MALAYSIAN JOURNAL OF AGRICULTURAL ECONOMICS

Original Research Article

Empowerment of Porang Farmers Through the Performance of Agricultural Extension in Increasing Economic Value in Rejosari Village, Bantur District, Malang Regency, East Java, Indonesia

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Abstract: This study examines the performance of Agricultural Extension Officers in empowering porang farmers in Rejosari Village, Bantur District, Malang Regency. The research involved 50 farmers and used a saturated sampling method. The data was analyzed using descriptive qualitative analysis and the Likert's Summated Rating Scale measurement. The results showed high performance in facilitating, motivating, mediating, innovating, and organizing. The closeness of the relationship between performance variables and farmer empowerment was very high. Suggestions for extension agents include regular training activities and creating a guidebook for farmers to expedite extension activities. The study also suggests that farmers should create a guidebook for extension activities to support the performance of extension workers and empower farmers.

Keywords: Agriculture; Empowerment; Porang Farmers.

Received: 12th May 2023

Received in revised form: 30th November 2023

Available Online: 20th December 2023

Published: 31st December 2023

Citation: Arifin Z, Murniati T, and Rihi D.F. Empowerment of Porang farmers through the performance of agricultural extension in increasing economic value in Rejosari Village, Bantur District, Malang Regency, East Java, Indonesia. Malays J Agric Econ 2023; 30(1): a0000433. https://doi.org/10.36877/mjae.a0000433

1. Introduction

Agricultural development has a close relationship with the development of human resources in increasing agricultural production, food demand for domestic industries, farmers' income, exports, expanding employment opportunities and encouraging equal distribution of business opportunities. In addition, the agricultural sector also has a role, namely as a supplier of food, industrial raw materials, feed and bio-energy, a source of national income, providing employment opportunities, generating foreign exchange, and preserving the environment (Rivai & Anugrah, 2011).

Agriculture is an essential sector in improving the welfare of the Indonesian people, so farmers must be able to adapt and adopt the latest innovations to become independent farmers. Therefore, to create independent farmers, the role of Agricultural Extension is needed (Fatchiya & Amanah, 2016).

Agricultural Extension is a person whose job is to provide motivation, knowledge and encouragement to farmers. It has a role in developing the agricultural sector and acts as a liaison between the government and farmers (Suwuh *et al*., 2021). Extension agents are the main actors, so reliable, qualified human resources are needed. They have knowledge skills, adequate information, the ability to access innovations, and the ability to be responsive to the times and technological developments.

The role of Agricultural Extension is a series of activities as learning process facilities, sources of information, assistance, problem-solving, guidance, monitoring and evaluation of agricultural activities related to their roles as mentors, organizers and managers, technicians and consultants (Budi & Si, 2018). The role of Agricultural Extension is in a strategic position in which the implementation is well coordinated and can run effectively and efficiently. Farmers need the latest inspiration to grow motivation and enthusiasm in farming, so good extension work is needed.

The performance of Agricultural Extension Officers is a self-realization of carrying out the main tasks of an Extension Officer following predetermined rules so that Agricultural Extension Officers can be said to have performed well or not. The performance of agricultural extension agents is influenced by age, length of service, number of trainings, number of assisted farmer groups, distance of working area, availability of necessary facilities and infrastructure, level of farmer participation and coaching and supervision support (Refiswal, 2017). The performance of agricultural extension agents has a significant effect on the development of farming because the low performance of extension agents will harm farmers as the primary users of extension services.

Amorphophallus muelleri is a tuber plant as a bush (herb) that can grow in tropical and subtropical regions. It has not been widely cultivated and grows wild in forests, under bamboo clumps, on river banks and mountain slopes (in damp places). Porang can grow in the shade and develop as an intercrop between types of woody plants or trees managed by an agroforestry system. Porang cultivation is an effort to diversify food ingredients and provide industrial raw materials that can increase the value of export commodities in Indonesia (Sumarwoto & Maryana, 2011).

Porang is a plant that has the potential to be developed as an export commodity because several countries need this plant as a food ingredient or industrial material. Indonesia exports Porang in the form of cassava or flour to Japan, Australia, Sri Lanka, Malaysia, Korea, New Zealand, Pakistan, England and Italy. The demand for Porang in fresh and dry chips continues to increase. For example, production of Porang in East Java in 2009 only reached 600-1000 tons of dry chips, while the industry's demand was around 3,400 tons. This

need has not been met because, in Indonesia, Porang has not been cultivated intensively and is still very dependent on natural potential, the planting area is still limited, and there are no complete cultivation guidelines. Apart from that, it is also because not many people know that the age of the plant is relatively longer than other types of tubers and crops (Sulistiyo *et al*., 2015)

Table 1. Production of Porang plants

City	Quantity
Nganjuk	4.845 ton
Madiun	1.429 ton
Ngawi	135 ton
Banyuwangi	180 ton
Jember	2.250 ton
Magetan	135 ton
Bojonegoro	142 ton

Porang is spread over three regencies in East Java, with production in 2007 covering an area of 14,764.9 Ha and production of 13,485.0 tons. However, in 2009, the area decreased to only 813 ha, and production was not recorded (Dinas Kehutanan Provinsi Jawa Timur, 2012). Great potential in Nganjuk (4,845 tons), Madium (1,429 tons), Ngawi (135 tons), Banyuwangi (180 tons), Jember (2,250 tons), Magetan (135 tons), Bojonegoro (142 tons). The people who cultivate Porang are ± 10 thousand households; the export value in 2006 was 77,828 kg of glucomannan. Utilization of the pharmaceutical field of the active ingredient glucomannan as a chemical drug binder in tablets, capsule wrappers, syrup thickeners, and cosmetic adhesives. Industrial field as a reinforcement and polish paper. Substitute cellulose in films as adhesives and fiber reinforcement for textile threads. The shelf life of flour is up to 6 months after making jelly / dry noodles. The active ingredient glucomannan for pharmaceuticals has a shelf life of ± 4 years (Qur'ani *et al*., 2020). The composition of Porang tubers is low in calories, so that it can be used as a healthy diet (Sari & Suhartati, 2015).

