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Will the Role and Effectiveness of Agriculture, Animal Husbandry, and Plantation Service Organization to Farmer Empowerment: A Study in Mungkajang District, Palopo City

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Abstract

The development of the agricultural sector is one of the important pillars to increase national economic growth and community welfare. This study measures whether the role of the Agriculture Office is focused on the empowerment of farmers through the effectiveness of the organization in Mungkajang District, Palopo City. The research methodology used was quantitative by collecting data from farmer groups using a structured questionnaire using the Likert scale. The number of respondents was 102 members of farmer groups. The data was analyzed statistically inferentially using the Structural Equation Modeling (SEM) technique using the Smart-PLS application. The results of the study show that the research results obtained that the variable of Service Role (X) has a positive and significant effect on Farmer Empowerment (Y) in Mungkajang District, Palopo City; Organizational Effectiveness (Z) has a positive and significant effect on Farmer Empowerment (Y) in Mungkajang District, Palopo City; the role of the Service (X) has a positive and significant effect on the Effectiveness of the Organization (Z); and Role (X) has a positive and significant effect on Farmer Empowerment (Y) in Mungkajang District through the Organizational Effectiveness (Z) of the Palopo City Agriculture, Livestock, and Plantation Office. Suggestion is that in the future, this research could be carried out on a larger scale, with the coverage of all farmer groups in Palopo City. This would be accomplished by comparing the farmer group in each regional work unit. This would make it possible to evaluate the role and effectiveness of agriculture, livestock, and plantation service organizations in farmer empowerment.

INTRODUCTION

The development of the agricultural sector is one of the important pillars in an effort to increase national economic growth and community welfare, especially in areas that have great potential for natural resources but have not been utilized optimally (Managanta, 2020). During increasing demand for agricultural products, strengthening the capacity of farmers is a must. Optimization of agricultural potential needs to be structured in a directed development strategy, which includes support in terms of funding, infrastructure, and the availability of professional human resources (Anwas, 2013). This is a decisive factor in increasing agricultural productivity, both at the production stage and post-harvest (Elian et al., 2014)

Farmer empowerment does not only focus on technical aspects, but also includes strengthening farmer group organizations, increasing motivation and participation, and developing competitive business networks (Zulfikar et al., 2018). Farmer groups play a strategic role as a forum for coaching, counseling, and applying agricultural technology innovations in a structured and

systematic manner (Euriga et al., 2018). In this case, the local government, through the Agriculture, Livestock, and Plantation Service, is expected to be able to become the driving force for participatory and sustainable agricultural development. In addition, the empowerment carried out by the government aims to expand the active participation of the community in determining their future (Ningsih, 2018).

The central government has provided a strong legal foundation in empowering farmers through several regulations, such as Law Number 19 of 2013 concerning the Protection and Empowerment of Farmers, Law Number 16 of 2006 concerning the Extension System of Agriculture, Fisheries, and Forestry, and Regulation of the Minister of Agriculture Number 273/KPTS/OT.160/4/2007 concerning Guidelines for Institutional Development of Farmers. In addition, the Regulation of the Minister of Agriculture Number 33 of 2016 also emphasizes the importance of facilitation, mentoring, and capacity building activities for farmers to improve the quality of life and independence (Menteri Pertanian RI, 2016)

Palopo City is one of the areas that relies on the agricultural sector as the economic support of some of its people, especially in sub-districts that have productive land. Mungkajang District, as one of the sub-districts in Palopo City, has quite a wide agricultural potential, with a total land use of 1,220 hectares. Land use data can be seen in Table 1:

Table 1. Use of Agricultural Land in Mungkajang District

No	Land Use	Broad (ha)
1.	Irrigated Rice Fields	47
2.	Tegal	105
3.	Lading/Huma	9
4.	Perkebunan	939
5.	Pool	2
6.	Pekarangan	1.502
7.	People's Forest	94
8.	National Forests	10
9.	Miscellaneous Uses	11
	Total	**1.220**

Literatur Review

Farmer empowerment

Empowerment refers to the state or outcome that a social change wants to achieve, namely a society that is empowered, has power or has knowledge and ability to meet its life needs, both physical, economic, and social, such as having confidence, being able to convey aspirations, having a livelihood, participating in social activities, and being independent in carrying out their life tasks. Farming communities are the main actors that must be empowered. The initial stage that needs to be taken to empower farmers is to form an institution in the form of farmer groups, which are special cooperation organizations formed in the community (Arifien et al., 2020).

