ANALYSIS OF FACTORS AFFECTING THE PERFORMANCE OF AGRICULTURAL EXTENSION AGENT IN LANGKAT DISTRICT

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ABSTRACT

Extension agent is one of the important factors in the agricultural process to deliver technology information and agricultural programs from government to farmers. The good performance of agricultural extension agents will have an impact on improving the performance of farmers to increase agricultural production.In Langkat Regency, the extension agent performance was not still optimal. Factors affecting the performance of the extension agent consist of internal and external factors. The objective of this study was to analyze the effect of age, formal education, work experience, distance of work area, and a number of assisted villages against the performance of extension agent in Langkat district. Questionnaires were distributed by sensus method to 49 agricultural extension agent who works in Langkat. The data used consist of primary data and secondary data. Data analysis methods used are multiple regression. The results showed that age, a distance of work area and a number of assisted villages negatively affect against the performance of extension workers; while formal education and work experience have a positive effect against extension agent performance. Age and number of assisted villages had no significant effect on extension agent performance; while formal education, work experience, and distance of the working area have a significant effect against extension agent performance.

A. INTRODUCTION

Extension agents in Indonesia were under conditions of limitations and lack of extension agents. The performance of good agricultural extension agents is our dream for the success of Indonesia's agricultural development. The current situation of farmers who are still in a lot of poverty is a feature that agricultural extension still needs to continue to improve its role in order to help farmers solve their own problems, especially in their aspects of farming thoroughly.

The performance of the agriculture extension agents was the response of individual or behavior to the work success achieved by the individual actually in an organization according to the tasks and responsibilities are given to him that was carried out effectively and efficiently based on a certain period of time in order to achieve organizational purpose [1]. The performance of extension workers must be improved again to be better, so that the cooperation of all agricultural stakeholders to make it happen.

Langkat district is one of the district in North Sumatra which has a total of 277 villages. The number of extension agent was 138 people, consisting of 59 civil servant extension workers and 79 agricultural extension assistants people. This number is also confirmed to be a shortage of agricultural extension agents compared to the number of villages, so that many of the extension agents who have agricultural extension work areas are more than one village.

The results of the evaluation in 2014 and 2015 were obtained in general, the average performance of extension workers classified as 'good'. Although there are still individuals, some of them fall into the category of 'enough', and some are included in the category of 'very good'. This can be seen in the results of evaluating the performance of agricultural extension agents and marked with the value of employee performance target for civil servants extension and extended work contract every year for agricultural extension assistants. Through this evaluation, it is expected to know the problems and potential that exist as an analysis material to improve the performance of agricultural extension agents in the future. In addition, the performance evaluation will be able to analyze the factors that influence the performance of the agricultural extension agents.

There are two factors that influence the performance of agricultural extension agents in working professionally consist of internal and external factors. Internal factors are the factors that come from the extension agent himself. Internal factors consist of formal education, training, age, motivation, utilization of extension media, and tenure or work experience of agricultural extension agents. External factors are factors that come from outside the extension agent himself. Some of the external factors of agricultural extension agent considered to

be related to the performance of agricultural extension agents are: availability of facilities and infrastructure needed, reward system, distance of work area, number of guided villages, number of assisted farmer groups, information technology, level of active participation of farmers, relationships in the organization, and support coaching and supervision [2].

B. METHODOLOGY

The location of the research was purposive in five subdistrict in Langkat district. They were Secanggang subdistrict, Sei Bingai subdistrict, Selesai subdistrict, Tanjung Pura subdistrict, and Wampu subdistrict. The reason of determining the location is because the five subdistricts are the subdistricts with the highest number of agricultural extension agents, these subdistricts are agricultural centers, the distance of the location to the district government center is not too far away.

Population in this study were 49 samples of extension agents and distributed in five district. Sampling is conducted by census of all populations, where all populations are used as samples. That is, all the extension agents in the five subdistricts were made as samples of the study, which amounted to 49 samples.

Data analysis method used was multiple regression analysis method, where this method was used to determine the effect of several independent variables on the dependent variable. The independent variables consist of age, formal education, work experience, a distance of work area, and number of guided villages. While the dependent variable is the performance of agricultural extension agents. Classical assumption test is done first before testing multiple regression analysis. Classic assumption test is done to get the BLUE regression model (Best Linear Unbiased Predicated) so that the regression equation obtained can be verified.