Rejosari Village, Bantur District, Malang Regency, is one of the Porang production centers. One of the problems faced by extension agents is the lack of extension workers. This is a problem that must be addressed to achieve farmers' welfare. Lack of farmers' understanding of extension programs delivered due to age and education factors is part of the essential background of this research to find out how Empowering Porang Farmers Through Agricultural Extension Performance in Increasing Economic Value in Rejosari Village, Bantur District, Malang Regency.

2. Literature Review

Laily (2014), have researched Farmer Empowerment in Improving Food Security. A qualitative research method with a descriptive approach was carried out through observation, interviews, and documentation with Miles and Huberman data analysis techniques. The study results show that in Balet Village, the empowerment of farmers has gone well, and they have

realized food security. The obstacles come from the problem of low-quality human resources and limited agricultural tools.

Sumarti *et al*. (2017) have researched the Empowerment Strategy for Young Entrepreneurial Coffee Farmers in Simalungun District. A qualitative approach research method with primary data types is used. The results showed that empowering young entrepreneurial coffee farmers requires two components: activating and facilitating factors. The driving factors include changes in the market system, changes in the patron-client system to a market, opening access to coffee processing equipment, forming the image of young farmers as active and critical agents, placing young coffee farmers, building leadership and entrepreneurial character. Facilitating factors include building collectivity, organizing farmers, strengthening social capital, protecting the water and land resource base by implementing good agricultural practices (GAP), diversifying livelihoods, opening market access, counselling and facilitating information and technology-based coffee businesses.

Iryana (2018) has researched the Empowerment of Farming Communities in Improving Life Welfare in Compreng District, Subang Regency. Research objectives: 1. Conduct studies related to empowering farming communities 2. Availability of data and information as well as references in efforts to administer government with the latest concepts. They are using qualitative data analysis. The study results show that the empowerment of farming communities in improving their welfare carried out by the Compreng sub-district government has not run optimally.

Mahyuddin *et al*. (2018) examined the factors affecting the performance of agricultural extension in East Aceh District. This study aimed to determine the factors that influence the performance of agricultural extension agents in the East Aceh district. The research method used is a survey technique. The results showed that age, education and experience had an effect of 35%, while other factors outside the research variables influenced the remaining 65%.

Banunaek *et al*. (2017) have researched Empowerment to Improve Agricultural Extension Performance in Boyolali District, Central Java Province. This study aims to determine the performance level of agricultural extension workers, analyze the influence of individual extension factors, psychological factors of extension agents, organizational factors of extension agents and work environment factors of agricultural extension workers on the performance of agricultural extension agents in carrying out their main tasks and find an empowerment model to improve the performance of agricultural extension workers. Data analysis in this study used multiple regression analysis. The results showed that collectively, the individual factors of the extension worker, the psychology of the extension worker, the extension organization and the work environment of the extension worker influenced the performance of the agricultural extension agent. Factors that have a significant positive effect on the level of extension workers' performance are individual factors (experiment of extension workers), psychological factors (perceptions of agricultural extension workers

towards the agricultural extension profession, attitudes and motivation of agricultural extension workers), organizational factors (agricultural instructor rewards) and work environment factors (the number of assisted farmers and the interaction of extension agents with assisted farmers). In contrast, the one that has a significant negative effect is the area of agricultural extension agents.

Sari and Suhartati, (2015) have researched Porang being found in forests and can be cultivated under the shade of trees or on open land. Porang tubers contain glucomannan, which is good for health and is used as a food thickener such as noodles, sausages, and meatballs, a binder for flavours in seasonings, and capsule wrappers. Apart from being a food ingredient, dried porang can also be used as raw material for the cosmetic industry. Porang tubers sliced and dried as chips or flour have become export commodities with high economic value, and demand continues to increase yearly. Indonesia has not been able to meet export demand. Indonesia can only produce 0.6–1000 tons of porang chips, while the demand is around 3400 tons. China, Vietnam, Japan, Thailand, Hong Kong and Pakistan are the destination countries for people's exports. The availability of porang is still lower than the need for exports. Therefore, the Minister of Agriculture of the Republic of Indonesia encouraged Indonesian farmers to develop porang.

The difference between previous research is the research object and data analysis methods. At the same time, similarities are found in the research objectives, namely the performance of agricultural extension workers and farmer empowerment.

2.1. Definition of Agricultural Extension

Agricultural extension can be described as a broader knowledge system that includes agricultural research and education. Agricultural information systems for rural development connect people and institutions to promote learning and generate, share, and use agriculture-related technology, knowledge, and information. Agricultural extension is defined as non-formal education shown to farmers and their families to change behavior including attitudes, actions and knowledge in a better direction, as well as improve the welfare of the Indonesian people. According to Romadi and Warnaen (2021) Agricultural extension agents are a process of economic, social and political change to empower human resources and strengthen their capabilities through a participatory joint learning process, intending to change the behaviour of those involved in the development process, for the realization of a more glorious, independent and prosperous life sustainable.