Three main indicators are interrelated and mutually reinforcing in Farmer Empowerment. First, increasing the capacity of farmers through technical training, administrative bookkeeping, and the adoption of modern agricultural technology, as seen in the smart farming program in East Nusa Tenggara (Koehuan et al., 2025). Second, the economic independence of farmers is strengthened by the formation of farmer corporation institutions that access capital, markets, and

formal institutional infrastructure (Wahyu Mulyani et al., 2024) as well as basic financial education that improves income management and reduces dependence on loan sharks in Semarang (Mudrikah et al., 2024). Third, the active participation of farmers in farmer institutions is very important as a means of joint learning, strengthening economic networks, and organizational control, where the institutions formed by farmers for farmers encourage independence and welfare (Malik, 2023)

The Role of the Agriculture Department

The Agriculture and Plantation Service is positioned as an implementing element of the Government in the field of Government, Development and Social Community led by a Head of the Service, and is under and responsible to the Regent through the Regional Secretary with the task of assisting the Regent in carrying out part of the tasks of the Implementation of Regional Government affairs in the field of Agriculture, Food Crops and Horticulture based on the principle of regional autonomy. The Agriculture Office has a very big role in increasing agricultural businesses. With good support from the Agriculture Office, people who depend on farming for their livelihoods will live more decently and prosperously. It is necessary to play an active role from every part of the Agriculture Service to realize these ideals (Walikota Palopo, 2024).

According to (Ardita et al., 2017), the role of the agriculture office includes the functions of coaching, counseling, facilitation of production facilities, agricultural technology training, and the development of a network of farmer business partnerships. The Agriculture Office is responsible for directing farmers to be able to increase productivity, product quality, and strengthen the independence of farming businesses through an agribusiness-based approach. Furthermore, it was explained by (Seran et al., 2023) that the Agriculture Office also has a strategic task in conducting policy advocacy, assisting farmer groups, and ensuring that farmers get access to sources of capital, technology, and markets. Empowering farmers through local needs-based programs has been an approach that has been emphasized in the last five years (Adiwisastra et al., 2019).

In the context of empowerment, the role of the agriculture office cannot be separated from the participatory principle, where farmers are not only objects, but subjects in the development process. As stated by (Purwatiningsih et al., 2018), the agriculture office needs to develop empowerment methods based on the real needs of farmers, including increasing the institutional capacity of farmer groups, diversifying farmer businesses, and integrating agriculture with information technology. The role of the Agriculture Office covers various aspects, including: (Kementerian Pertanian Republik Indonesia, 2024)

1. Regulator

   The Agriculture Office functions to formulate local regulations and policies that support agricultural sustainability, such as land use regulation, pest and plant disease control, and standardization of production results. This regulation aims to create a healthy, fair, and sustainable agricultural ecosystem.
2. Dinamisator

   The Agriculture Office is tasked with arousing the enthusiasm and motivation of farmers to continue to innovate. This is done through empowerment activities, mentoring farmer groups, developing community-based agribusiness, and encouraging the adoption of modern agricultural innovations.
3. Facilitator

The Agriculture Office facilitates farmers in accessing various forms of assistance, such as superior seeds, subsidized fertilizers, agricultural machinery (alsintan), and opening access to the agricultural product market. In addition, the Service also plays a role in facilitating training and counseling to farmers to improve their skills in applying appropriate technology.

Organizational Effectiveness

Effectiveness in the context of farmer empowerment refers to the extent to which a program or intervention is able to achieve predetermined goals, such as increasing farmer productivity, income, and independence. According to (Ledjab et al., 2025) states that effectiveness will show whether or not the implementation of a work is good or not, and to what extent the desired results are achieved. The effectiveness of empowering farmer groups will illustrate how well the role is carried out by farmer groups.

