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Factors that Deals between Competence Agricultural Extension Workers and Skill Farmers Shallot

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Abstract:- The aim of this research is to explore the characteristics of agricultural extension officers in Gorontalo regency, factors related to the shallot farmer's skills, and the correlation between the competence of the agricultural extension officer and shallot farmer's skills. This research employed an ex-post facto method where the data were examined by using Rank Spearman Correlation test. It is revealed that competence of the extension officers is determined by several factors, e.g., age, years of service, number of assisted farmers, educational level, and number of workshops. The competence of the extension officer is central to the shallot cultivation; this is based on the overall survey result indicating that the better the competence of the officers, the more improved the farmer's skills. The officer's competence significantly contributes to the shallot farmer's skills, i.e., personality, andragogy, professionalism, social and technical. However, this does not apply to the innovative communication competence. The aforementioned correlation is also symbolized by the average correlation value of 0.786 or 78.6%.

Keywords:- *Agricultural Extension Workers, Shallot Farmer's Skills.*

I. INTRODUCTION

Agricultural extension officers, in attempts to improve the quality of farmers' performance, are obliged to have both technical agricultural and managerial competencies. This is because competence refers to one's capability to undertake a job based on his level of knowledge and skills. Extension on agriculture which happens to be the part of non-formal agricultural education requires technical and managerial competence of the officers to develop a plan regarding a location-specific extension. This program will be based on farmers' needs as the main actors of agricultural activities. Prior to defining the concept of farmer's skill, it is crucial to explore the definition of the term 'skill.' This word is regarded as an effort to master a particular capability to foresee and cope with problems. Farmer's skill is a process of communicating the knowledge to shape the attitude of the farmer, such as their working speed and accuracy. This is done through the development of artificial and processing technology. Skills are crucial to the development of agriculture, crops processing, and marketing of the final product.

The increase in the production of shallot in Gorontalo regency puts shallot as one of the top commodities in the area. This crop also has a bright prospect. Among the five regencies, Gorontalo regency is the area with a steady increase in the agriculture and production of shallot. Every year, the regency expand the area for cultivating the crops as the market demands, due to a spread of culinary business in the area, are growing. This trend, however, does not apply to the quality of shallot which can be considered poor. Such an issue blames the lack of the farmer in understanding technology, climate change, and convoluted commerce. These also lead to impertinence towards farmers and the lack of the competence of agricultural extension officers. The insufficient insight of the farmers in some aspects, e.g., technical of agriculture, managerial, and entrepreneurship hinder their effort to decide a better price for their crops, meaning that the production is yet to be considered effective. With that being said, an extension officer should pioneer the farmer to innovate in improving their living standards. This is because an officer is someone who assists the society to create changes in every farming activity. States that an extension officer serves as an empowerment officer in society through encouraging agricultural technology and innovation transfer to improve the quality of human resources and local wisdom. Furthermore, the officer alongside with the farmer design extension programs according to the farming activities in an area. This is done by effective and efficient communication based on the motivation, competence, management of the officer, as well as the funding for the implementation of extension program.

II. RESEARCH METHODS

This research was conducted since November 2017 to February 2018 in a number of selected sub-district within Gorontalo regency, i.e., Asparaga sub-district, Tolangohula sub-district, Boliyohuto sub-district, Limboto sub-district, Limboto Barat sub-district, Tabongo sub-district, Batudaa Pantai sub-district, and Tibawa sub-district. It employed an ex-post facto method, meaning that this study examines a past phenomenon or the factual situation at the site. The population of this research were 280 shallot farmers from the eight sub-district; only 73 farmers were selected as the sample by using a simple random sampling method. This research used both primary and secondary data. These data were further analyzed by using non-parametric, a statistical quantitative method and descriptive qualitative method. The qualitative descriptive method was used to explore the first problem statement of research; the data were from related department or institutions.