Makmur. M *et al*. (2019) state that agricultural extension agents must have broad and competent insights. Besides guiding extension farmers, they also act as providers of production facilities (facilitators), as motivators and as communicators for farmers so that agricultural extension activities can be carried out correctly. Agricultural extension activities involve two active groups: the extension group and the extension group. Extension officers are tasked with motivating farmers as well as encouraging, guiding and directing them with the aim that farmers can be independent in managing their farms. Besides that, extension

workers also help farmers to be able to analyze and describe the situation that is developing (Bahua, 2016).

From the description above, it can be interpreted that agricultural extension activities are a learning process for farmers and their families as well as other agricultural business actors so that they have the will and can help and organize themselves in accessing markets, agricultural technology and capital to increase more efficient farming production and increase farmers' income. Therefore, Bahua (2015) states that extension agents and farmers are the first and last elements in agricultural development.

2.2. The Role of Agricultural Extension

The role is a dynamic aspect and has an essential position for someone who carries out his rights and obligations in carrying out his role, where rights and obligations must be interrelated with the provisions of the role that should be carried out according to expectations. According to Wardani and Anwarudin (2018) the role of agricultural extension agents is a series of activities as facilitating the learning process, information sources, problem-solving assistance, guidance, monitoring, and evaluation of agricultural activities related to their roles as mentors, as organizers and dynamic actors, as technicians and as consultants. In carrying out their role correctly, agricultural extension workers must fulfil five roles (Faqih, 2016) namely:

2.3. Extension Role as Facilitator

The role of the extension worker as a facilitator is expected to be able to provide facilities and infrastructure as well as providing information and as a bridge connecting innovations to farmers as well as a means of consultation to help solve problems faced by farmers, without having to wait but also actively asking farmers directly (Sofia, *et al*., 2022).

2.4. Extension Role as a Motivator

The role of extension agents as a motivator can be seen from the contributions made by agricultural extension workers to farmers to provide encouragement and enthusiasm to participate in farmer group activities, and it is hoped that agricultural extension agents can have multiple roles, as teachers, advisors, mentors, information dissemination and partners of farmers. In addition, agricultural extension agents must also be able to broaden farmers' minds with counselling, which contains the delivery of information about the advantages of participating in group activities so that farmers are more enthusiastic about participating in group activities.

2.5. The Role of the Extension Officer as a Mediator

The role of extension agents as mediators is the ability of extension workers to provide information and connect farmers with information sources to solve problems encountered in programs run by extension workers, and this role can be measured by

indicators of frequency and provision of information, clarity in conveying information and linking information sources with farmers (Padmaswari *et al*., 2018).

2.6. Extension Role as an Innovator

Extension's role as an innovator is disseminating information, ideas, innovations and new technologies to farmers. Agricultural extension conducts counselling and conveys various messages that farmers can use to improve farming (Muspitasari, 2019).

2.7. Extension Role as Organizer

As an organizer, the Agricultural Extension Officer helps manage the group by maintaining cooperation between groups. Thus, the group will run dynamically and be able to provide benefits to group members to increase the efficiency of farming carried out by group members.

From the description above, the role of Agricultural Extension can be interpreted as an activity that assists farmers in forming sound opinions and making good decisions by communicating and providing information according to the needs of farmers and encouraging farmers to develop insight and knowledge.

2.8. Agricultural Extension Performance

Performance (work achievement) is the result of work in quality and quantity achieved by an employee in carrying out his duties following the responsibilities given to him. A person's performance varies depending on the expertise and skills possessed. According to Bestina *et al*. (2005), indicators for measuring the performance of agricultural extension agents can be seen from: the ability of extension workers to identify and develop work plans according to the needs of farmers (responsibility), the responsibility for carrying out activities following extension principles, the realization of implementation and providing benefits to farmers (responsibility), the speed in provide information as well as the accuracy of materials and counselling methods (quality of service). Measurement of all items is done by scoring. Total scoring is used to process the data and answer the research hypothesis.

According to Sapar and Butami (2017), the factors that can affect the performance of Agricultural Extension are:

2.8.1 Age

Age is a psychological factor that influences the learning process and learning efficiency both directly and indirectly; 25 years old is the most optimal age for learning, whereas, at 46 years, learning ability will begin to decline so that the age variation owned by the Agricultural Extension Officer will affect competence and performance.

2.8.2. Formal education

According to Anwas (2013) Formal education for Agricultural Extension is a demand for the profession and demands of society that continue to grow. It can be interpreted that formal education is intended to improve the abilities, attitudes and skills following the demands of work as an Agricultural Extension while also influencing the level of individual competence.

2.8.3. Work experience

According to Nurfathiyah (2019) agricultural extension work experience is the length of time agricultural extension workers work as extension workers. Work experience can be used as a benchmark in the development of activities in the future because the longer a person's work experience, the better they are expected to carry out their duties.

2.8.4. Technical training

Training is an effort to develop human resources, especially in developing intellectual and personality and increasing competence. According to Kurniati (2019) Training can be carried out through three stages: basic training, level training and level-over training.

2.8.5. Task location

The location of the tasks carried out by the Agricultural Extension Officer will affect the performance level of the extension worker; the more accessible access to the task location, the better the performance of the extension worker

2.8.6. Work area

The size of the work area that Agricultural Extension Officers supervise is limited by several considerations, such as the ability of extension agents to carry out field visits, the ability of extension agents to carry out coaching and the area of agricultural land

2.8.7. Number of assisted farmers

The number of assisted farmers depends on the farmer groups in the assigned location. A farmer group is an informal group of people based on harmony in the sense of having the same views and interests.

