

PERFORMANCE ANALYSIS OF FIELD AGRICULTURAL EXTENSION WORKERS IN KARO REGENCY

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Abstract

Agricultural extension as a system of empowering farmers is a non-formal education system for farming families that aims to assist farmers in improving technical skills, knowledge, developing more positive attitude changes and building independence in managing their agricultural land. The performance of an agricultural extension agent reflects his abilities and skills in carrying out the tasks he is assigned. This study aims to analyze how the performance of Field Agricultural Extension and analyze the factors that influence the performance of Field Agricultural Extension in Karo District. The analytical model used in this research is using descriptive analysis and scoring by calculating the Work Performance Value (NPK) from the Independent Evaluation Score of each extension worker to see the work performance value of the instructor and multiple linear regression analysis to see the factors that affect performance agricultural field extension in Karo District. The data used is primary data collected through direct interviews using questionnaires to selected respondents. The results showed that the work performance value (NPK) of Field Agricultural Extension (PPL) in Karo Regency was 76.14 in the good category. Factors of age, formal education, training, the number of assisted villages, the number of assisted groups have a positive and significant effect on the performance of field agricultural extension agents in Karo District, while the distance to the work area has a negative and significant effect on the performance of field agricultural extension agents in Karo District. Variable length of service has no significant and significant effect on the performance of agricultural extension workers.

Keywords: *agricultural extension, external factors, internal factors, performance.*

1. INTRODUCTION

Agricultural Extension as a farmer empowerment system is a non-formal education system for family farmers that aims to assist farmers in improving technical skills, knowledge, developing more positive attitudinal changes and building independence in managing their agricultural land. Agricultural extension as an intermediary in the process of technology transfer, the main task and services of extension is to facilitate the learning process, provide technological information, input information and input - output prices as well as market information (Pusat Penyuluhan Pertanian Badan Penyuluhan dan Pengembangan SDM Pertanian Kementerian Pertanian, 2015). Agricultural programs, technical meetings, exhibitions, and farmer courses. In addition, in the opinion of (Wulandari et al., 2021) the responsibilities of extension workers as counselors, organizers, technicians, liaisons, and catalysts of reform are more than enough for farmers. Agricultural extension in Indonesia currently has a legal umbrella in agricultural development since the issuance of Law No. 16/2006 on Agricultural, Fisheries and Forestry Extension System (SP3K Law). The birth of this law can be interpreted as an effort to realize the revitalization of agriculture, where agriculture is seen broadly covering agriculture, fisheries and forestry. The SP3K Law can be used by the central and regional governments in carrying out agricultural extension activities in Indonesia. (Abdullah, 2018) states that until now, extension is mainly seen as a function, very important in helping the development of knowledge and transfer of technology between farmers and researchers, or among the farmers themselves, the competence of civil servant extension workers can be done through education and training. According to (Sundoko et al., 2021) the performance of agricultural extension workers needs to be improved by achieving the results of the work of extension workers in carrying out the tasks assigned to them, based on ability, experience and seriousness and the use of time. Training is a planned effort to facilitate learning about work

Performance Analysis Of Field Agricultural Extension Workers In Karo Regency

Ripka Prianti Ginting, Rahmanta , Salmiah, Terkelin Surbakti

related to the knowledge, skills and behavior of trainees (Jamil et al., 2021). The performance of extension workers will be good if the extension workers have implemented elements consisting of loyalty and high commitment to the task of preparing extension activities, discipline and creativity in carrying out extension activities, cooperation with farmers and related parties in the development of farming, leadership that is a role model, good personality, honest and objective in fostering farmers, and responsibility for duties. The successful performance of agricultural extension workers is influenced by several factors, namely characteristics including (age, education, training, work experience, working area distance, number of fostered villages, number of fostered farmer groups), competence (ability to plan extension, ability to evaluate and report, ability to develop extension), motivation (need for achievement, need for power, need for affiliation). One of the government's efforts to improve agricultural development is to maximally empower agricultural extension workers by determining the main tasks and functions of agricultural extension workers (Ajaren, 2013).

