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THE ROLE OF AGRICULTURAL EXTENSIONIST ON THE PRODUCTIVITY OF COFFEE FARMING

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ABSTRACT

Extension officers have a very important role, namely as a non-formal learning tool that provides knowledge on how to run a farm that can help improve the quality of farmers, skills, and profit income in farming. Therefore, research was conducted related to the role of agricultural extension agents on farming and the relationship between the role of agricultural extension agents on productivity. The purpose of this study is to determine the role of agricultural extension workers as facilitators, dynamists, consultants, organizers, analyzers in coffee farming. And the relationship between the role of agricultural extension agents on farming productivity using a descriptive quantitative method of measuring the Likert scale and rank correlation test to analyze the relationship between the role of agricultural extension agents and productivity. The sample size used was 32 with a sampling technique, namely the saturated sample contained in Non Probability Sampling. The results obtained by the role of agricultural extension agents in coffee farming agricultural extension agents as facilitators were 3.56 Medium categories, extension agents as dynamicators 3.29 Medium categories, extension agents as consultants 3.53 High categories, extension agents as organizers 3.61 High categories and extension agents as analyzer of 2.99 Medium category. Extension agents with a high category in coffee farming in weak sugih namely the role of extension agents as consultants and as organizers. for extension agents as facilitators, dynamists and analyzers, scores in the Moderate category are obtained. As for the rank correlation analysis test, it is used to analyze the relationship between the role of extension workers and productivity. The results show that there is a relationship with a correlation value of 0.383, with a low correlation criterion.

Keywords: The Role of Agricultural Extension, Productivity, Coffee Farming.

INTRODUCTION

The agricultural sector is the main base of the national economy in Indonesia. As an agricurtural country, the agricultural sector is a very important aspect of nationaal defense and food sovereignty. The crop sub-sector, which is a part of the agricultural sector, plays an important role in development (Ansar & Fathurrahman, 2018; Elly et al., 2020; Sulaksana, 2020). Agricultural extension is an effort to create a conducive environment to increase food sovereignty. Cultivation sub-sector is a part of the agricultural sector, playing an important role in the development of the country (Sumardjo et al., 2022). Agricultural extension is an effort to create a conducive climate to help farmers and their families develop to become dynamic and able to improve their lives and livelihoods on their own and ultimately be able to help themselves (Jamal et al., 2014; sulaksana, 2021)

According to UUD No. 6 of 2006 The agricultural, fishery and forestry extension system, hereinafter referred to as the agricultural extension system, is an overall series of activities that building the capacity, knowledge, skills and attitudes of the key people and business entities through counsulting services. Agricultural, fishery and forestry extension hereinafter referred to as agricultural extension, is the learning process for agricultural actors and businesses so that they are willing and able to help and organize themselves to access market information in order to improve productivity, business efficiency, income and profit is and raises awareness about the conservation of environmental functions.

West Java province is one of the coffee producing places in Indonesia, besides tea, coffee is one of the main food crop of the plantation in West Java. The West Java Province Statistical Agency states that in terms of area of plantation development in West Java, coffee ranks fifth after coconut, tea, rubber and cloves. Coffee production in West Java is relatively increasing every year(Indra et al., 2021; Tenriawaru, 2020). Lemahsugih District is one of the coffee centers in Majalengka Regency with an area of 209 Ha, the types of coffee cultivated are Robusta and Arabica coffee with an area of 24.39 Ha of Arabica coffee plantations producing 1.42 tons of raw material production, 0.34 tons of processed products, and achieved an average production of 0.10 tons/ha.

Increased productivity will make a growing and sustainable business. Therefore, one of the factors that influence farming productivity is the quality of farmer resources because farmers are actors who are directly related to their farming business. Therefore, there is a need for government efforts to improve the quality of farmers through empowering farming communities such as agricultural counselling. The productivity of processed coffee products in Lemahsugih District in 2020 is 2,484 kg/ha, while in 2021 processed coffee productivity has decreased by 2,236 kg/ha (Indra et al., 2021).