2.8.8. Interaction with farmers

In carrying out communication and ongoing interaction, each individual has a different tendency to adapt to the interaction system concerned because interaction within the group has a feeling to continue progressing and developing.

2.8.9. Porang plants

Porang (*Amorphophallus Oncophyllus* Prain) is a type of tuber plant, and this plant is a shrub (herb) that can be found growing in tropical and sub-tropical regions (Sari & Suhartati, 2015).

Porang can grow in the shade, so it can be developed as an intercrop between types of woody plants or trees managed by an agroforestry system. Porang cultivation is an effort to diversify food ingredients and provide industrial raw materials to increase the value of export commodities in Indonesia. The composition of porang tubers is low in calories so that it can be used as a healthy diet (Sari & Suhartati, 2015).

According to its origin, porang comes from the tropics of West Africa and then spreads eastward through the Andaman Islands of India, Myanmar, Thailand, China, Japan and Indonesia (Sumatra, Java, Madura, Bali and NTB). Porang has different regional names such as ponang (Java), kruwu, lorkong, labing, subeg leres, subeg bali (Madura), acung, cocoan oray (Sunda), badur (West Nusa Tenggara) (Dwiyono, 2009).

The porang plant (*Amorphophallus Oncophyllus* Prain) is a plant that the public has long known since the Japanese occupation. However, until now, the people of Indonesia have not widely practised the cultivation of porang. The porang tuber is a single tuber, or each stem of the porang plant only produces one tuber. On the tubers, there are no growing points of shoots other than the former growth of the stems; the flesh of the tubers is bright yellow, and the fiber is acceptable. Porang sap is slightly cloudy in colour and causes itching when it comes into contact with the skin. If the tubers are chopped in the form of chips and dried in the sun, the flesh of the tubers after drying will show a reddish-brown colour (Hidayat, 2013).

The advantages of porang tubers in terms of cultivation include: Do not require significant technology and capital; once planted, there is no need to plant again; can live under stands or shaded land; less intensive maintenance; and they bright market prospects (Hidayat, 2013). While the advantages of porang tubers in terms of nutritional and health values are: making normal cholesterol levels, preventing diabetes, preventing high blood pressure, helping people who are overweight, low-fat content, low calories, high fiber content, mineral rich.

Based on this understanding, it can be concluded that the porang plant is a tuber-like plant that can grow in various soil conditions. Porang plants have erect, soft, smooth green or black stems with white spots. A single stem (often called a pseudo stem) divides into three secondary stems, breaking into petioles.

2.8.10. Farmer empowerment

An essential strategy in development in the agricultural sector is empowering farmers. According to Mangowal (2013) the empowerment of farmers is a vital force such as physical, material, economic and income aspects, institutional aspects, cooperation strength,

intellectual strength and joint commitment strength in applying the principles of empowerment. It can be interpreted that the importance of empowering farmers is used to create independence so that farmers are able to act, understand, and apply in various development activities. Empowerment is important in increasing living standards, welfare levels, and farming cultivation. Farmer empowerment can be achieved through growing information networks, community building, improved relationships and development, resulting in increased diversification, higher farmer incomes, and a more competitive agricultural sector.

According to Sumarti *et al*. (2017), empowering farmers means investing in farmers and their organizations so that their assets and capabilities increase, both individual capabilities and group capacities. Factors influence the success of farmer empowerment activities: (1) participation, (2) accessibility of information, (3) local organizations, and (4) accountability. These four elements are related to each other and support each other. The aim of empowering farmers is to train them to be independent and improve their quality of life.

2.8.11. Conceptual framework

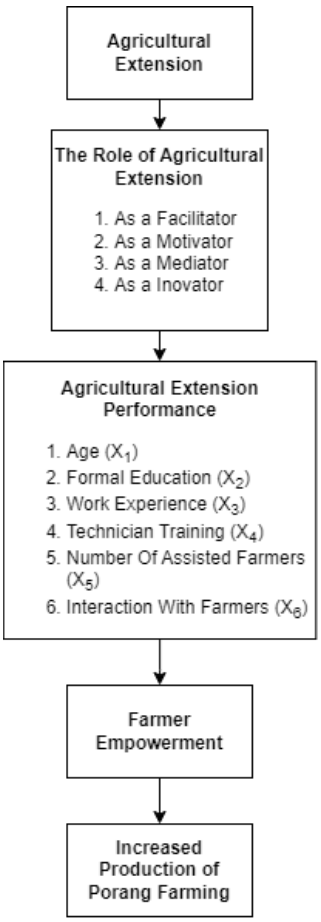

Figure 1. Framework of Thinking

To measure the performance of agricultural extension workers in empowering farmers in Rejosari Village, Bantur District, and Malang Regency, agricultural extension workers who are reliable in their field are needed so that they can carry out their roles properly and correctly. Can be achieved after the empowerment of farmers is achieved, it will affect the increase in the production of porang farming. For more details, it can be presented in the form of a chart like Figure 1. The Framework is adopted from Arifin and Mutiara (2021)

2.9. Concept Framework and Hypothesis

The temporary assumption is to find out the temporary assumption that the performance of agricultural extension influencers empower farmers in increasing economic value in Rejosari Village, Bantur District, Malang Regency.

It is believed that the Bantur district of Malang is one of Porang's production centers. Supposedly, one of the problems faced by the farmers is the lack of power of these farmers, which is a problem that must be addressed in order to ensure the welfare of farmers — suspected lack of understanding of the cattle program by farmers was presented due to age and education factors.