Some strategies that can be applied to increase the effectiveness of farmer empowerment programs include: (Kementerian Pertanian Republik Indonesia, 2024)

1. Strengthening the institutional capacity of agricultural extension

   The principles of extension are a socio-cultural process, where farmers' attitudes and opinions need to be appreciated through two-way communication. Sharing knowledge through dynamic and facilitated discussions allows farmers to refer to and assimilate knowledge into life experiences, which provides higher knowledge. The role of counseling officers changed from teachers to facilitators. The credibility of counseling practitioners in building trust and trustworthiness. This can be achieved through simple steps such as voicing the correct opinion of the idiom (e.g., slang or the use of anecdotes), asking individual opinions on the state of the farmer, and empathizing with the views (Agunga, 2015).
2. Development of agricultural information systems

   Access to information on farmer institutions in Indonesia is uneven and difficult to obtain. The role of the agricultural sector is very large for national economic growth. Therefore, a solution is needed to make it easier for all groups to get access to good information on farmer institutions. Therefore, it is necessary to build a Web-based Information System that is able to monitor farmer institutional data such as Farmer Groups (POKTAN) and Farmer Group Associations (GAPOKTAN) (Usadolo, 2020).
3. Development of a farmer empowerment model based on local wisdom

   Local wisdom is the basis for the community's strategy to deal with disasters through various activities and meet the needs of the community in the future. Indonesians have local wisdom in maintaining food security for natural disaster mitigation. The importance of increasing farmer participation, institutional empowerment, and local wisdom in food procurement and availability supports sustainable food security. Along with the increase in population growth, which averages around 1.49%, it causes an increase in food demand, while economic growth is around 6-7% and food income is still elastic. The need to anticipate extreme climate anomalies, high land conversion degradation and control, and various other related constraints is predicted to cause relatively low food capacity and availability, which requires the alignment and assistance of various related parties in the implementation of various agricultural technology innovations. Increasing and empowering the role of agricultural institutions is one of the government's strategies to support sustainable food independence and security (Arifin, 2004).
4. Increasing farmers' access to agricultural technology and innovation

Increased access for farmers to agricultural technologies, especially for smart agriculture and precision agriculture. Farmers will gain practical information on how new technologies can mitigate some of the challenges facing farmers today, thus leading them in a more sustainable direction and a productive future. This approach uses a personalized and context-aware system with ubiquitous computing devices and adaptive learning, which clearly improves agricultural practices by leveraging real-time data to provide immediate responses to environmental changes (Awotide et al., 2016).

According to (Kim et al., 2024), indicators that can be used to measure the effectiveness of an organization are: the achievement of its goals is a process, which includes factors such as the specified achievement period, concrete goals, and legal basis. Integration can be measured based on an organization's ability to socialize, develop consensus, and communicate with various other organizations. The factors involved include the socialization procedures and processes. Adaptation is judged by an organization's ability to adapt to its environment. According to (Idawati et al., 2019) One of the environmental factors is climate, such as rainfall, temperature and exposure to sunlight, which also affect the strength of plants in addition to physical and chemical factors in the soil related to root infiltration and the ability to absorb nutrients. Adaptability includes the ability to dynamically change or align standard operating procedures when the environment changes. Factors involved in adaptation include improving capabilities as well as facilities and infrastructure.

