The Relationship of Socio-Economic Characteristics with the Implementation of the main Tasks of Agricultural Extension Workers

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ABSTRACT: Individual characteristics are personal factors related to all aspects of life that are influenced by behavior, environment, and individual interaction. Socioeconomic characteristics indicate the resources owned by agricultural extension workers to carry out extension services in accordance with their abilities that can affect the main tasks of agricultural extension workers. The purpose of this study is to analyze the correlation between the socioeconomic characteristics of extension workers and the implementation of the main tasks of agricultural extension workers. The research method used is the survey method. Sampling using saturated sample method or census with 48 respondents. The data collection method uses a questionnaire with reference to the Likert scale. The research data were analyzed using *Partial Least Square* (PLS). The results showed that the socioeconomic characteristics of agricultural extension workers have diversity including; productive age, education, work experience, income, and expenses. The implementation of the main duties of agricultural extension workers in carrying out their duties is quite visible from the average result of the Work Performance Value of 68.70. There is a positive correlation between the social characteristics of agricultural extension workers, age background, and length of time as extension workers with the implementation of the main duties of agricultural extension workers.

KEYWORDS: Agricultural extension workers, characteristics, main tasks, socio-economic

I. INTRODUCTION

The main task of agricultural extension workers will determine the confidence of policy makers and development budgets to continue to allocate budgets to finance extension services in supporting agricultural development. The implementation of the main task of agricultural extension workers is to develop extension work programs that are in accordance with specific locations and market demands to meet various kinds of people's living needs. According to Kindineh et al (2023), the main task of good agricultural extension workers has an impact on improving farmers' performance in increasing agricultural production. The implementation of the main tasks of agricultural extension workers is directed at solving problems faced by farmers in carrying out farming.

Julia et al (2023) explained that agricultural extension is a learning process for farmers so that they know, want and are able to help and organize themselves in accessing market information, agricultural technology, capital, and other resources to improve the quality of farming and their welfare. According to Susanne & Luca (2021), there are three kinds of main roles and tasks of agricultural extension workers in conducting extension services, namely: (1) self-integration with farmers, (2) mobilizing farmers to make changes, and (3) strengthening interpersonal relationships with farmers. To be more professional, an agricultural extension worker acts as a carrier of information, a good listener, motivator, facilitator, capacity builder, and skill builder, program manager, group worker, and consultant for the farming community.

Agricultural extension workers also have roles as motivators, innovators, facilitators, consultants and communicators (Lamin et al, 2023). The purpose of agricultural extension is to produce competent Human Resources for agricultural development actors so that they are able to build a resilient agricultural business, farm better, try to farm more profitably, live more prosperously, and the surrounding environment becomes healthy (Karen et al, 2023).

The performance of agricultural extension workers in Bone Bolango Regency, Gorontalo Province, has various kinds of assessments from farmers. Performance appraisal in the field will be assessed by farmers when performing the main duties of agricultural extension workers. The main duties of agricultural extension workers listed in the Regulation of the Minister of

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Agriculture of the Republic of Indonesia Number 91/Permentan/OT.140/9/2013 concerning Guidelines for Performance Evaluation of Agricultural Extension Workers consist of agricultural extension preparation activities, implementation of agricultural extension workers, evaluation and reporting. The performance of agricultural extension workers in the field is considered still lacking, because there are several differences in the characteristics of each individual extension worker.

The socioeconomic characteristics of agricultural extension workers affect the performance of extension workers in terms of age, education, number of family dependents, and income (Erick et al, 2024). The results of Saeedeh et al's (2022) study explain that there is a correlation between the socioeconomic characteristics of extension workers in terms of education, work experience, number of family dependents, and income with the implementation of the main duties of agricultural extension workers which can affect the performance of extension workers.