3. Research Methods

This research was conducted in Rejosari Village, Bantur District, Malang Regency. Research activities were carried out for ± 4 (four) weeks from 01 August to 01 September 2022. This research was conducted to determine the performance of Agricultural Extension Workers in empowering Porang farmers. Porang farmers operating under the sponsorship of the farmer groups in Rejosari Village were the study's variables.

The operational definition is a measurement that is applied in the field and conveyed in a way that approaches objectivity. Its goal is to characterize the variables that emerge from a study as specific indicators. These variables are separated into two categories:

1. Independent Variable: The variables that alter or impact the dependent variable are known as independent variables. The performance improvement of the agricultural extension officers in Rejosari Village, Bantur District, Malang Regency (X), is the independent variable utilized in this study.

2. Independent Factor: The variable impacted by the independent variables is known as the dependent variable. The variable that is dependent

3.1. Sampling Method

The method of determining the sample in this study uses the Saturated Sampling method. The Saturated Sampling Method is a technique for determining a research sample by involving all population members as samples (Raco, 2018). The population in this study were all Porang farmers in the KPHR in Rejosari Village, Bantur District, Malang Regency,

both those who were doing Porang farming and those who had been doing Porang farming. The population is 50 farmers, and all of them are respondents.

3.2. Data Collection

According to Tersiana (2018) Data collection methods can be done in two ways, namely:

Data collection techniques can be done using primary data and secondary data. Primary data refers to information obtained first-hand by researchers, while secondary data refers to pre-existing information.

Techniques for obtaining data can be done by observation, interviews and documentation. Observation is observation as well as sequential recording consisting of elements that appear in a phenomenon in the object of research, and interviews are a method used to obtain information orally with respondents by asking questions freely but still in the interview guidelines that have been made while documentation can be obtained from information in the form of books, archives, documents, written numbers and pictures in the form of reports and information that can contain research.

3.3. Data Analysis

The data analysis technique used in this study is a qualitative descriptive data analysis technique, where the presentation of the facts that the researchers obtained from the field was then analyzed and narrated according to the thesis writing mechanism (Raco, 2018).

To find out the level of the role of extension workers in research, each indicator asked was given a score (value), including strongly agree answers were given a score of 5, good answers were given a value of 4, poor answers were given a value of 3, wrong answers were given a value of 2, very bad answers. Good is given a value of 1. The value of each variable is the sum of the scores of each indicator for that variable, so it can be written like an interval:

(5) = Very good (SB)

(4) = Good (B)

(3) = Not good (KB)

(2) = Poor (TB)

(1) = Very Poor (STB)

To find out the score range, the following formula is used:

$$RS= n (m-1) / m \quad (1)$$

Where:

RS = Score range

n = Number of respondents

m = Score the highest mark for each question

Then, to answer the formulation of the problem in this study using the Likert's Summated Rating Scale measurement.

The Likert's Summated Rating Scale is a scale based on the number of attitudes of respondents in responding to questions related to the indicators or factors being measured in this study divided into three indicators (Tersiana, 2018).

High Performance: Rate performance level 2,34–3,00

Moderate Performance: Score the level of performance 1,67–2,33

Low Performance: Score the level of performance 1,00–1,66

Furthermore, the data obtained was analyzed using the SPSS version 25 program. The Rank Spearman correlation test method was used to measure the degree of closeness of the relationship between the performance of agricultural extension agents and the empowerment of farmers. If the rank Spearman correlation test value is more significant than 0.5, then the closeness of the relationship is very high, whereas if the value obtained is less than 0.5, then the closeness of the relationship is very low. Spearman's Rank Correlation is a tiered rank correlation and can be written in mathematics as follows (Sari *et al*., 2021).

$$R=1=\frac{N \Sigma d_2}{N(n_2 - 1)} \quad (2)$$

Where:

R = Spearman Rank Correlation Value

N = Number of Samples

d2 = Difference Each Sample

To find out the good performance of extension agents, the F-test and t-test methods are used.

3.3.1. F-test and t-test

The F test aims to examine the effect of all independent variables on the dependent variable together or to determine the effect of the independent variables significantly on the dependent variable. If F count < F table, then the independent variables together have no influence on the dependent variable (not significant), or changes in the dependent variable cannot be explained by changes in the independent variables, where the significance level used is 5%.

The t-test is used to decide whether the hypothesis is proven or not, where the significant level used is 5%, and to find out whether each independent variable has a significant effect on the dependent variable or to find out whether each variable independent variables can explain the changes that occur in the dependent variable significantly. If the value of t count> t table, then the dependent variable individually affects the dependent variable.

4. Result and Discussion

4.1. Characteristics of Porang Farmers

Several characteristics of the respondents considered important included age, education, farming experience, number of family members, land area and ownership status. These characteristics are considered essential because they mutually influence the implementation of farming, especially in the implementation of cultivation techniques, which will later affect production, costs, revenues, farming income and productivity of Porang plants. For more details regarding the characteristics of Porang farmers, it can be seen as follows:

Table 2. Socio-demographic profiles of respondents.