Lemahsugih Village is one of the areas where farmers cultivate coffee plantations. The low awareness of farmers' knowledge and skills in

understanding farming development so that the skills in running their farming are not optimal causing low coffee production so that productivity also decreases. In Lemahsugih village, extension workers are active in carrying out activities in the form of meetings with farmer groups to exchange ideas and provide knowledge for farmers to overcome various problems, one of which is expected to increase farmer production and increase productivity.

In this study, there are two formulations of the problem, what is the role of agricultural extension agents in coffee farming for the Sugih Jaya farmer group, and whether there is a relationship between the role of agricultural extension workers and the productivity of coffee farming for the Sugih Jaya farmer group. The first formulation aims to describe the role of agricultural extension workers in coffee farming in the Sugih Jaya farmer group and to analyze the relationship between the role of agricultural extension workers and the productivity of coffee farming in the Sugih Jaya farmer group. Then in this study there are three uses for researchers, so that they become part of the learning process, add insight and knowledge. For extension agents, it becomes an evaluation material for extension workers in carrying out their duties. And for academics, it is expected to be useful and used as a reference for further research.

Hypothesis

H_0 : there is no relationship between the role of extension officer and the coffe yield of the Sugih Jaya farmer group.

H_1 : there is a relationship between the role of agricultural extension officer and the coffee productivity of the production group Sugih Jaya.

METHODOLOGY

The study was carried out in Lemahsugih village, Lemahsugih district, Majalengka province. The study period will last from October 2022 to June 2023, from the preparation phase, field data collection, data processing and analysis, to the reporting phase. The data types used include primary data and secondary data. Primary data was collected through direct interviews with farmers (respondents) using a list of questions (questionnaire). Secondary data are obtained from studies by libraries, departments or agencies involved in the research.

This study used a survey method where the research was selected purposively. The population in this study were coffee farmers in the Sugih Jaya farmer group which consisted of 32 members of the coffee respondent group. The sample was taken as a whole, i.e. 32 coffee farmers were used as respondents with a saturated sampling technique. Sampling was carried out using the saturated sampling technique found in *Non-Probability Sampling*.

Validity test

According to (Dwi Priyatno, 2014) the validity test is used to measure the accuracy of a statment in the questionnaire to be asked of the respondents. The calculation of the validity test in this study uses the Pearson correlation method by testing the significance value as follows :

1. If the significance value shows <0.05, the statement item is said to be valid
2. If the significance value is > 0.05, the statement item is said to be invalid

Reliability test

According to (Dwi Priyatno, 2014) reliability test is performed to determine the stability or consistency of the measurement tools, usually using a questionnaire, if the Cronbach alpha reliability coefficient is > 0.6, then the statements used to measure each variable is reliabel.

To answer the first research objective, specifically, what is the role of agricultural extensionist for coffee growing in Sugih Jaya's production group. To complete the construction of the first problem, the data is explained descriptively using a Likert scale to measure the attitudes, opinions, and perceptions of a person or group of people about the phenomenon of particular group of people (Midega et al., 2016). The questionnaries measured the role of extension officers in coffee growing in the group of farmers Sugih Jaya in Lemahsugih Village using one of five alternative models (scale 5):

Table 1. Model Alternative Scale

No	Information	Score
1	Strongly agree	5
2	Agree	4
3	Disagree	3
4	Don't agree	2
5	Strongly Disagree	1

With the testing criteria for the level of the role of agricultural extension agents, it is assessed as follows:

Table 2. Role intervals

Interval	Role Level
1 – 1,80	Very low
1,80 – 2,60	Low
2,60 – 3,40	Currently
3,40 – 4,20	Height
4,20 – 5,00	Very high

To analyze the second goal, namely the relationship between the role of agricultural extension workers and coffee productivity, the test was performed using correlation analysis *rank spearman* with the following formula: (Siegel, 1997)

$$Rs = 1 - 6\ 1\ d2i/n\ (n2\text{-}1)$$

Information :
Rs = spearman rank correlation coefficient
6 = constant number
d^2 = the difference between the rank pairs
n = the number of rank pairs

To test the level of significance, the student t test was used because more than 10 samples were taken (N> 10). Decision making criteria:

1. If r spearman > r table then H0 is rejected, meaning that there is no significant relationship between the role of agricultural extension workers and the productivity of coffee farming
2. If r Spearman ≤ t table then H1 is accepted, meaning that there is no significant relationship between the role of agricultural extension workers and the productivity of coffee farming.