This study aims to describe the socioeconomic characteristics of agricultural extension workers, identify the implementation of the main duties of agricultural extension workers, and analyze the relationship between the socioeconomic characteristics of agricultural extension workers and the implementation of the main duties of agricultural extension workers in Bone Bolango Regency, Gorontalo Province.

II. RESEARCH METHODS

This research was conducted in Bone Bolango Regency, Gorontalo Province. The selection of research sites was carried out purposively with the consideration that all Agricultural Extension Centers in Bone Bolango Regency have the title of Widyaiswara Achievement by the Ministry of Agriculture. The research conducted from July to September 2023.

Sampling techniques are statistically carried out using saturated sampling or census methods. Saturated sampling or census is a sampling technique using all populations as samples in research (Roger et al, 2023). The number of samples used was 48 people consisting of 24 agricultural extension workers and 24 heads of farmer groups in Bone Bolango Regency.

The types of data in this study are primary data and secondary data. Primary data were obtained directly from agricultural extension workers and farmer group leaders, through interviews using questionnaires. Secondary data were obtained from the Agriculture Office of Bone Bolango Regency and from the Agricultural Extension Center. The data collection method is carried out by means of interviews using questionnaires, direct observation/observation and documentation. This study used descriptive qualitative and quantitative analysis. The measurement of indicators uses an ordinal scale that refers to the principle of the Likert scale with a scale of 1 to 5. The data was analyzed using the Partial Least Square (PLS) method with a calculation process assisted by the SmartsPLS software application program. The test criteria carried out in PLS are:

1. Outer Model (*Model Measurement*)

This model specifies the relationship between latent variables and their indicators. The outer model also defines how each indicator relates to its latent variables. Tests performed on outer model tests: Convergent Validity, Discriminant Validity, Composite Reliability, Average Variance Extracted (AVE), and Cronbach Alpha. (Jan et al, 2012).

2. Inner Model (Model *Structural*)

The Inner Model test is performed to test the relationship between latent constructs. There are several tests for structural meodel, namely: R-Square on endogenous constructs, Estimate for Path Coefficients, Effect Size (*f square*) or known as Stone-Geisser's (Jan et al, 2012).

3. Test the hypothesis

According to Junyao & Chengpu (2024), the statistical hypothesis for the inner model of exogenous (independent) latent variables in this study is:

a. $H_0 : \gamma = 0$ opponents $H_1: \gamma i \neq 0$

b. H_0 : There is no correlation of socioeconomic characteristics with the implementation of agricultural extension duties.

c. H_1 : There is a correlation of socioeconomic characteristics with the implementation of agricultural extension duties.

According to the Regulation of the Minister of Agriculture of the Republic of Indonesia in 2013, the standards of Work Performance Value for evaluating the performance of agricultural extension workers are described in Table 1:

Table 1. Agricultural Extension Extension Worker Performance Value Standards

No	Value	Work Performance
1	> 91	Excellent
2	76 - 90	Good
3	61 - 75	Sufficient
4	51 - 60	Less

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5	< 50		Bad

Source: Ministry of Agriculture of the Republic of Indonesia in 2013.

To determine the attitude of the research respondents, the Likert Scale measure described in Table 2 was used.

Table 2. Likert Scale Value Category Distribution

Category	Scores/Value	Captions
A	5	The activities carried out are very good
B	4	Activities carried out are good
C	3	The activities carried out are sufficient
D	2	Activities carried out are less
E	1	Poorly performed activities

III. RESULTS AND DISCUSSION

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1. Interpretation of Measurement Results (*Outer Model*)

a*. Convergent Validity*

According to Hashita et al (2024) that the outer loading value requirement is 0.70. The outer loading value can be tolerated to be included in the model that is still in the development stage up to a value of 0.50 and if it is below the value of 0.50 it can be removed from the analysis.