Socio-demographic	Frequency (*n*)	Percentage (%)
Age Group (Years)		
35–40	3	6
> 40–45	4	8
> 45–50	7	14
> 50–55	6	12
> 55–60	10	20
> 60–65	11	22
> 65–70	6	12
> 70–75	3	6
Total	50	100
Level of education		
Graduated from elementary school/equivalent	27	53
Graduated from Middle School/Equivalent	10	20
Graduated from high school/equivalent	13	27
Total	50	100
Farming Experience (Year)		
2	8	16

3	17	34
4	16	32
5	9	18
Total	50	100
Number of Family Members		
0–2	4	8
3–4	27	54
5–6	19	38
Total	50	100
Land area (Ha)		
0–1	14	28
1–2	24	48
2–3	12	24
Total	50	100
Mastery Status		
Rent	0	0
One's own	50	100
Farm workers (It belongs to people)	0	0
Total	50	100

Table 2 shows that the age of Porang farmers is > 60–65 years, with a percentage of 22%. The farmer's age will affect his physical and mental abilities. According to Muhammad Al Giffari *et al*. (2022), productive farmers are around 35–65 years old because they have strong physical abilities, are creative and dynamic and are quicker in adopting innovations than older farmers. Farmers over 65 years old will find it difficult to accept innovations and reject new technologies. This is because farmers aged between 35–65 years are generally more aggressive and more courageous in taking risks, and more dynamic so they gain new experiences more quickly in increasing the productivity of their farming business.

The level of education is a factor that can affect the success rate of a person's work and is a supporting factor in the ability to absorb technology by farmers. Most respondents' farmer education graduated from elementary school/equivalent with a percentage of 53%. Low education will affect farmers' absorption of technological developments, resulting in difficulties, and it takes a long time to adopt innovations. In contrast, farmers with higher education generally easily accept innovations that are beneficial to their farming activities.

The most significant percentage of farming experience of Porang farming respondents is 34% in the range of 3 years. Farming experience in the research area is relatively new, which means that the ability of the respondent farmers is not optimal in

Porang farming and in determining the decisions to be taken to obtain optimal profits and income.

The number of family dependents also affects the income and expenses of farming families. An increasing number of dependents will become a burden for farmers when viewed from a consumption perspective. However, the number of families is an essential asset in helping farmer activities because it will add to the outpouring of family labor, so that production costs incurred by farmers are smaller. Most (54%) of the dependents of farmers are 3–4 people.

The cultivated land area is one factor that significantly influences a farm in obtaining the amount of production. The amount of production produced depends on the productivity of the land and the technology applied to farming, which will affect farmers' income and employment. The majority of the land area owned by farmers is in the range of 1–2 Ha with a percentage of 48%.

The total area of farmers' land owned by the respondent farmers is their own, with a total of 50 respondents (100%). Farmers who use their land are certainly more flexible in carrying out their farming activities and reducing production costs.

Decent forest plants are developed in the conservation of forest resources to shift the community's orientation and livelihoods around the forest from wood forests to non-wood forests, improving the welfare of efforts to preserve the forest area. The nutritional content in multi-complex plants is mainly sodium, glucomannan, calcium oxalate crystals, raw fiber, and reduction sugars. Treatment of post-harvest flour produces a variety of shapes of chips, flour, and glucomannan flour that can be used as base ingredients for flour, instantaneous pepper, and other food and beverage products. The issues faced by farmers, in general, are 1) property, 2) safety (often there is theft of field crops), and 3) forest fires. Frog breeding innovations are 1) reproduction by frog or frog; 2) production from fruit or seeds; and 3) production by bulbs.

4.2. The Role of Agricultural Extension

The role of agricultural extension is a series of activities that provide learning process facilities, assistance, coaching, sources of information, problem solving, and monitoring and evaluation of farmer activities in farming (Putra, 2016). The role of counselling that has been carried out by extension workers in Rejosari Village is:

4.3 Role of Extension as Facilitator

The role of the agricultural extension worker as a facilitator is the task of the extension worker providing training to farmers. It is responsible for providing an adequate learning environment, which is expected to be carried out by serving the needs and needs of the target community in facilitating the implementation of an activity process. The role of extension workers as facilitators in this study can be seen in Table 3.

Table 3. Data on the role of extension workers as facilitators

No.	Indicator	Average Score	Category
1	Access to the agricultural service	5	Very Good
2	Get the means of production	5	Very Good
3	Capital loans from related agencies	2	Poor
4	Porang farmer training	5	Very Good
5	Assistance on how to cultivate	5	Very Good
6	Serving the needs and needs of farmers	5	Very Good
	Average	4,5	Very Good

Source: (Primary data will be processed in 2022)

From the table above, it can be seen that the role of Agricultural Extension as a facilitator is included in the (Very Good) category with a score of 4.5. It can be concluded that the Agricultural Extension Officers at the research site have carried out their duties properly and correctly following the research results obtained based on the responses of the Porang farmers.

4.4. The Role of Extension as a Motivator

The role of the extension worker as a motivator is a task that is expected to arouse the enthusiasm of Porang farmers to participate in farmer group activities to increase the productivity of Porang farming. The role of the instructor as a motivator in this study can be seen in Table 4 below.

Table 4. Data on the Role of Extension As a Motivator

No.	Indicator	Average Score	Category
1	Directing farmers in the care and control of pests	5	Very Good
2	Motivate to continue to improve skills in Porang farming	5	Very Good
3	Innovate in developing Porang farming	5	Very Good
4	Teaches how to increase productivity	5	Very Good
5	Teach how to handle post-harvest	5	Very Good
6	Guiding farmers well	5	Very Good
	Average	5	Very Good

Source: (Primary data will be processed in 2022)

Table 4 shows that the role of Agricultural Extension as a motivator is classified as effective with a score of 5 (Very Good), meaning that extension agents as motivators can provide positive motivation and encouragement to farmers for sustainability and increase the production of Porang farming.

4.5. The Role of Extension as a Mediator

The role of the extension agent as a mediator is the ability of the extension worker to provide information related to Porang farming and to help farmers to be linked to sources of information, with the aim that farmers can become independent farmers in solving the problems they face. The role of agricultural extension workers as mediators in Rejosari Village is described in Table 5.