Research Conceptual Framework

The purpose of this study is to explore how the role of the Agriculture Office is affected by the empowerment of farmers through organizational effectiveness in Mungkajang District, Palopo City. Based on the literature review and the conceptual framework, the research hypothesis is determined as shown in Figure 1:

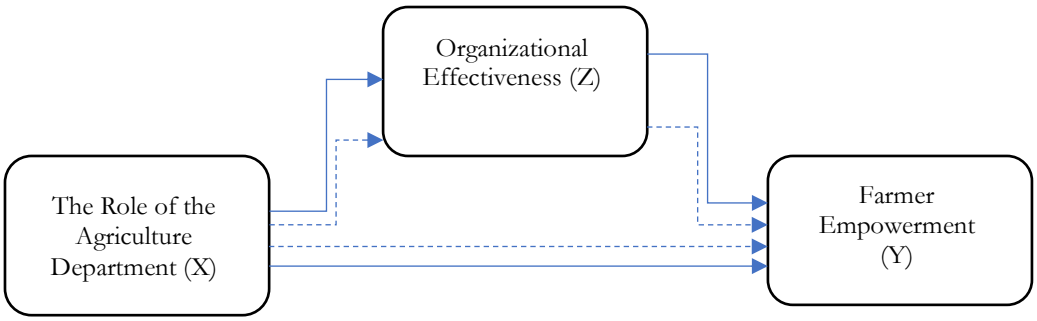


Figure 1. Conceptual framework

As shown in Figure 1, the research hypothesis can be explained as follows:

H1= The influence of the role of the agency on the empowerment of farmers in Mungkajang District, Palopo City.

H2= The effect of organizational effectiveness on the empowerment of farmers in Mungkajang District, Palopo City.

H3= The influence of the role of the service on the effectiveness of the organization.

H4= The influence of the role of the agency on the empowerment of farmers through organizational effectiveness as an intervening variable in Mungkajang District, Palopo City.

METHODS

The research method used is quantitative research, which is a process to acquire knowledge by using numeric data as a tool to find the desired information. The data obtained will be statistically intrinsic using the Structural Equation Modeling (SEM) technique, namely SEM-PLS with the Smart-PLS 3 statistical tool. This study examines the observed variables and analyzes the influence of dependent and independent variables. The dependent variable consists of farmer empowerment (Y), while the independent variable consists of the Role of the Service (X) and Organizational Effectiveness (Z) as the intervening variables. This research was conducted in Mungkajang District, Palopo City, from April to June 2025.

The data collection technique used is purposive sampling, which is the determination of samples based on certain criteria that are relevant to the purpose of the research. This technique was chosen because not all members of the population have adequate or relevant information regarding the variables being studied (Idawati et al., 2023; Sigit & Wiwit, 2022). The respondent criteria are farmer groups that are still active, farmer group administrators consisting of the chairman, secretary, and treasurer, willing to become research respondents. The number of research samples was determined using the Slovin formula, and the number of respondents was 102 members of the selected group.

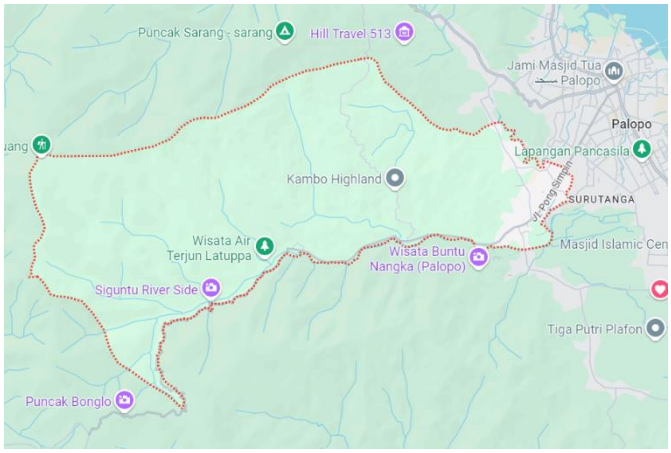
In this study, the data collection method used was a questionnaire given to 102 farmers. Namely, data collection was carried out through structured interviews using a questionnaire that applied the Likert scale. This study uses semi-structured interview guidelines compiled based on the indicators of Role, Organizational Effectiveness, and Farmer Empowerment. Each indicator of the role, organizational effectiveness, and empowerment of farmers was created a question/questionnaire that used a Likert Scale of 1-5 to assess each indicator, namely: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

RESULTS AND DISCUSSION

Result

Overview of research locations

Mungkajang District is a sub-district in Palopo City with an area of 53.8 km2. There are four sub-districts, namely Mungkajang Village, Murante Village, Latuppa Village, and Kambo Village. The category of sub-districts is divided into two criteria, namely urban criteria, namely Mungkajang Village, while the other three sub-districts, namely Murante, Latuppa, and Kamboha Villages, are considered as criteria in rural criteria. The distance to the sub-district capital in Mungkajang Village is about 3 km from Palopo City.