LITERATURE REVIEW

Agricultural Extension

Agricultural extension workers as motivators in the delivery of knowledge in agricultural development are expected to be educators for farmer groups in terms of learning and can facilitate farmers in instilling an understanding of attitudes towards the application of modern agricultural technology from government program policies (Sundari et al., 2021). Agricultural extension workers in their activities as agents of change in development always provide direction that can awaken the awareness of farming business actors. Extension is one of the non-formal education provided to farmers in the form of assistance to increase their productivity in farming (Jaya, 2018).

Agricultural Extension Performance

Performance is a person's success in carrying out tasks, the results work that can be achieved by a person or group of people in an organization in accordance with the authority and responsibility of each or organization in accordance with their respective authorities and responsibilities or about how a person is expected to function and behave in accordance with the duties that have been charged to him and the quantity, quality and time with the tasks that have been assigned to him as well as the quantity, quality and time used in carrying out the task used in carrying out the task (Marbun, et al., 2019). The performance of agricultural extension workers is a manifestation of the implementation of the main tasks of an agricultural extension worker in accordance with the rules that have been set. Agricultural Extension workers can be said to have good performance if they have carried out main tasks and functions according to certain standards such as preparing, implementing, evaluating, reporting and developing activities extension (Latifarruhma et al., 2019).

Farmer's Behaviour

Knowledge is more easily accepted when the source of information and the way it is delivered are good. Source information or the availability of adequate information but not coupled with the right way of delivery will hinder the entry of information to farmers. As one aspect of farmer behavior, knowledge becomes an individual's (farmer's) ability to recall all the material learned. The existence of good knowledge about something, will encourage behavior on the part of the individual, where knowledge of the benefits of an individual. Extension as a farmer mentor does not have to change the way of farming, but the main thing to do is to change the farmer's behavior into the right one. The process of changing behavior involves aspects of knowledge, skills and mental attitudes so that they know and are able to implement changes in their farming business in order to achieve welfare (Inten & Sekar, 2017).

2. IMPLEMENTATION METHOD

The research was conducted in Karo Regency. The determination of the research area was carried out by purposive sampling, which is determined intentionally. The selection of the Karo Regency area was carried out because 95% of the Karo Regency area is agricultural land and 85% of the livelihoods of the Karo Regency community are farmers. The population in this study were civil servant agricultural extension workers, P3K agricultural extension workers, THL-TBPP agricultural extension workers, and regional honor agricultural extension workers who had a work area in Karo Regency, which was 130 people. From this population, 77 people were taken. Drawing a sample from population data begins with determining the sample size using the Slovin formula, namely: The nine indicators contain 16 questions, and each question is scored using a scale of 1 to 5. Scale 1 indicates the lowest performance and scale 5 indicates the highest performance. The sum of the PPL performance measurement scores is called the Self Evaluation Score (NES) which is a measure of work performance. The procedure for calculating PPL performance is as follows:

$$WPS = (\text{Total NES})/80 \times 100$$

Description:

WPS : Work Performance Score
 Total NES : Total Self Evaluation Score. The Field Agricultural Extension Worker WPS standard is expressed in numbers as set out in Table 1.

Table 1. Standardized Work Performance Score for Field Agricultural Extension Workers

No	Work Performance Score (WPS)	Category of Work Achievement Score (WAS)
1	>91	Very good
2	76-90	Good
3	61-75	Fair
4	51-60	Poor
5	<51	Poor

Source: MOA No. 91 of 2013 on Guidelines for Performance Evaluation of Agricultural Extension Workers

The purpose of multiple linear regression analysis is to predict the value of the independent/response variable (Y) if the value of the independent/predictor variables (X1, X2, ..., Xn) is known. In addition, it is also to determine the direction of the relationship between the independent variable and the independent variables. The multiple linear regression equation is mathematically (Porter, 2012):

Use of multiple linear regression formula in the first objective (Gujarati, 2012):

$$Y = \alpha_0 + \alpha_1 \text{Ln}X_{1it} + \alpha_2 \text{Ln}X_{2it} + \alpha_3 \text{Ln}X_{3it} + \alpha_4 \text{Ln}X_{4it} + \alpha_5 \text{Ln}X_{5it} + \alpha_6 \text{Ln}X_{6it} + \alpha_7 \text{Ln}X_{7it} + \mu_i$$