The way to determine the performance of the extension agent is determined by the results of performance evaluation by looking at the standard of work achievement value. Standard of work achievement value of extension agents are stated in numbers and designations as shown in Table 1 [3]

Table 1. Standard of work achievement value

Standard of Work Achievement Value	Meaning
91 up	Excellent
76-90	Good
61-75	Average
51-60	Poor
50 down	Bad

a. Model Specification

In analyzing age, formal education, work experience, distance of work area, and number of guided villages against the performance of agricultural extension agents in Langkat district, we specify a mathematical multiple regression model. The model is thus;

$$\boldsymbol{Y} = \beta_0 + \beta_1\mathbf{X_1} + \beta_2\mathbf{X_2} + \beta_3\mathbf{X_3} + \beta_4\mathbf{X_4} + \beta_5\mathbf{X_5}$$

Where :

$\boldsymbol{Y}$ = Performance of agricultural extension agent (the value of work performance)

β_0 = Intercept

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = Coefficient of age, formal education, work experience, distance of work area, andnumber of guided villages

X_1 = Age (Years)

X_2 = Formal education (years)

X_3 = Work experience (years)

X_4 = Distance of work area (km)

X_5 = Number of guided villages

b. The Classic Assumption Test

a. Normality Test

Normality test can be done by Kolmogorov Smirnov test, by looking at the significance value.

A normality test is a statistical process used to determine if a sample or any group of data fits a standard normal distribution. A normality test can be performed mathematically or graphically.

Hypothesis statements :

H_0: the data are normally distributed

H_1: the data are not normally distributed

Criteria test :

If sig Kolmogorov Smirnov < 0,05 then accept H_1 reject H_0

If sig Kolmogorov Smirnov < 0,05 then accept H_0 reject H_1

b. Multicollinearity Test

To find out whether there is multicollinearity between independent variables by looking at the value of Variance Inflation Factor (VIF) and Tolerance of each independent variable to the dependent variable. Criteria test :

Tolerance value > 0,1
Variance Inflation Factor Value < 10

c. Heteroscedasticity

Heteroskedasticity is used to examine whether there is a difference in the residual variance of the observation period to another period observation. A good regression model is a homoskedasticity or no heteroscedasticity. The method that can be used to determine whether a model is free from the heteroscedasticity by looking at the scatter plots graph.

Hypothesis Testing

a. Coefficient determination test (R square)

R-squared is a statistical measure ofhow close the data are to the fitted regression line. It is also known as the coefficient of determination, or the coefficient of multiple determination for multiple regression.The definition of R-squared is fairly straight-forward. It is the percentage of the response variable variation that is explained by a linear model. R-squared is always between 0 and 100%.

b. F Test

F statistic is a value obtainedin the regression analysis to find out if the means between two populations are significantly different. F test explained if a group of variables are jointly significant. The p-value is determined by the F statistic and is the probability of the results could have happened by chance. The P value is the probability of getting a result at least as extreme as the one that was actually observed.

Hypothesis statements:

H_0 = There is no influence between X_1, X_2, X_3, X_4, X_5 against Y significantly

H_1 = There is influence between X_1, X_2, X_3, X_4, X_5 against Y significantly

Criteria test :

If p-value< 0,05 then accept H_1 reject H_0

If p-value>0,05 then accept H_0 reject H1.

c. Individual Test (T-Test)

This test aims to assess whether the means of two groups are *statistically* different from each other. T-test also shows whether partially the independent variable affects the dependent variable. T-test explained a single variable is statistically significant.

Hypothesis statements:

H_0 = There is no influence between X_n against Y significantly

H_1 = There is influence between X_n against Y significantly

Criteria test :

If p-value< 0,05 then accept H_1 reject H_0

If p-value>0,05 then accept H_0 reject H1.

d. Regression Coefficient Test

The coefficients describe the mathematical relationship between each independent variable and the dependent variable. The sign of a regression coefficient explained whether there is a positive or negative correlation between each independent variable (X) to the dependent variable (Y). A positive coefficient indicates that as the value of the independent variable increases, the mean of the dependent variable also tends to increase. A negative coefficient suggests that as the independent variable increases, the dependent variable tends to decrease.