According to (Siegel, 1997), the criteria for the correlation coefficient are as follows:

Table 3. Correlation Coefficient Interval

Coefficient Intervals	Classification
0,000 – 0,199	Very low
0,200 – 0,399	Low
0,400 – 0,599	Currently
0,600 – 0,799	Strong
0,800 – 1,000	Very strong

In this study the authors used statistical tests with a significance level of 0.05 or a 95% confidence level with independent criteria (df).

RESULTS AND DISCUSSION

Characteristics of Respondents

Characteristics based on gender. Gender of respondents (farmers) in this study can be seen in Table 4.

Table 4. Characteristics by Gender

No	Gender	Number Of People)	Percentage (%)
1.	Man	32	100%
2.	Woman	-	-
	Amount	32	32

Source: Primary Data, (2023).

Based on Table 4 most of the respondents were male with a percentage of 100%, there were no female members in the Sugih Jaya farmer group. This is because most women work as housewives.

Table 5. Characteristics based onAge.

No.	Age	Number of people	Percentage (%)
1.	18 – 20	1	31,2
2.	21 – 30	2	6,25
3.	31 – 40	5	15,6
4.	41 – 50	9	28,1
5.	51 – 60	7	21,8
6.	> 61	8	25
	Amount	32	100

Source: Primary Data, (2023).

Table 5 shows that the Sugih Jaya farming group is dominated by farmers aged 41-50 years with a percentage of 28.1. And for the lowest age of farmers, so farmers are aged 18-20 years, with a percentage of 3.12. This means that on average the coffee farmers who are members of the Sugih Jaya farmer group are included in the productive farming group, because a person's work ability is strongly influenced by the age factor.

Table 6. Characteristics Based On Level Of Education

No.	Level of education	Number of people	Percentage (%)
1.	Elementary School	15	46,875
2.	Junior High School	8	25
3.	High School	8	25
4.	D3	0	0
5.	S1	1	3,12
6.	Other	0	0
	Amount	32	100

Source: Primary Data, (2023).

Based on Table 6, it can be seen that the education level of the Sugih Jaya farmer group is mostly basic education, namely 15 people. The lowest educational level of the S1 respondent is 1 person. From the general level of education the respondent has the highest basic education, farmers realize that the role of extension workers is very important for their farmer groups in order to renew extension activities.

Test the Role of Agricultural Extension Instruments

Validity test

Calculation of the validity test in this study used the Pearson correlation method by looking at the significance contained in the significance value table

<0.05 with the calculation concluded that the agricultural extension agent role variable was valid.

Reliability test

A variable is said to be reliable or reliable if the answers to the questions are always consistent, calculates its reliability using a the *Alpha Cronbcah's* formula then obtain the value of Cronbach alpha as below.

Table 7. Reliability test

Variable	Cronbach alpha
The role of agricultural extension workers	0,792

Source: SPSS Calculations (2023).

It can be concluded that the reliability test of the question items on the role of extension agents is reliable because*cronbach alpha* > 0.60.

The Role of Agricultural Extension in Coffee Farming in the Sugih Jaya Farmer Group

The role of agricultural extension workers in this study can be seen from five variable factors, namely facilitators, dynamists, consultants, organizers and analysts. Based on the calculations of the likert scale on the respondents' feelings about the role of the extension, the following results can be obtained :

1. Respondents' Perceptions of Extension As Facilitators

Based on table 8, the extension worker as a facilitator is in the medium category, because the respondents' perceptions indicate that the role of the extension worker in holding meetings is rare. Extension officers in providing information and directions show that field counseling in providing information is very good with the result of the formation of the Sugih Jaya farmer group. Material according to the needs of farmers is very good, seeing the meetings between farmers and agricultural extension workers. The extension worker provides a complete production input to see the running of the program provided by the extension worker regarding the distribution of subsidized fertilizers.