Table 3. Outer Loading Results for Convergent Validity testing

Variable	Indicators	*Outer Loading*	Captions
Implementation of the main duties of agricultural extension workers	Y1.2 Guiding the preparation of a Definitive Plan for the Needs of Farmer Groups	0,568	Valid
	Y1.6 Carry out the application of agricultural extension methods in the target area in the form of visits/face-to-face (individual/group/mass) (in one month)	0,556	Valid
	Y1.8 Implementing agricultural extension methods in the target area in the form of meetings (field meetings, talks, technical meetings, workshops, business meetings) (within one year)	0,571	Valid
	Y1.9 Applying agricultural extension methods in the target area in the form of teaching farmer courses (in the last year)	0,645	Valid
	Y1.12 Carry out agricultural extension guidance in order to grow and develop farmer economic institutions in terms of number and quality.	0,619	Valid
	Y1.14 Evaluate the implementation of agricultural extension services	0,514	Valid
Social Characteristics of Agricultural Extension Workers	X1 Age	0,913	Valid
	X3 Long Time as an Agricultural Extension Worker	0,679	Valid
Economic Characteristics of Agricultural Extension Workers	X4 Number of Family Dependents	0,528	Valid
	X5 Income	0,763	Valid
	X6 Expending	0,952	Valid

The result of this test is valid if the outer loading value is greater than 0.50. The results of the Convergent Validity test consist of 11 indicators that are declared valid and 11 indicators that are declared invalid so that they can be removed from the analysis.

b. *Discriminant Validity*

The measurement of Discriminant Validity can be seen in Cross Loading between indicators and their constructs in Table 4.

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Table 4. Driscriminant Validity Test Results – Cross Loading

	Average Variance Extracted (AVE)		Correlation		
Variable	AVE	AVE Root	Economic Characteristics of Agricultural Extension Workers	Social Characteristics of Agricultural Extension Workers	Implementation of the main duties of agricultural extension workers
Economic Characteristics of Agricultural Extension Workers	0,587	0,766	0,382		
Social Characteristics of Agricultural Extension Workers	0,706	0,840		0,655	
Implementation of the main duties of agricultural extension workers	0,362	0,602			0,548

The model has a considerable Discriminant Validity if the root of Average Variance Extracted (AVE) for each construct is greater than the correlation between other constructs (Alexandra et al, 2021). It is proven that the variable economic characteristics of root agricultural extension workers Average Variance Extracted (AVE) > correlation, 0.766 > 0.382, the variables of social characteristics of root extension workers 0.840 > 0.655 and the variable of implementation of the main duties of agricultural extension workers 0.602 > 0.548. Requirements to determine a good Average Variance Extracted (AVE) value if the value is greater than 0.50 (Alexandra et al, 2021). The construct on the economic characteristics of extension workers 0.587> 0.50 and the social characteristics of agricultural extension workers 0.706 > 0.50, then has a good Average Variance Extracted (AVE) value. So, it can be stated that discriminant validity has a good value.

c. *Composite Reliability*

According to Afef et al (2023), *Composite Reliability* has a requirement that *Cronbach's Alpha* value is more than 0.5 so the data is reliable. While the requirement for a *Composite Reality* value of at least 0.70 is ideally 0.80 or 0.90. Reliable tests are used to see the consistency and accuracy of an instrument in measuring a construct with its indicators (Joel et al, 2024). *Composite Reliability* Test Results are described in Table 5.

Table 5. *Composite Reliability* Test Results

Variable	*Cronbach's Alpha*	*Composite Reliability*	Captions
Economic Characteristics of Agricultural Extension Workers	0,631	0,804	Reliable
Social Characteristics of Agricultural Extension Workers	0,594	0,827	Reliable
Implementation of the main duties of agricultural extension workers	0,670	0,768	Reliable

The results of the research in Table 5 show that all variables have met the criteria of Cronbach's Alpha which has a value of more than 0.5 and the criteria of Composite Reability which has a value greater than 0.70 so that further tests can be carried out, as explained in Figure 1 of the PLS Algorithm Results.