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In addition, Spearman Rank Correlation test was applied to analyze the second and third problem statement. This test is to measure the level of correlation between the independent and dependent variable. Both variables are ordinal (Riduwan, 2014). The formula is as follows:

$$rs = 1 - \frac{6\sum d^2}{n(n2-1)}$$

Description:

rs = Spearman coefficient correlation (ρ)

d = deviation between X and Y rank
n = number of sample

III. RESULTS AND DISCUSSION

A. *Competence of Agricultural Extension Officers that Correlates with Farmer's Skills in Shallot cultivation*

- *The personality of Agricultural Extension Officers and its Correlation with Shallot cultivation*

			Shallot Farmer's Skills	Leadership	Organizational Management
Spearman's rho	Shallot Farmer's Skills	Correlation Coefficient	1.000	.952**	.952**
		Sig. (2-tailed)	.	.000	.000
		N	8	8	8
	Leadership	Correlation Coefficient	.952**	1.000	.929**
		Sig. (2-tailed)	.000	.	.001
		N	8	8	8
	Organizational Management	Correlation Coefficient	.952**	.952**	1.000
		Sig. (2-tailed)	.000	.001	.
		N	8	8	8

Table 1:- The Correlation of Leadership and Management of Agricultural Extension Officers and Farmer's Skills in Shallot cultivation through Spearman Rank Correlation (Source: primary data after processed, 2018).

The result of correlation analysis suggests that the research hypothesis is accepted. This is because the personality of the extension officer, i.e., leadership and management, significantly contribute to the farmer's skill in shallot cultivation. The management of the officer has a significant contribution to the technical competence of the farmers. The coefficient correlation of the extension officer's leadership and organizational competence with the technical competence of the farmer has the same value ranging from 0.80-1.00, meaning that it is significantly correlated. The determinant coefficient (R) of the correlation between organizational management of the extension officer and shallot farmer's competence (personality dimension) is 0.952 x 0.952 x 100% = 0.906. This indicates that 90.6% farmer's skill is influenced by the officer's organizational management while the remaining 9.4% refers to other factors excluded from the research.

- *Andragogy Competence of Agricultural Extension Officers and its Correlation with Shallot cultivation*

The result of correlation analysis signifies that the research hypothesis is accepted. A reason for this is that the andragogy competence of extension officer, i.e., program planning and appreciating the cultural difference, significantly contribute to the farmer's skill in shallot cultivation. The coefficient correlation of the extension officer's leadership and organizational competence with the technical competence of the farmer has the same value ranging from 0.81-1.00, meaning that it is significantly correlated. Moreover, it is revealed that the determinant coefficient (R) of the correlation of program planning and organizational management of the extension officer with shallot farmer's competence (andragogy competence dimension) is 0.905 x 0.905 x 100% = 0.819 and 0.857 x 0.857 x 100% = 0.734 respectively. This indicates that 81.9% farmer's skill is influenced by the officer's andragogy competence while the remaining 18.1% refers to other factors excluded from the research. The ability to respect cultural diversity influence 73.4% of farmer's skill while the rest 26.6% refers to other factors which are not the focus of research. Table 2 provides the information regarding the correlation of the leadership and organizational management.

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			Shallot Farmer's Skills	Extension Planning	Appreciating Cultural Differences
Spearman's rho	Shallot Farmer's Skills	Correlation Coefficient	1.000	.905**	.857**
		Sig. (2-tailed)	.	.002	.007
		N	8	8	8
	Extension Planning	Correlation Coefficient	.905**	1.000	.952**
		Sig. (2-tailed)	.002	.	.000
		N	8	8	8
	Appreciating Cultural Differences	Correlation Coefficient	.857**	.952**	1.000
		Sig. (2-tailed)	.007	.000	.
		N	8	8	8

Table 2. The Correlation of Leadership and Management of Agricultural Extension Officers and Farmer's Skills in Shallot cultivation through Spearman Rank Correlation (Source: primary data after processed, 2018).

- *Professionalism of Agricultural Extension Officers and its Correlation with Shallot cultivation*

			Shallot Farmer's Skills	Implementation of Extension Program	Utilizing Local Resources
Spearman's rho	Shallot Farmer's Skills	Correlation Coefficient	1.000	.619	.810*
		Sig. (2-tailed)	.	.102	.015
		N	8	8	8
	Implementation of Extension Program	Correlation Coefficient	.619	1.000	.929**
		Sig. (2-tailed)	.102	.	.001
		N	8	8	8
	Utilizing Local Resources	Correlation Coefficient	.810*	.929**	1.000
		Sig. (2-tailed)	.015	.001	.
		N	8	8	8

Table 3. The Correlation of Implementation of Extension Program and Utilization of Local Resources by Agricultural Extension Officers towards Farmer's Skills in Shallot cultivation through Spearman Rank Correlation (Source: primary data after processed, 2018).