Table 8. Role of Extension As Facilitator

Facilitator	Mark	Category
Arrange a meeting	2,87	Currently
Provide information and directions	3,25	Currently
Material according to the needs of farmers	3,32	Currently
The instructor provides complete input	3,56	Height
Amount	12,995	
Mean	3,24	Currently

2. Respondents' Perceptions of Extension As a Dynamicator

Based on table 9, the instructor as a dynamist is in the moderate category. Looking at the respondents' perceptions, it shows that cooperative meetings between farmer groups conducted by extension agents are of a high category, seeing that there are forums between farmer groups that are held, but not all members of the farmer groups participate. Extension agents are active in taking care of members of the low category, seeing the small number of agricultural extension workers which causes it to be increased so that farmer groups can easily develop their farming businesses. Extension agents apply farming methods to each member of the category, seeing that farmers do not know about farming methods and solving problems related to pests and diseases in the field. The extension worker guided the preparation of the RDKK (Definitive Design of Group Needs) in view of the distribution of subsidized fertilizers to farmers.

Table 9. Role of Extension As a Dynamicator

Dynamist	Mark	Category
Collaborative meetings between farmer groups	3,53	Height
Actively taking care of members of farmer groups	2,40	Low
Apply farming methods to each member of the farmer group	2,93	Currently
Guiding in the preparation of the RDKK	4,31	Height
Amount	13,17	
Mean	3,29	Currently

3. Respondents' Perceptions of Extension As Consultants

Based on table 10 extension workers as consultants are in the high category. Seeing the respondents' perceptions regarding extension agents holding consultations is quite good because extension agents invite farmers to discuss the problems they face. Extension officers introduced new technology to see that there were some farmers who had not implemented machines in their farming fields.

Table 10. Role of Extension As Consultants

Consultant	Mark	Category
Hold consultations/discussions	3,18	Currently
Introducing new technology	2,93	Currently
Linking farmer groups with related agencies/institutions	3,87	Height
Give satisfaction every counseling	4,15	Height
Amount	14,13	
Mean	3,53	Height

Extension officers connected farmer groups with agencies to see that there was assistance and direction regarding the distribution of subsidized fertilizers.

According to extension workers, extension workers provide satisfaction for each counseling session. In carrying out their duties, extension workers are able to open discussion forums to exchange ideas between farmers and extension workers.

4. Respondents' Perceptions of Extension As Organizers

Based on Table 11 extension workers as high category organizers. Seeing that according to the respondent the extension worker helped the activity well indicating that there was an extension visit to the farmer. The extension worker led each activity seeing that according to some respondents there were often regular meeting activities. Extension officers lead but not every activity can be seen from the existence of extension meetings with farmers which are not carried out during discussion forums but extension workers are able to visit farmers in the fields. Extension agents develop it so that it functions as a teaching and learning class seeing the interaction between extension agents and farmers in discussion forums.

Table 11. Role of Extension As an Organizer

Organizer	Mark	Category
Help with activities	2,96	Currently
Lead every activity properly	3,62	Height
Lead but not every activity	3,65	Height
Develop to function as a teaching and learning class	2,90	Currently
Amount	18,05	
Mean	3,61	Height

5. Respondents' Perceptions of Extension as Analysts

Based on Table 12 extension workers as medium category analyzers. Seeing that according to the respondent there were counseling activities which were not only carried out during the forum but visited the field and analyzed every farmer's problem. Extension officers supervise activities according to respondents, not all farmers who feel the existence of counseling activities, this needs to be improved so that farmers are able to attend and experience counseling both in the field and during discussion forums between farmers and extension workers. Extension officers evaluating the problem according to respondents were not fully accepted by all members of the farmers related to directly evaluating the spaciousness of farming and also because there were some farmers who were less active in carrying out farmer group activities so this had to be improved again. Extension agents apply a new system in the low category because they have not fully provided ways to implement a new system in their farming that can increase coffee production and productivity.