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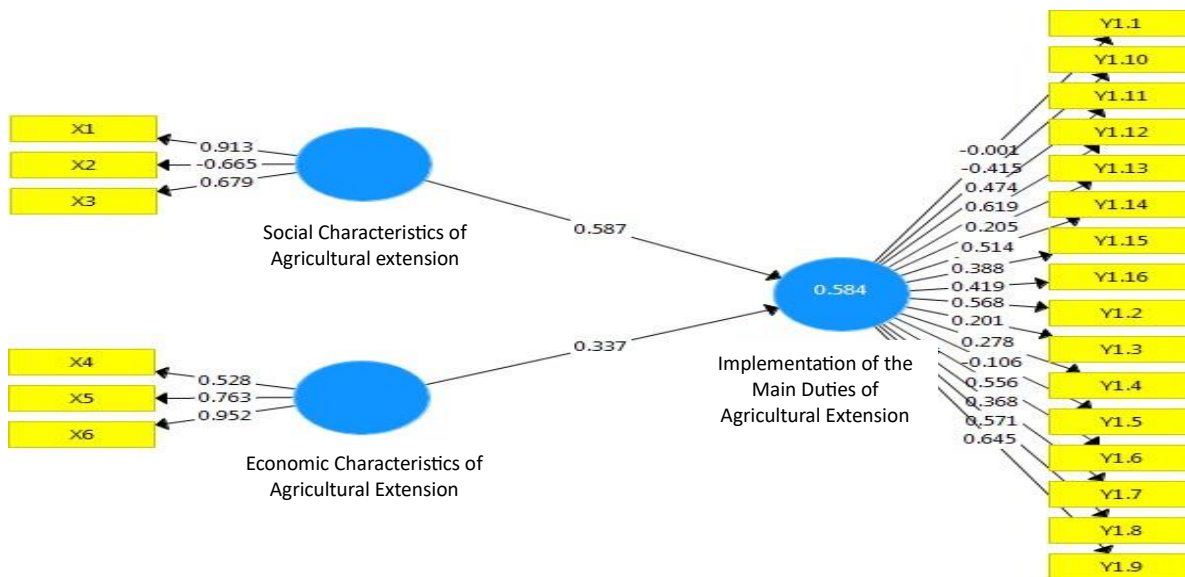

Fig 1. PLS Algorithm Results

2. INTERPRETATION OF RESULTS (*INNER MODEL*)

a. *Path Coeffisient*

The path coefficient is used to determine the significant influence of variables of socioeconomic characteristics of agricultural extension workers by looking at the value of the variable coefficient (original sample). The provision for Statistical-T is 1.96 (Yang et al, 2023). The comparison for t Table is the statistical t in Table 6 below.

Tabel 6. Hasil *Path Coeffisient*

	Variable Coefficients	t-Statistics
Economic Characteristics of Agricultural Extension Workers -> Implementation of the main duties of agricultural extension workers	0,349	1,619
Social Characteristics of Agricultural extension -> Implementation of the main duties of agricultural extension workers	0,522	3,246

The amount of the variable coefficient for the variable economic characteristics of agricultural extension workers with the implementation of the main duties of agricultural extension workers is 0.349, which means that there is a positive influence between the economic characteristics of extension workers and the implementation of the main duties of agricultural extension workers. Meanwhile, the social characteristics of extension workers with the implementation of the main duties of agricultural extension workers are 0.522, which means that there is a positive influence between the social characteristics of extension workers and the implementation of the main duties of agricultural extension workers. This positive influence has a positive impact after the interpretation that the better the socioeconomic characteristics of extension workers, the higher the level of implementation of the main duties of agricultural extension workers. T value Statistical economic characteristics of extension workers with the implementation of the main duties of agricultural extension workers of 1.619 means that it is not significant because 1.619 < 1.96. Meanwhile, the social characteristics of agricultural extension workers with the implementation of the main duties of agricultural extension workers amounting to 3,246 are significant, because 3,246 > 1.96.

b. *R-Square* The results of the R-Square analysis are described in Table 7.