Description :

Y = Agricultural Extension Performance (Internal)
 X1 = Age
 X2 = Formal education
 X3 = Training
 X4 = Tenure/work experience
 X5 = Distance of working area
 X6 = Number of assisted villages
 X7 = Number of assisted farmer groups
 $\alpha_1-\alpha_7$ = Regression Coefficient
 i = Number of Observations
 t = Number of samples studied

Performance Analysis Of Field Agricultural Extension Workers In Karo Regency

Ripka Prianti Ginting, Rahmanta , Salmiah, Terkelin Surbakti

3. RESULTS AND DISCUSSION

To find out the magnitude of the parameters of each variable analyzed, a multiple linear regression analysis model was used (multiple regression linear analysis). The effect of each variable can be expressed in the form of the following equation:

Performance Of Agricultural Extension Workers In Karo District

Along with the birth of Law No. 16 of 2006 concerning Agricultural, Fisheries and Forestry Extension System will further strengthen the existence of extension as the spearhead of agricultural development. Extension as an agent of change is to assist farmers and their families in overcoming farming problems and improving their welfare. In accordance with MOA No. 91 of 2013, indicators of performance assessment of agricultural extension workers are carried out on three activities, namely preparation of agricultural extension, implementation of agricultural extension and evaluation and reporting of agricultural extension workers, all of which are part of the 9 indicators of success of extension workers. According to (Titiharu et al., 2021) the performance of agricultural extension workers is evaluated to provide feedback on the output or work performance of agricultural extension workers. Agricultural extension workers will receive feedback on their performance goals and objectives, planning, and implementation methods.

The process of evaluating, reviewing, and measuring the performance of agricultural extension workers can also be included in performance appraisal. Performance appraisal is a reflection that an individual has been able to perform the duties and functions mandated by the institution. In principle, performance appraisal is the process of categorizing the work of each individual. Performance can be defined as the result of a job that can be seen or felt. Performance can be measured through work competency standards and indicators of success achieved by a person in a position/job (Sudiadnyana & Adi Putra, 2019). The number of parameter measurement values obtained by agricultural extension workers is called the Self Evaluation Value (NEM), which is a measure of the work performance of agricultural extension workers. The WAS standard for agricultural extension workers is expressed in numbers and designations. The results of the measurement of the performance of Field Agricultural Extension Workers in Karo Regency can be seen in Appendix 2. While the results of the calculation of the Self Evaluation Value (NEM) and Work Achievement Value (NPK) of Field Agricultural Extension Workers in Karo Regency fiber average value can be seen in Table 2.

Table 2. Indicators of Work Achievement Score of Field Agricultural Extension Workers

No	Value (WAS)	Category (WAS)	Value of Work Achievement (WAS) of Field Agricultural Extension Workers in Karo District
1	>91	Very good	
2	76-90	Good	76.14 (Good)
3	61-75	Fair	
4	51-60	Poor	
5	≤ 50	Poor	

Source: data processed 2022

Table 2 shows that based on the results of research in the field, the average Work Achievement Score (WAS) of Field Agricultural Extension Workers in Karo Regency is 76.14 with a good category. This shows that the 9 performance indicators of agricultural extension workers as part of the evaluation of extension worker performance can be carried out well by extension workers in Karo Regency. These results show that the extension system run so far in Karo Regency has been running well and implemented in the field well so that it has an impact on good performance results as well. The activity of evaluating and reporting the results of implementation has gone well. The performance of field agricultural extension workers in Karo Regency is in the good category, indicated by the increased participation of agricultural extension workers in Karo Regency is high so that the performance of field agricultural extension workers is in the good

category. The performance of extension workers is a combination of ability, effort, and opportunity which is assessed from the results of their work. To find out the 9 indicators of the assessment of the work performance of extension workers for each item can be presented in the following table 3:

Table 3. Performance of Field Agricultural Extension Workers per Activity Indicator in Karo District