Table 5. Data on the Role of Extension As a Mediator

No.	Indicator	Average Score	Category
1	Using print media	5	Very Good
2	Easy-to-understand information	5	Very Good
3	Solution to the problems encountered	3	Very Good
4	Communicate well	5	Very Good
5	Help market production	3	Very Good
6	Assist with post-harvest handling	5	Very Good
	Average	4,3	Very Good

Source: (Primary data will be processed in 2022)

Based on Table 9, the role of extension workers as mediators is quite good because extension workers have carried out their duties to the maximum extent possible in providing directions and print media that are easy for farmers to understand by obtaining a score of 4.3 (Good) so that it can be interpreted that Porang farmers in Rejosari Village can access knowledge and obtain information about Porang farming directly from the source.

4.6. The Role of Extension as an Innovator

The role of extension workers as innovators is related to disseminating information owned by extension agents, ideas, innovations and new technologies to farmers with the aim that farmers can use them to increase the production of their farming businesses. The role of Agricultural Extension as innovators is presented in Table 6.

Table 6. Data on the Role of Extension Workers as Innovators

No.	Indicator	Average Score	Category
1	Provide encouragement in using technology	5	Very Good
2	Provide ideas/ideas in developing Porang farming	1	Very Bad
3	Putting ideas into practice right away	1	Very Bad
4	Provide advice and directions	5	Very Good
5	Provide the right strategy	5	Very Good
6	Increase selling value	5	Very Good
	Average	3,6	Good

Source: (Primary data will be processed in 2022)

From Table 6, the role of extension workers as innovators is classified as (Good) with a score of 3.6, so it can be interpreted that Porang farmers in Rejosari Village agree with all the indicators given by extension agents, but two indicators need to be improved by agricultural extension workers, namely how to provide ideas/ ideas in developing Porang farming and directly practicing these ideas to maximize them even more.

4.7. The Role of Extension as an Organizer

The role of extension workers as organizers is significant because it can help farmers manage groups and maintain and establish cooperation with other farmer groups to exchange information. The role of extension workers as organizers in this study is in Table 7.

Table 7. Data on the Role of Extension As an Organizer

No.	Indicator	Average Score	Category
1	Get cooperation with other farmer groups	5	Very Good
2	Contributing to the development of Porang farming	5	Very Good
3	Directly control the development of Porang farming in the field	3	Poor
4	Help so that the results obtained are of high quality and competitive	5	Very Good
5	Make market network breakthroughs	5	Very Good
6	Maintain harmony among group members	5	Very Good
	Average	4,7	Very Good

Source: (Primary data will be processed in 2022)

Table 7 shows that the role of agricultural extension workers as organizers is very optimal because they get a score of 4.7, close to 5 (Very Good), meaning that the role of extension workers as organizers is very good and essential for farmers. After all, they have helped and facilitated farmers in exchanging information with other groups. as well as being able to sell production at maximum prices by utilizing market networks that have worked together so that the welfare of farmers is maintained.

4.8. Agricultural Extension Performance in Empowering Porang Farmers

The performance of agricultural extension workers in empowering Porang farmers in Rejosari Village, Bantur District, Malang Regency can be seen from the results obtained based on the role of agricultural extension workers using the Likert's Summated Rating Scale formula, as shown in Table 8 below:

Table 8. Agricultural Extension Performance Data in Empowering Porang Farmers

No.	Extension Role	Total score	Grade	Category
1	Facilitator	5	2,5	High Performance
2	Motivator	5	2,5	High Performance
3	Mediator	5	2,5	High Performance

No.	Extension Role	Total score	Grade	Category
4	Innovator	4	2,0	High Performance
5	Organisator	5	2,5	High Performance
	Average		2,4	High Performance

Source: (Primary data will be processed in 2022)

In Table 8, the performance of agricultural extension workers in empowering Porang farmers obtained an average value of 2.4 in the high-performance category with a total of 50 respondent farmers. Agricultural Extension in empowering Porang farmers in Rejosari Village is quite good and needs to be maintained. These categories can be explained in the following elaboration form:

The performance of agricultural extension workers in empowering Porang farmers as facilitators is in the high-performance category with a score of 2.5. This is because extension workers can provide infrastructure assistance needed by farmers, facilitate farmers in getting access to the Agriculture Service, and facilitate farmers in carrying out direct practice with training that can help Porang farming continue to develop optimally.

The performance of agricultural extension workers in empowering Porang farmers as a motivator obtained a score of 2.5 (High Performance), due to the ability of extension workers to keep farmers' enthusiasm to continue to be strong and determined in cultivating Porang farming and directing farmers in plant care and controlling pests and weeds and continuing to improve skills.

The performance of agricultural extension workers in empowering Porang farmers as mediators is classified as high performance because they get a value of 2.5. This is because extension workers use print media in extension activities so that farmers can repeat the material independently besides extension agents are also able to find solutions to problems faced by farmers and help farmers in post-harvest handling.

The performance of agricultural extension workers in empowering Porang farmers as innovators is moderate because the value obtained is 2.0. This is influenced by the lack of optimal instructors in giving ideas to farmers to develop Porang farming and not being optimal in directly practising the proposed ideas/ideas, thus making it difficult for farmers to assume these ideas/ideas. Therefore, extension workers need to increase their role as innovators, for even better.

Agricultural extension workers' performance in empowering Porang farmers as organizers obtained a score of 2.5 in the high-performance category. Because extension agents can carry out their duties optimally, this can be proven by the cooperation established with other groups and extension workers can maintain harmony among group members.