(https://www.google.com)

Figure 2. Map of Mungkajang District, Palopo City

The geophysicist states that the sub-district is more with the topography of the mountains. Administratively, Mungkajang District is bordered by West Wara District to the north, Sendana District to the south, Wara District to the east, and Luwu Regency to the west. The population of Mungkajang District is 9,867 people, with 3,617 males and 3,779 females. The number of Rukun Warga (RW) in Mungkajang District amounted to 19 RWs, with details of Mungkajang Village as many as 3 RWs, Murante Village as many as 9 RWs, Latupa Village as many as 4 RWs, and Kambo Village as many as 3 RWs. Meanwhile, the number of RukunTetangga (RT) is 48 RTs, with details in Mungkajang Village as many as 11 RTs, Murante Village as many as 17 RTs, Latuppa Village as many as 11 RTs, and Kambo Village as many as 9 RTs.

Characteristics of the study respondents

Table 2. Characteristics of the study respondents

No	Category	Respondents (people)	Percentage (%)
1	Gender		
	Man	84	82
	Woman	18	18
2	Age		
	21-40 years old	25	25
	41-70 years old	77	75
3	Education		
	SMA	80	78
	Bachelor	22	22

The farmers who were the target of the study as shown in table 2 were 84 men or 82%, women 18 people or 18%, 25 people aged 21-40 years or 25%, 41-70 years old as many as 77 people or 75%, with high school education 80 people or 78%, and bachelor's as many as 22 people or 22%.

Inferential Sastatistic Analysis

Convergent validity test

Convergent validity testing relies on the measurement of outer loading or loading factor. An indicator is considered to have convergent validity in the excellent category if its outer loading value is more significant than 0.7 (Khaddapi et al., 2022). The convergence validity results for this study are displayed in Table 3.

Table 3. Results of Convergent Validity Test

Variable	Indicator	Outer Loading
The Role of the Service (X)	X1. Regulator	0,964
	X3. Facilitator	0,955
Farmer Empowerment (Y)	Y1. Strengthening the capacity of farmers	0,926
	Y2. Economic independence	0,916

	Y3. Active participation of farmers	0,981
Organizational Effectiveness (Z)	Z1. Goal achievement	0,940
	Z2. Integration	0,939

Source: Data processed with Smart PLS (2025)

Table 3 shows the results of the convergent validity test. All indicators have an outer loading value greater than 0.7. Therefore, it can be inferred that all indicators are valid and suitable for use in the research model. Another approach to evaluate the discriminant validity is by comparing the square root of the average variance extracted for each construct with the correlation between different constructs in the model and utilizing the loading factor value. A model is said to have good discriminant validity if each construct's average variance extracted (AVE) root is greater than the correlation between that construct and other constructs (Tang et al., 2024). The square root value of the AVE is shown in Table 5, and the next can be seen in the Fornell-Lacker Criterium Table 4.

Table 4. Fornell Lacker Criterium

	Farmer Empowerment (Y)	**Organizational Effectiveness (Z)**	**The Role of the Agriculture Department (X)**
Farmer Empowerment (Y)	0,941		0,966
Organizational Effectiveness (Z)	0,931	0,940	0,855
The Role of the Agriculture Department (X)			0,960

Source: Data processed with Smart PLS (2025)

Composite reliability test

The composite reliability test is employed to assess the reliability value of indicators on a variable. To satisfy composite reliability, a variable must have a composite reliability value > 0.6 (Memon et al., 2021). The composite reliability results of this study are displayed in Table 5.