The result of Spearman's Rank correlation confirms that the research hypothesis is accepted for the significant contribution of the way the extension officer plan an extension program and make the most out of the local resources toward the technical competence of shallot farmer with the value ranging from 0.60 - 0.79.

Moreover, it is shown that the determinant coefficient (R) of the impact of implementation of extension program and utilization of local resources by the extension officer on the shallot farmer's competence (professionalism dimension) is 0.619 x 0.619 x 100% = 0.383 and 0.810 x 0.810 x 100% = 0.656 respectively. In other words, 38.3% of farmer's skill is determined by the capability of extension officer in implementing the program; 61.7% of the farmer's skill is, however, influenced by other factors that are not discussed in this study. 65.6% of the production of the agricultural product and the farmer's competence is also influenced by the way an extension officer utilize the local resources. Other factors excluded from this research only contribute 34.4% to the farmer's skill.

- *Social Competence of Agricultural Extension Officers and its Correlation with Shallot cultivation*

Social competence of an extension officer is measured by two aspects, i.e., the way they implement social actions and their interpersonal skills. These are central to having the farmers being engaged with the extension program. Initiating social actions motivate the farmer and promote collaborative works with the extension officer, forming good interpersonal communication between the officer and the farmer. The data on the contribution of social action by the extension officer towards the farmer's competence are provided in the following Table 4.

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			Shallot Farmer's Skills	Ability to Implement Social Action	Interpersonal Skill
Spearman's rho	Shallot Farmer's Skills	Correlation Coefficient	1.000	.762*	.299
		Sig. (2-tailed)	.	.028	.471
		N	8	8	8
	Ability to Implement Social Action	Correlation Coefficient	.762*	1.000	.479
		Sig. (2-tailed)	.028	.	.230
		N	8	8	8
	Interpersonal Skill	Correlation Coefficient	.299	.479	1.000
		Sig. (2-tailed)	.471	.230	.
		N	8	8	8

Table 4. The Correlation of Social Action and Interpersonal Skill of Agricultural Extension Officers with Farmer's Skills in Shallot cultivation through Spearman's Rank Correlation (Source: primary data after processed, 2018).

The result of Spearman's Rank correlation signifies that the research hypothesis is accepted for the insignificant contribution of the way the extension officer implement social actions and communicate interpersonally with shallot farmer with the value ranging from 0.20 - 0.39. Moreover, it is shown that the determinant coefficient (R) of the impact of social action and interpersonal communication by the extension officer on the shallot farmer's competence (professionalism dimension) is 0.762 x 0.762 x 100% = 58% and 0.299 x 0.299 x 100% = 8.9% respectively. To put it simply, 58% of farmer's skill is influenced by the capability of extension officer in conducting social actions; 42% of the farmer's skill is, however, influenced by other factors that are not examined in this study. Interpersonal communication by the officer contributes to 8.9% of farmer's skill while the rest 90.1% refers to other factors which are not the focus of research.

- *Innovative Communication Competence of Agricultural Extension Officers and its Correlation with Shallot cultivation*

The result of Spearman's Rank correlation clarifies that the research hypothesis is accepted for the insignificant contribution of the innovative communication competence of the extension officer, i.e., managing agricultural extension information and managing diffusion of innovation, to the shallot farmers with the interval ranging from 0.40 - 0.59 . The determinant coefficient (R) of the contribution of innovative communication and managing information by the extension officer on the shallot farmer's competence (professionalism dimension) is 0.476 x 0.476 x 100% = 22.7% and 0.548 x 0.548 x 100% = 30.0% respectively. This indicates that 22.7% and 30% of the production of shallot cultivation is determined by the way an extension officer manage the extension information and the competence of the diffusion of information. The following Table 5 explains the data on the above correlation:

			Shallot Farmer's Skills	Managing Extension Information	Managing Innovation Diffusion
Spearman's rho	Shallot Farmer's Skills	Correlation Coefficient	1.000	.476	.548
		Sig. (2-tailed)	.	.233	.160
		N	8	8	8
	Managing Extension Information	Correlation Coefficient	.476	1.000	.976**
		Sig. (2-tailed)	.233	.	.000
		N	8	8	8
	Managing Innovation Diffusion	Correlation Coefficient	.548	.976**	1.000
		Sig. (2-tailed)	.160	.000	.
		N	8	8	8

Table 5. The Correlation of Managing Extension Information and Technology and Information Diffusion by Agricultural Extension Officers with Farmer's Skills in Shallot cultivation through Spearman's Rank Correlation (Source: primary data after processed, 2018).