No	Indicator	SES	Maximum Value	WAS (%)	Criteria
1	Compilation of regional potential data	47.92	47.92	100.00	Very good
2	Compilation of Agricultural Extension Program	41.43	47.92	86.45	Good
3	Compilation of Annual Work Plan (RKT) of Agricultural Extension Workers	46.62	47.92	97.29	Very good
4	Dissemination of agricultural technology information to the main actors	36.39	47.92	75.93	Good
5	Growing Farmer Institutions	40.26	47.92	84.01	Good
6	Increased Capacity of Main Actors	35.37	47.92	73.80	Fair
7	Increased access of main actors to market information, technology, infrastructure and financing	38.31	47.92	79.95	Good
8	Increased productivity and business scale of main actors	32.73	47.92	68.29	Fair
9	Increased income of main actors	32.34	47.92	67.48	Fair

Source: data processed 2022

Based on Table 3, it can be seen the average percentage of Work Performance Value of Agricultural Extension Workers in Karo Regency based on 9 indicators of performance assessment of agricultural extension workers. There are 2 indicators that have very good NPK value criteria, namely the compilation of regional potential data and the compilation of annual work plans for Agricultural Extension Officers. This shows that these indicators have been implemented very well by field agricultural extension workers in Karo Regency. There are 4 indicators that have good NPK score criteria, namely the preparation of agricultural extension programs, the dissemination of agricultural technology information to the main actors, the growth of farmer institutions and the increasing access of main actors to market information, technology, infrastructure and financing. While those that have sufficient NPK value criteria, there are 3 indicators, namely increasing the capacity of the main actors, increasing the productivity and business scale of the main actors and increasing the income of the main actors. It is still necessary to improve the performance of agricultural extension workers in Karo Regency, especially against performance indicators with sufficient values.

Factors Affecting The Performance Of Agricultural Extension Workers In Karo Regency

Factors affecting the performance of field agricultural extension workers in Karo Regency were analyzed using multiple linear regression with the SPSS application. The steps in this analysis are classical assumption tests, the regression results are Best Linear Unbiased Estimator (BLUES). After the classical assumption criteria are met, the coefficient of determination and correlation are analyzed to determine the role of the independent variable on the dependent variable. Then the f test (simultaneous test) is carried out to see the effect of all independent variables together on the dependent variable. Then the t test (partial test) to see the effect of each independent variable on the dependent variable.

Test Goodness of Fit

The fit test aims to test the feasibility of a research model consisting of the Simultaneous Test (F-test), Partial Test (T-test) and the coefficient of determination (R2). The results of the regression test of factors affecting the performance of Field Agricultural Extension Workers in Karo Regency can be seen in Table 4.

Table 4. Regression Test Results of Factors Affecting the Performance of Field Agricultural Extension

Independent Variable	Regression Coefficient	t- statistics	Prob.	Description
Constant	1.867	2.611	0.011	
Age (X1)	0.324	2.803	0.007	Significant
Formal Education (X2)	0.240	2.426	0.018	Significant
Training (X3)	0.190	1.967	0.043	Significant
Length of Service (X4)	-0.005	-0.052	0.959	Not Significant
Working Area Distance (X5)	-0.230	-2.295	0.025	Significant
Number of Assisted Villages (X6)	0.290	2.519	0.014	Significant
Number of Assisted Farmer Groups (X7)	0.432	3.378	0.001	Significant
R-Squared = 0.762				
F-statistic = 4.731				
Prob(F-statistic) = 0.000				

Source: data processed 2022

Table 4 is the result of multiple linear regression test to analyze the factors that influence the performance of Field Agricultural Extension Workers in Karo Regency. The multiple linear regression equation is as follows:

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 X_6 + \alpha_7 X_7 + \mu$$

$$Y = 1.867 + 0.324 X_1 - 0.240 X_2 + 0.190 X_3 - 0.005 X_4 - 0.230 X_5 + 0.290 X_6 + 0.432 X_7 + \mu$$

Description:

- Y : Performance of Agricultural Extension Workers Field
- β_0 : Coefficient of Intercept
- $\beta_1 - \beta_6$: Regression Variable Coefficient
- X1 : Age (Year)
- X2 : Formal education (Years)
- X3 : Training (times/year)
- X4 : Working Period (Years)
- X5 : Distance of Working Area (Km)
- X6 : Number of Assisted Villages (Village)
- X7 : Number of Assisted Farmer Groups (Farmer Groups)
- μ : Random error

1. Coefficient of Determination (R2)

The results of the analysis show that the coefficient of determination or R² is 0.762, which means that 76.2% of the variation in the variable factors affecting the performance of Field Agricultural Extension Workers in Karo Regency can be explained by the variation in the variables of Age (X1), Formal Education (X2), Training (X3), Tenure (X4), Working Area Distance (X5),

Number of Assisted Villages (X6), Number of Assisted Farmer Groups (X7) and the remaining 23.8% is explained by other variables not included in the model.