Table 5. Cronbach's Alpha & Composite Reliability Test Results

Variable	**Cronbach's Alpha**	**Rho A**	**Composite Reliability**	**Average Variance Extracted (AVE)**
The Role of the Agriculture Department (X)	0,915	0,922	0,959	0,921
Farmer Empowerment (Y)	0,935	0,939	0,959	0,886
Organizational Effectiveness (Z)	0,887	0,867	0,938	0,883

Source: Data processed with Smart PLS (2025)

Table 5 shows the results of the composite reliability test, indicating that the role of the Agriculture Department (X) variable has a specific composite reliability value of 0.959 > 0.6, meaning that all indicators in the role of the Agriculture Department (X) variable are reliable. Farmer empowerment has a composite reliability value of 0.959 > 0.6, which means that all indicators in

the Farmer empowerment variable are reliable. Organizational Effectiveness has a composite reliability value of 0.938 > 0.6, meaning that all indicators in the Organizational Effectiveness variable are reliable, and all AVE value > 0,6 indicates that all variables to indicators are reliable.

R Square test

The R Square test measures the proportion of the impact of exogenous variables on endogenous variables (Memon et al., 2021). The R Square test results can be observed in Table 6.

Table 6. R Square results

	R Square	**R Square Adjusted**
Farmer Empowerment (Y)	0,974	0,973
Organizational Effectiveness (Z)	0,731	0,728

Source: Data Processed with Smart PLS (2024)

The R Square results in Table 6 indicate that the performance variable has an R Square value of 0.974, indicating that the role of the Agriculture Department variable contributes 97.4% Farmer Empowerment. Additionally, the Organizational Effectiveness variable has an R Square value of 0,731, indicating that the Organizational Effectiveness variable contributes 73.1% to farmer Empowerment.

F Square test

The F Square test is a statistical measure used to evaluate the relative influence of an independent variable on dependent variables. F Square, also known as effect size, is a metric used to assess the relative impact of a variable bound to another free variable, commonly referred to as the R^2 change effect. In other words, the change in the value of R2 resulting from removing a specific independent variable from the model can be used to assess the extent to which the excluded variable affects the dependent variable (Awang et al., 2015).

Table 7. F Square results

	Farmer Empowerment (Y)	**Organizational Effectiveness (Z)**	**The Role of the Agriculture Department (X)**
Farmer Empowerment (Y)			
Organizational Effectiveness (Z)	1,575		
The Role of the Agriculture Department (X)	4,090	2,711	

Source: Data processed with Smart PLS (2024)

Based on the findings of F Square in Table 7, the subsequent elucidation can be delineated: the self-efficacy variable has a negligible effect on performance, as indicated by an F Square value of 0.006. Similarly, the self-efficacy variable significantly affects motivation, with an F Square value of 0.092. On the other hand, the discipline variable has a moderate effect on performance, as shown by an F Square value of 0.000.

Hypothesis test

The direct effect analysis, also known as a direct influence test, is a method used to examine the hypothesis of the direct impact of exogenous variables on endogenous variables. The indirect effect test is a valuable tool for examining the hypothesis of the indirect impact of exogenous variables on endogenous variables, which is facilitated by an intervening variable (Harahap et al., 2023). Direct effect results are shown in Table 8.

Table 8. Direct and indirect effect results

Effect	Original sample	Sample Mean	Standard Deviation	T Statistics	P Values
The Role of the Service (X) → Farmer Empowerment (Y)	0,966	0,964	0,015	64,207	0,000
The Role of the Service (X) → Organizational Effectiveness (Z)	0,855	0,856	0,044	19,375	0,000
Organizational Effectiveness (Z) → Farmer Empowerment (Y)	0,392	0,398	0,086	4,542	0,000
The Role of the Service (X) → Organizational Effectiveness (Z)→ Farmer Empowerment (Y)	0,335	0,341	0,077	4,352	0,000

Source: Data processed with Smart PLS (2025)

The direct and indirect effect test results in this study provide the following explanation in Table 8:

Hypothesis 1: The path coefficient value of 64,207 and P Values of 0.000 < 0.05 indicate a significant positive direct influence between the Role of the Agriculture Department (X) on Farmer Empowerment (Y).