➢ *Technical Competence of Agricultural Extension Officers and its Correlation with Shallot cultivation*

The research hypothesis, according to the result of correlation analysis, is accepted as the technical competence of an extension officer, i.e., technical competence of agriculture significantly contributes to the shallot farmers. The interval of this correlation is significant with the range 0.80 - 1.00 whereas the determinant coefficient regarding this is measured at 0.819 (the result from the calculation: 0.905 x 0.905 x 100%). In other words, 81.9% of farmer's skill is determined by the capability of extension officer in terms of technical agricultural competence. 18.1% of the farmer's skill is, however, influenced by other factors that are not discussed in this study. The determinant coefficient in terms of the correlation of processing competence and the shallot farmer's skills measured at 90.6%; this is from the result of the calculation: 0.952 x 0.952 x 100%. This suggests that 90.6% of farmer's skill is determined by the capability of extension officer in implementing the program; 9.4% of the farmer's skill is, however, influenced by other factors that are not discussed in this study. The following Table 6 explains the data on the above correlation:

			Shallot Farmer's Skills	Technical Competence of Agriculture	Processing and Marketing of Agricultural Products
Spearman's rho	Shallot Farmer's Skills	Correlation Coefficient	1.000	.905**	.952**
		Sig. (2-tailed)	.	.002	.000
		N	8	8	8
	Technical Competence of Agriculture	Correlation Coefficient	.905**	1.000	.810*
		Sig. (2-tailed)	.002	.	.015
		N	8	8	8
	Processing and Marketing of Agricultural Product	Correlation Coefficient	.952**	.810*	1.000
		Sig. (2-tailed)	.000	.015	.
		N	8	8	8

Table 6.Technical Competence of Agricultural Extension Officers and its Correlation with Shallot cultivation Explained through Spearman's Rank Correlation (Source: primary data after processed, 2018).

B. *The Correlation of Agricultural Officer's Competence and Shallot Farmer's Skills in Gorontalo Regency*

It is revealed that the correlation between the competence of extension officer and farmer's skill in Gorontalo regency is significant with the percentage 78.6% (0.786). The value of probability correlation is 0.021 whereas it is smaller than the probability value 0.05. The result of this research is in line with the one by Safar, et al. (2015) that an extension officer significantly contributes to the competence of cacao farmers. This indicates that the performance of an extension officer determines the competence of cacao farmers with the coefficient valued at 0.645 on $\alpha = 5\ \%$, oleh as the variable of the performance of extension officer should serve as the focus on improving the farmer's skill. The capability to plan an extension program, evaluate, and report the program are essential to be developed. As this present study concludes that the extension officer plays a vital role to the performance of the shallot farmers, the Department of Agriculture Gorontalo Regency should endeavor to improve the quality of extension officer through various training and workshop on the technical of cultivating shallot.

The success of an extension officer depends on his or her competence to provide information that the farmer needs, e.g., agriculture technology, market price, access to the market, capital, and policy on agricultural development in the site area. With that being said, it is essential for an extension officer to Have good communication skill and in-depth knowledge. An officer should also be able to act independently and to adjust his or herself with the characteristic of the assisted farmers. The ability to plan a program, designing effective, efficient learning media and lesson plan that fit the needs of the society are also crucial for an extension officer.

The conceptualization of one's attitude to carrying out a particular duty can be defined as ability. While the term competence refers to mindset-on the core principle, it can be regarded as a skill that is shaped by an individual's knowledge, capability, and attitude during working; this concept also applies to describe the term agricultural extension officer's competence, but the focus of such an officer is to empower the assisted farmers. There are five competencies underpinning the concept of human resources development; some are difficult to be developed. Knowledge and mastery are relatively easy to foster through programs, such as workshop and training. On the other hand, motive and characteristics are permanent; these are complicated that it is not easy to assess and develop. A competent agricultural extension officer leads to professional farmers. This condition also enhances the farmer's skill as most farmers seek a

qualified extension officer to help them solve the issues of their work. Improvement of the insight, attitude, and competence of the farmers depends on the quality of the work of the extension officer.

IV. CONCLUSION

The conclusions of this present study are as follows:
The officer's competence significantly contributes to the shallot farmer's skills, i.e., personality, andragogy, professionalism, social and technical. However, this does not apply to the innovative communication competence.
The aforementioned correlation is also symbolized by the average correlation value of 0.786 or 78.6%.

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