition, the Odds Ratio value on the variable farmland area is 2.772. This means that farmers who have more land area will increase the chances of the adoption of rubber farming technology to be high, amounting to 2.772 times that of farmers with low technology adoption rates.

The household income of farmers shows a significant effect on the level of adoption of rubber farming technology. This can be seen from the sig value of 0.022, which means it is smaller than the real test level (α) of 0.05 (5%). In addition, the Odds Ratio value on the farmer household income variable is 1.475. This means that every Rp 100,000 increase in household income of farmers will increase the chances of the adoption rate of rubber farming technology to be high, amounting to 1.475 times that of farmers with low technology adoption rates.

IV. Conclusions And Suggestions

Conclusion
The conclusions drawn based on the results and discussion in this study are as follows:

1. The counseling materials used at the research location were the control of Rubber Plant Pesting Organisms, balanced fertilization of rubber, the use of new superior varieties of rubber, the benefits of rubber weeding, rubber tapping techniques, processing of the handling of bokar production. The counseling method used in this research is the group counseling method. The counseling media used in the research are flash cards, sound slides, posters, bulletin, brochures, folders.
2. The adoption rate of rubber farming technology in Patangkep Tutui District, East Barito Regency is significantly high.
3. Based on the binary logistic regression model, it shows that the variables that affect the level of adoption of rubber farming technology are age of the farmer, formal education, experience of rubber farming, land area and household income. Each of these variables shows:

a. Farmers who have higher formal education will increase the chances of a high adoption rate of rubber farming technology, amounting to 4.469 times that of farmers with low technology adoption rates.
b. Farmers who have a longer rubber farming experience will increase the chances of the adoption rate of rubber farming technology to be high, amounting to 1.548 times that of farmers with low technology adoption rates.
c. Farmers who have a wider farming area, will increase the chances of the adoption of rubber farming technology to be high, amounting to 2.772 times that of farmers with low technology adoption rates.
d. Every Rp 100,000 increase in household income of farmers will increase the chances of the adoption of rubber farming technology to be high, amounting to 1.475 times that of farmers with low technology adoption rates.

Suggestion

Suggestions that can be given based on the results of this study are as follows:

1. Increase the number of counselingmaterials on new improved varieties (VUB) in replanting.
2. Increase the use of flash cards in agricultural counseling.
3. Development of business diversification, such as the integration of plantation crops and food crops or livestock, as an effort to increase household income.

Farmers whose age is more / mature, will increase the chances of the adoption rate of rubber farming technology to be high, amounting to 1.267 times that of farmers with low technology adoption rates

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