Table 7. R-Square Analysis Results

Variable	*R-Square* (R^2)
Implementation of the main duties of agricultural extension workers	0,533

The R-Square value of 0.533 can be explained that the influence of the socioeconomic characteristics of agricultural extension workers with the implementation of the main duties of agricultural extension workers gives a value of 0.533 where the interpretation results that the construct variable of implementing the main duties of agricultural extension workers can be

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explained by the variables of socioeconomic characteristics of extension workers by 53.3%. While the remaining 46.7% was explained by other variables outside this study. If the R-Square value of 0.75 is included in giving a strong effect, 0.5 is included in giving a moderate/sufficient effect and 0.25 is included in giving a weak effect (Michael et al, 2022). So that the results of the R-Square value of 0.533 provide a strong influence in the relationship between the socioeconomic characteristics of agricultural extension workers with the implementation of the main duties of agricultural extension workers in Bone Bolango Regency.

3. HYPOTHESIS TESTING

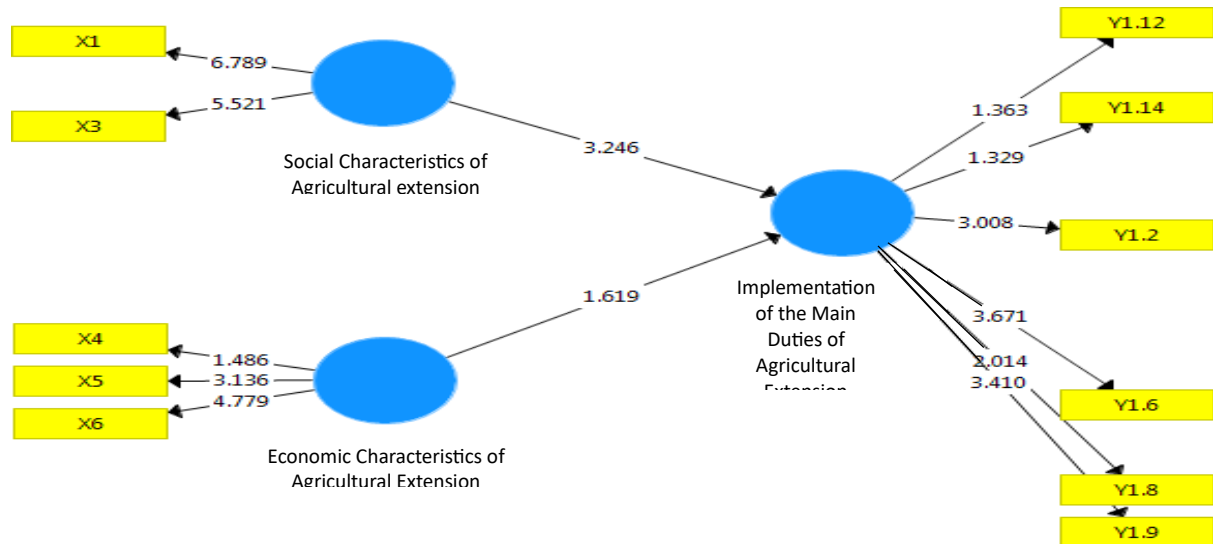Hypothesis testing using bootstrapping calculations as described in Figure 2.

Fig 2. Bootstrapping Output on SmartPLS 3.0

The results of hypothesis testing can be considered in Table 8. Testing this hypothesis from data X (age and length of time as an extension worker) with Y (Implementation of the Main Duties of Agricultural Extension Workers).