2. Concurrent Test (F-test)

The regression test results table shows that the F-statistic of 4,731 is greater than the F-table of 2,145 with a significance of 0.000 at the $\alpha = 0.05$ level. This shows that the significance value of F is smaller than the probability value ($0.000 < 0.05$), so there is an influence of the independent variables simultaneously on the dependent variable. This means that the independent variables, namely Age (X1), Formal Education (X2), Training (X3), Tenure (X4), Working Area Distance (X5), Number of Assisted Villages (X6), Number of Assisted Farmer Groups (X7) simultaneously have a significant effect on the dependent variable, namely the Performance of Field Agricultural Extension Workers in Karo Regency.

3. Partial Test (T-test)

Partial Test is used to determine the partial effect or influence of each between the independent and dependent variables by looking at the t value at a significance level of 5% significant to the performance of agricultural extension workers.

DISCUSSION

The Effect of Age on the Performance of Field Agricultural Extension Workers in Karo Regency

The regression coefficient value of the Age variable (X1) has a positive sign with a regression coefficient value of 0.324. This shows that partially age has a positive and significant effect on the performance of field agricultural extension workers in Karo Regency. The positive regression coefficient shows that if age increases every year, it will increase the performance of field agricultural extension workers in Karo Regency by 0.324 percent. In general, young employees are physically stronger, dynamic and creative but tend to get bored quickly, are absent a lot and are less responsible (Wuriani; Zakso, A; Suib, 2014) This is because young people are still very likely to switch to other jobs that are considered better. A person's productivity does not only depend on physical skills but is also influenced by experience.

The Effect of Formal Education on the Performance of Field Agricultural Extension Workers in Karo Regency

The regression coefficient value of the formal education variable (X2) has a positive sign with a regression coefficient value of 0.240. This shows that partially formal education has a positive and significant effect on the performance of field agricultural extension workers in Karo Regency. The positive regression coefficient shows that if formal education increases every year, it will increase the performance of field agricultural extension workers in Karo Regency by 0.240 percent. The level of education of extension workers affects performance supported by the results of research (Sugiarta et al., 2017) which states that formal education attended by extension workers can affect the performance of extension workers, because with formal education an extension worker can improve his performance in accordance with his main duties and functions.

The Effect of Training on the Performance of Field Agricultural Extension Workers in Karo Regency

The regression coefficient value of the training variable (X3) has a positive sign with a regression coefficient value of 0.190. This shows that partially training has a positive and significant effect on the performance of field agricultural extension workers in Karo Regency. The positive regression coefficient shows that if training increases every year *ceteris paribus*, it will increase the performance of field agricultural extension workers in Karo Regency by 0.190 percent. This illustrates that the performance of agricultural extension workers in Karo Regency is supported by the training activities they have participated in both technical and non-technical in order to produce agricultural extension workers who are resilient and professional, creative,

Performance Analysis Of Field Agricultural Extension Workers In Karo Regency*Ripka Prianti Ginting, Rahmanta , Salmiah, Terkelin Surbakti*

innovative, credible and have a global outlook. The results of the interviews show that the types of training conducted include those related to the development of patterns, systems and methods of implementing extension, developing networks of cooperation to increase agricultural production, strategies for developing future agricultural extension and improving the quality and quantity of agricultural extension workers. One of the causes of the decline in the performance of extension workers is the lack of attention of agencies in providing training as needed (Turere, 2013).