In addition to the above, we also need to know the degree of closeness of the relationship between the performance variables of Agricultural Extension and the

empowerment of Porang farmers in Rejosari Village, Bantur District, Malang Regency. In order to find out the close relationship between the performance of agricultural extension and the empowerment of farmers in this study, data was obtained, as shown in Table 9.

Table 9. Farmer Extension and Empowerment Performance Data

No.	X	Y	No.	X	Y
1	128	64	26	133	66,5
2	133	66.5	27	133	66.5
3	133	66.5	28	134	67
4	128	64	29	134	67
5	135	67.5	30	134	67
6	134	67	31	124	62
7	129	64.5	32	134	67
8	134	67	33	133	66.5
9	133	66.5	34	134	67
10	134	67	35	134	67
11	134	67	36	134	67
12	129	64.5	37	124	62
13	129	64.5	38	134	67
14	134	67	39	133	66.5
15	133	66.5	40	134	67
16	134	67	41	134	67
17	134	67	42	134	67
18	134	67	43	124	62
19	124	62	44	134	67
20	134	67	45	133	66.5
21	133	66.5	46	134	67
22	134	67	47	134	67
23	134	67	48	134	67
24	134	67	49	124	62
25	134	67	50	134	67

Source: (Primary data will be processed in 2022)

Information:
X = Total Farmer Performance:

Facilitator
Motivator
Mediator
Innovator

Organisator

Y = Farmer Empowerment Value

After obtaining the data above, an analysis of the Spearman Rank correlation test and the t-test and F test were carried out in the SPSS 25 application, and the results are shown in Table 10.

Table 10. The Closeness of the Relationship Between the Performance of Farmer Extension with Farmer Empowerment

Correlations

			Performance	Y
Spearman's rho	*kinerja*	*Correlation Coefficient*	1.000	1.000**
		Sig. (2-tailed)	.	.
		N	50	50
	Y	*Correlation Coefficient*	1.000**	1.000
		Sig. (2-tailed)	.	.
		N	50	50

**. Correlation is significant at the 0.01 level (2-tailed).

Source : (Primary data will be processed in 2022)

Information

Extension Performance : Fasilitator, Motivator, Mediator, Innovator, Organisator → Total

Y: Farmer Empowerment

Based on Figure 3 above, it can be concluded that the closeness of the relationship between performance variables and farmer empowerment is in the very high-level category because it obtains a value of 1,000 ≥ 0.5, meaning that if the extension worker's performance is good, the level of empowerment of Porang farmers will also be good, for data that is processed more clearly can be seen in Appendix 2.

Table 11. F-test results data and t-test.

Variable	$T_{calculate}$	Sig.	Information
(Constant)	1,899	0,064	No significant effect
Facilitator	0,539	0,593	No significant effect
Motivator	1,612	0,114	No significant effect
Mediator	1,469	0,149	No significant effect
Innovator	0-,921	0,362	No significant effect
Organisator	2,120	0,040	Significant influence
T_{table}	2,011		
$F_{calculate}$	1,677		
F_{tabel}	2,43		

Source: (Primary data will be processed in 2022)

Based on Table 11, it is known that the significant value for the effect of the independent variable (X) on the dependent variable (Y) is 0.000 <0.05. F count 1.677 <F table 2.43, so there is no effect of the independent variable (X) on the dependent variable (Y) together the same or significant, and in Table 14 it is known whether the variables used individually influence or not the empowerment of farmers with a significant level of 0.05 and t table 2.011, so that:

1. The facilitator obtained a sig value of 0.593 > 0.05 and a t-count value of -0.539 < t table 2.011, so partially, the facilitator does not affect empowering Porang farmers due to a lack of understanding of farmers towards the facilitator provided by the extension worker.

2. The motivator obtained a sig value of 0.114 > 0.05 and a calculated t value of 1.612 <t table 2.011 so that partially, the motivator does not affect empowering Porang farmers due to lack of training and meetings between farmers and extension workers.

3. The mediator obtained sig 0.149 > 0.05 and t value 1.469 < t table 2.011, so that partially, the mediator does not affect the empowerment of Porang farmers.

4. Innovators obtained sig 0.362 > 0.05 and t count values 0-.921 <t table 2.011 so that partially innovators do not affect the empowerment of Porang farmers.

5. The organizer obtained sig 0.040 > 0.05, and the t-value was 2.120 > t-table 2.011, so partially, the organizer affected the empowerment of Porang farmers because it had an important role and helped make it easier for farmers to exchange information with other farmer groups and assist in selling their produce Porang.

5. Conclusions

From the research results, the writer can know that The performance level of Agricultural Extension is included in the "High" category with a score of 2.4. The role of Agricultural Extension Officers as Facilitators is included in the "Very Good" category with a score of 4.5. The role of Agricultural Extension as a Motivator is classified as "Very Good" with a score of 5. The role of agricultural extension as a mediator is classified as "good," with a score of 4.3. The role of agricultural extension as an innovator is classified as "good," with a score of 3.6. The role of agricultural extension officers as organizers is maximal, with a score of 4.7. The closeness of the relationship between performance variables and farmer empowerment is in the very high-level category, with a value of $1{,}000 \geq 0.5$.

Author Contribution: All authors have accepted responsibility for the entire content of this manuscript and approved its submission

Acknowledgement: The Authors are grateful for the reviewer's valuable comments that improved the manuscript

Funding: Authors state no funding involved

Conflict of Interest: The authors declare no conflict of interest in this work.

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