Table 12. Role of Extension as Analyst

Analyst	Mark	Category
Collect data and analyze properly	3,90	Height
Supervise all activities	2,65	Currently
Evaluate the problem	3,03	Currently
Implementing the new system	2,40	Low
Amount	11,98	
Mean	2,99	Currently

The Relationship between the Role of Agricultural Extension Officers and the Productivity of Coffee Farming in the Sugih Jaya Farmer Group.

Analysis of the correlation the role of extension staff on the coffe productivity of the group coffee farmers Sugih Jaya in Lemahsugih village. The calculation of yield is obtained according to the formula:

Productivity = Production amount (Kg) / land area (Ha)

From the research results, the total productivity of coffee farming in the last harvest season was 57.854 Kg/Ha. With a land area of 21.2 Ha and a production yield of 51,415 Kg in the last harvest season. These results are obtained from the productivity formula (Kg/Ha). And then the results obtained an average productivity of 2,425 kg. thus the productivity of the coffee farming of all members of the Sugih Jaya farmer group was 2,425 kg in the last harvest season. The performance of coffee production has decreased as seen in 2020 coffee production of 13,500 while in 2022 there were 10,000, if production has decreased then productivity has decreased.

Table 13. Result Of Rank Correlation Calculation

Spearman's rho	The Role of Agricultural Extension	Productivity	Correlation	Information
1	2.060	2.425	0,383	Low correlation

Source: SPSS Calculations (2023).

Analysis of the correlation coefficient between the role of agricultural extension workers and the productivity of coffee farming is 0.383 with a low correlation description. The correlation is low because some farmers are less active in participating in activities held by extension workers so that the information and innovations provided by extension agents that can increase productivity have not been fully received by all farmers. The low productivity is also caused by farmers rejuvenating coffee plants and other problems caused by weather factors.

Calculation of a significant relationship if rs > r table then reject H0. To determine the value of r table for the mathematical significance level df = n – 2 the value of n is the number of observations, df = 32 – 2 = 30 is calculated using alpha = 5%, the r table in this study is 0.349. The calculations makes a decion to take the table rs > r table and then reject H0. Rs 0.383 > r table 0.349, then reject H0 accept H1 means that there is a relationship between the role of extension workers and productivity. In other words, there is a positive and significant relationship between the role of agricultural extension agents and productivity.

CONCLUSION

The role of agricultural extension workers in coffee farming in the Sugih Jaya farmer group. The extension worker as a facilitator gets a score of 3.24, the extension worker as a dynamicator is 3.29, the extension worker as a consultant is 3.53, the extension worker as an organizer is 3.28, the extension worker is an analyzer at 2.99. The role of extension agents is in the high category in carrying out their duties as agricultural extension agents in the Sugih Jaya farmer group, namely extension workers as consultants and organizers. For the role of extension workers as facilitators, dynamicators, and analyzers in the moderate category. In this case, the task of extension workers in the Sugih Jaya farmer group is still not optimal enough. The problems faced by extension agents in increasing productivity include the lack of knowledge and skills of farmers in farming and the lack of active participation of farmers in extension activities. The low productivity is also caused by the weather factor.

The relationship between the role of agricultural extension agents and the productivity of coffee farming using Spearman correlation analysis, it can be concluded that it has a relationship with the rank Spearman correlation value of 0.383 with the criteria of a low correlation value. The low correlation value is because some farmers are less active in extension activities and the innovation and information provided by extension agents has not reached all farmers. The existence of agricultural extension agents in an area can change the knowledge of farmers in running their farming where the knowledge of farmers affects the increase in the productivity of coffee farming.

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