C. RESULT AND DISCUSSION

The result of The Classic Assumption Test

Table 2. One-Sample Kolmogorov-Smirnov Test

Test	Sig
Kolmogorov Smirnov	0.941

Table 2 gave the result that the significance value of the test is 0.941. This value is more than the value α (0.941 > 0.05), it showed that the null hypothesis (H_0) was accepted and H_1 is rejected. So it can be concluded that the data are normally distributed.

Table 3. Multicollinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
Age	0,359	2,782
Formal Education	0,750	1,334
Work Experience	0,358	2,794
The distance of Work Area	0,965	1,036
Number of guided village	0,875	1,142

Table 3 gave the result that the tolerance value of the independent variable is more than 0.1 and the VIF value is less than 10. It can be concluded that this assumption is met or there is no multicollinearity.

Heteroscedasticity chart scatter

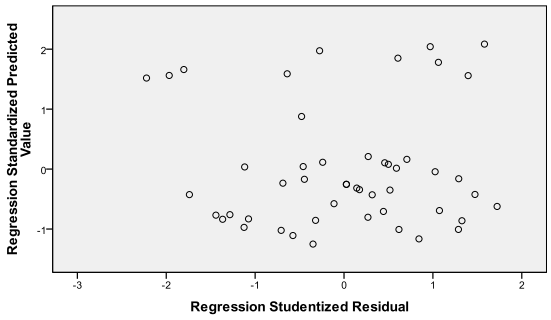

Figure 1. Scatterplot

Based on the scatterplot output above, it appears that the spots are diffused and do not form a clear specific pattern. So it can be concluded that the regression model does not occur heteroscedasticity problem.

The results of the analysis obtained using multiple regression analysis can be seen below:

Table 4. Coefficient determination test (R square)

Model	R Square
1 Regression	0.729

Table 4 gave the result that R Square value is 0.729. That is, 72.9% of the performance of the extension agent can be explained by the variables of age, formal education, work experience, a distance of work area, and a number of target villages. While the remaining 27.1% is explained by other variables not included in the model.

Table 5. F – Test

Model	$F_{calculated\ value}$	F_{table}	Sig	(α)
1 Regression	23,164	2,43	0,000	0,05

Table 5 gave the result that $F_{calculated\ value} > F_{table}$ (23,164 > 2,43) or p-value (sig) less than α (0,000 < 0,05), where a common alpha level for tests is 0.05. It showed that the null hypothesis (H_0) was rejected. The hypothesis states that there was influence between age, formal education, work experience, distance of work area, and number of guided villages against the performance of agricultural extension agents in Langkat distric.

Table 6. Partial Test (T – Test)

Model	B	$t_{calculated}$	t_{table}	Sig	(α)
(Constant)	64,345	11,133	1,681	0,000	0,05
Age	-0,151	-1,371	1,681	0,177	0,05
Formal education	1.348	4,046	1,681	0,000	0,05
Work experience	0,492	5,221	1,681	0,000	0,05
Distance of work area	-0,415	-2,879	1,681	0,006	0,05
Number of guided villages	-1,414	-1,402	1,681	0,168	0,05

Table 6 gave the result that each of independent variables which consist of age, formal education, work experience, distance of work area, and a number of guided villages. Age variable gave the result that $t_{calculated\ value} < t_{table}$ (1,371 < 1,681) or p-value (sig) more than α (0,177 > 0,05), therefore the null hypothesis (H_0) was accepted, it means that age variable did not affect against the performance of agricultural extension agents significantly. This result was not accordance by theory explained that the age

of the person is closely related to performance. The productivity of person will decrease with increasing age, because of speed, dexterity, strength, coordination declines over time, in addition to the prolonged factor of work boredom and lack of intellectual stimulation will also reduce productivity[4].