The Effect of Tenure on the Performance of Field Agricultural Extension Workers in Karo Regency

The regression coefficient value of the Working Period variable (X4) has a negative sign with a regression coefficient value of -0.005, but has no effect on the performance of field agricultural extension workers in Karo Regency. This is indicated by the probability value of the tenure variable which is greater than 0.05 ($0.959 > 0.05$), so it is concluded that there is no effect of tenure on the performance of field agricultural extension workers in Karo Regency. The length of service does not show a significant relationship with the successful performance of an extension worker because the length of service only shows how long an extension worker has been guiding fostered farmers. This is because the recruitment of agricultural extension workers was carried out almost simultaneously in 2007-2009 for THLTBPP who had switched their employment status to ASN P3K. While the acceptance of civil servant extension workers was carried out last in 2011 and only received 3 extension workers. (Hernanda et al., 2015) stated that there are two benefits in the length of service, namely, increased knowledge and experience and increased confidence in counseling. Knowledge and experience are obtained from clients, superiors, fellow extension workers and various sources of knowledge that are sometimes not obtained from school. Information transactions are absolute things that extension workers do to be able to increase their knowledge and experience to be much more useful.

The Effect of Working Area Distance on the Performance of Field Agricultural Extension Workers in Karo Regency

The regression coefficient value of the variable Working area distance (X5) has a negative sign with a regression coefficient value of -0.230. This shows that partially the distance of the working area has a negative and significant effect on the performance of field agricultural extension workers in Karo Regency. The negative regression coefficient indicates that if the distance of the working area increases every 1 Km, it will reduce the performance of field agricultural extension workers in Karo Regency by 0.230 percent. This is in accordance with research (Andhika, 2017) which states that the distance of the working area has a negative effect on the performance of agricultural extension workers in Bantul Regency, this is because the remote working area makes the spirit of extension workers' performance decrease and supporting facilities are inadequate.

The Effect of the Number of Assisted Villages on the Performance of Field Agricultural Extension Workers in Karo Regency

The regression coefficient value of the variable Number of Assisted Villages (X6) has a positive sign with a regression coefficient value of 0.290. This shows that partially the number of assisted villages has a positive and significant effect on the performance of field agricultural extension workers in Karo Regency. The positive regression coefficient shows that if the number of assisted villages increases per farmer group/year, it will increase the performance of field agricultural extension workers in Karo Regency by 0.290 percent. This is because the facilities provided to extension workers are adequate, such as motorbikes for each extension worker, making it easier for extension workers to visit all existing fostered villages more quickly, so that the number of villages and farmer groups can still be reached by extension workers properly so that it does not affect their performance. Institutions that automatically accommodate the re-implementation of the Internship program in Japan. Both institutions, especially KTNA, have a strategic role in national agricultural development (Syahyuti et al., 2016).

The Effect of the Number of Assisted Farmer Groups on the Performance of Field Agricultural Extension Workers in Karo Regency

The regression coefficient value of the variable number of assisted farmer groups (X7) has a positive sign with a regression coefficient value of 0.432. This shows that partially the number of assisted farmer groups has a positive and significant effect on the performance of field agricultural extension workers in Karo Regency. The positive regression coefficient shows that if the number of fostered farmer groups increases by farmer groups / year, it will increase the performance of field agricultural extension workers in Karo Regency by 0.432 percent. The results of this study are in accordance with research (Mahyuddin et al., 2018) which states that the assisted farmer group has a positive effect on the performance of agricultural extension workers in Deli Serdang Regency. This shows that extension workers have a great responsibility to their fostered farmers in terms of carrying out their main duties. The number of fostered farmers is a factor that has a major influence on the performance of agricultural extension workers, because the more the number of fostered farmers the more demanded agricultural extension workers who perform well.

4. CONCLUSION

The performance of Field Agricultural Extension Workers in Karo Regency is categorized as good. This shows that agricultural extension workers have carried out their main duties and functions in accordance with the standards that have been set. Age, formal education, training, number of fostered villages, number of fostered groups have a positive and significant effect on the performance of field agricultural extension workers in Karo Regency while the distance of the working area has a negative and significant effect on the performance of field agricultural extension workers in Karo Regency. The tenure variable has no significant effect.

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Performance Analysis Of Field Agricultural Extension Workers In Karo Regency

Ripka Prianti Ginting, Rahmanta, Salmiah, Terkelin Surbakti

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