Table 8. Path Coefficient Results

Hypothesis	Variable Coefficients	T-Statistics	P-*Values*	Captions
Economic Characteristics of Agricultural Extension Workers -> Implementation of the main duties of agricultural extension workers	0,349	1,619	0,106	Rejected
Social Characteristics of Agricultural extension -> Implementation of the main duties of agricultural extension workers	0,522	3,246	0,001	Accepted

The results of the hypothesis explain that exogenous variables, namely the relationship between social characteristics of agricultural extension workers, age background, and length of time as extension workers, significantly to endogenous variables of implementing the main duties of agricultural extension workers in Bone Bolango Regency. The test results between the social characteristics of agricultural extension workers, age background, and length of time as extension workers showed a coefficient path value of 0.522, a T-Statistics value of 3.246 and a p-value of 0.001. The value of the Statistical T test results shows that 3.246 > 1.96 and p value 0.001< 0.05 so that conclusions can be drawn that the hypothesis is accepted. So that there is a relationship between the social characteristics of agricultural extension workers, age background, and length of time as extension workers with the implementation of the main duties of agricultural extension workers in Bone Bolango Regency.Social characteristics of agricultural extension workers, the age background of extension workers, is related to the implementation of the main duties of agricultural extension workers in Bone Bolango Regency. The age of agricultural extension workers is increasing, the more prepared they are in carrying out their responsibilities as extension workers. The age of agricultural extension workers in Bone Bolango Regency ranges from 46 – 55 years. This age is classified as a productive age, so that they can understand the responsibilities as agricultural extension workers.The results of this study are in line with the results of research from Jose & Alejandra (2024) which

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concluded that, the age that is still productive has a higher level of productivity compared to the old workforce, so that the physique possessed becomes weak and limited. The results of this study are different from the results of research from Olivia et al (2023) which states that the age of extension workers has no relationship with the implementation of the main duties of agricultural extension workers, because even if the age of extension workers is still young or old, if they do not carry out their duties as extension workers, the implementation of the main duties of agricultural extension workers will not be successful.The social characteristics of agricultural extension workers, the old background of being extension workers, are related to the implementation of the main duties of agricultural extension workers in Bone Bolango Regency. This long-time extension worker already has a lot of experience to deal with a problem in the field. The longer you become an agricultural extension worker, the implementation of the main duties of agricultural extension workers will be carried out properly. The length of time as an extension worker in Bone Bolango Regency ranges from 7 – 12 years, so it is classified as a long time and a lot of experience in the field. The experience possessed is quite a lot, so it can know and overcome the problems faced by farmers when in the field.The results of this study are in line with the results of research from Mukhayyo et al (2023) which concluded that, the longer the working period of a workforce, the skills and ability to do work should increase. Furthermore, the results of research from Ayotunde & Oyedeji (2022) explain that there is a long-standing relationship between being an extension worker and the implementation of the main duties of agricultural extension workers. The results of this study are different from the results of research from Philip & Lindsay (2021) which states that the length of time as an extension worker has no relationship with the implementation of the main duties of agricultural extension workers because high experience may not necessarily be able to carry out their duties well, while low experience may not necessarily not be able to carry out their duties well.

IV. CONCLUSION

The socioeconomic characteristics of agricultural extension workers related to the main duties of agricultural extension workers consist of; age of extension workers, experience as an extension worker, number of family dependents, income, and expenses. Implementation of the main duties of agricultural extension workers, among others; guiding the preparation of the Group Needs Definitive Plan, implementing the application of agricultural extension methods in the target area in the form of visits and face-to-face meetings both individually, groups, and masses, implementing agricultural extension methods in the target area in the form of field meetings, talks, technical meetings, workshops, and business meetings, implementing agricultural extension methods in the target area in the form of teaching farmer courses, Carry out agricultural extension guidance in order to grow and develop farmer economic institutions in terms of quantity and quality, and evaluate the implementation of agricultural extension services. There is a positive relationship between the social characteristics of agricultural extension workers, background, age and length of time as extension workers with the implementation of the main duties of agricultural extension workers in Bone Bolango Regency.

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