Higher education will have an effect on the level of adaptation, have wider choices in life, including in implementing extension [4]. Formal education variable gave the result that $t_{\text{-calculated value}} > t_{\text{-table}}$ (4,046 > 1,681) or p-value (sig) less than α (0,000 < 0,05), therefore the null hypothesis (H_0) was rejected, it means that formal education variable affected against the performance of agricultural extension agents significantly. This is also accordance with the opinion that the higher the level of education, there is a tendency for higher levels of knowledge, attitudes, and skills, work efficiency and more and more know ways and techniques to work better and more profitable. Thus it is suspected that the level of formal education educators has an influence on their level of performance [5].

The result of work experience that $t_{\text{-calculated value}} > t_{\text{-table}}$ (5,221 > 1,681) or p-value (sig) less than α (0,000 < 0,05), therefore the null hypothesis (H_0) was rejected, it means that work experience variable affected against the performance of agricultural extension agents significantly. This research in accordance with the previous research that works experience has a positive effect on the performance of cocoa agricultural extension agent. This is proven by partially testing obtained regression coefficients for positive value work experience variables (0.096), which means that each increase in the work experience will affect the increase in the performance of the cocoa agriculture extension agent [6].

The result of distance of work area variable that $t_{\text{-calculated value}} > t_{\text{-table}}$ (2,879 > 1,681) or p-value (sig) less than α (0,006 < 0,05), therefore the null hypothesis (H_0) was rejected, it means that the distance of the work area variable affected against the performance of agricultural extension agents significantly. This result in accordance with the opinion that the distance of the house to the office is relatively far, it forced a number of employees to sacrifice to do it. The results of the study found that the distance between home to office causes susceptible to stress, low levels of happiness, stuck in traffic, and decrease in working spirit [7].

The result of the number of guided village that $t_{\text{-calculated value}} < t_{\text{-table}}$ (1,402 < 1,681)or p-value (sig) more than α (0,168 > 0,05), therefore the null hypothesis (H_0) was accepted, it means that the number of guided village variable did not affect against the performance of agricultural extension agents significantly. The result was not accordance with the opinion that the increasing number of agricultural extension work areas, will make extension agents more difficult and limited to conducting extension activities. The travel time needed to carry out activities from one place to another will be longer and requires higher operational costs [4].

Regression Coefficient Test

We can specify the estimated model of multiple regression from table 4 is thus,

$\boldsymbol{Y}$= 64,345– 0,151 $\mathbf{X1}$+ 1,348$\mathbf{X}_2$+ 0,492$\mathbf{X}_3$– 0,415 $\mathbf{X}_4$ – 1,414 $\mathbf{X}_5$

Where :

$\boldsymbol{Y}$ = Performance of agricultural extension agent (the value of work performance)

β_0 = Intercept

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$= Coefficient of age, formal education, work experience, distance of work area, andnumber of guided villages

X_1 = Age (Years)

X_2 = Formal education (years)

X_3 = Work experience (years)

X_4 = Distance of work area (km)

X_5 = Number of guided villages

From the specifications of the model it can be concluded that relationship between each independent variable againstdependent variable. The influence of age on the performance of the extension was every increase in the age of the extension agent by 1 year, itonewould decrease the value of the performance of the extension agent by 0.151. The influence of formal education on the performance of the extension was every increase in the formal education of the extension agent by 1 year, it would increase the value of the performance of the extension agent by 1.348. The influence of work experience on the performance of the extension was every increase in the work experience of the extension agent by 1 year, it would increase the value of the performance of the extension agent by 0.492. The influence of distance work area on the performance of the extension was every increase in distance work area by 1 km, it would decrease the value of the performance of the extension agent by 0.415. The influence of number of a a guided village on the performance of the extension agent was every increase in number of the guided village by 1 village,oneit would decrease the value of the performance of the extension agent by 1.414.

D. CONCLUSION AND RECOMMENDATION

Based on the findings of this study, we conclude that age, distance of work area and number of assisted villages negatively affected against the performance of extension agents, while formal education and work experience positively affected against the performance of extension agent. Age and number of the assisted village did not affect significantly against the performance of extension agent while formal education, work experience, and the distance of the work area affected significantly against the performance of extension agent.

Therefore, the government should recruits new agricultural extension agents both civil servant extension agents, honorary extension agents, contract extension agents, or self-help extension agents to anticipate shortages due to the number of extension agent who are approaching retirement and to fulfill the mandate of Law No. 19 of 2013 which mandates that one village for one extension

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