Hypothesis 2: The path coefficient value of 19.375 and P values of 0.00 < 0.05 indicate a significant positive direct effect of the Role of the Agriculture Department (X) on Organizational Effectiveness (Z).

Hypothesis 3: The path coefficient value of 4.542 and P Values of 0.000 < 0.05 indicate a strong and significant direct influence of Organizational Effectiveness (Z) on Farmer Empowerment (Y).

Hypothesis 4: The path coefficient value for the indirect influence of the Role of the Agriculture Department (X) on Farmer Empowerment (Y) through Organizational Effectiveness (Z) is 4.352, with a P value of 0.000 < 0.05. This indicates a significant positive indirect influence.

Discussion

The Effect of the Role of the Agriculture Department (X) on Farmer Empowerment (Y)

The relationship between the role of the agriculture department to farmer empowerment is positively and significantly correlated. This happens because every service officer and agricultural extension officer, as a sector liaison in increasing farmer empowerment in the agriculture service,

has a very active role, especially in terms of being a facilitator and a regulator of community differentiation. However, the dynamizer instigator in this study does not have a high influence; this is because the government is more of a regulator and facilitator.

This research also shows that in empowering farmers, the role of the Agriculture Office through agricultural extension workers is at the forefront in increasing the productivity and creativity of farmers. In increasing knowledge in the field of agricultural innovation and technology, the government, through its agricultural extension workers, opens access as much as possible. This is possible if farmers improve their economic performance, participate actively, and at the same time increase their capacity in knowledge capacity.

This research shows the same thing in the research conducted by (Hasan et al., 2017), where the results of the study state that the role of agricultural extension workers is needed in increasing the progress of highly competitive agriculture. In other research conducted by (Khalil et al., 2009) with the title "Assessing Agricultural Extension Professionals' Opinion towards Sustainable Agriculture in Bangladesh", the results of this study suggest that the extension professionals had a moderate to low level of opinion towards sustainable agriculture. Three characteristics (eg, in-service training, in-service sustainable agriculture training, and environmental consciousness) influenced the opinion according to the regression results.

The Effect of the Role of the Agriculture Department (X) on Organizational Effectiveness (Z)

This study's results show no direct positive or significant influence of the Agriculture Department (X) on Organizational Effectiveness (Z). In the SEM analysis, it was found that the significance value was found to be a P-Value of 0.000 < a Cut of Value value of 0.05, which indicates that statistically the influence between the variables is very positive and significant. In the results of the analysis, each indicator had the greatest influence on the regulator indicator of 64,036, while the facilitator indicator obtained a score of 36,328. The results of this analysis show that the influence of each indicator on its variables is very large, so that it greatly affects the influence between the variables and shows positive and meaningful results.

Although indicators such as facilitators and dynamizers have an outer loading value of < 0.70 and are excluded from the model due to low validity, the role of the service as a regulator remains strong and is a major factor in improving organizational effectiveness. This shows that farmers are more aware of the role of policies and regulations, rather than direct assistance and innovation. Overall, the institutional role of the service remains crucial in strengthening the operational effectiveness of the organization as the foundation of services to farmers (Nurmawati et al., 2023).

The Influence of Organizational Effectiveness (Z) on Farmer Empowerment (Y)

Based on the results of the analysis of respondents' responses, the organizational effectiveness variables of the Palopo City Agriculture, Livestock and Plantation Office were proven to have a positive and significant influence on the empowerment of farmers in Mungkajang District, with Statistics = 4.542 and PValue = 0.000 (< α = 0.05). This shows that when service organizations work integrated manner, lead to clear goals, and are responsive to field needs, empowerment results in the form of capacity building, economic independence, and active participation of farmer groups are effectively achieved. Organizational effectiveness continues to play a major role as a mediator and reinforcer of farmer empowerment, as good organizational

structure, strong internal coordination, and consistent achievement of goals make a tangible contribution to the outcome of empowerment.

This research is in line with research conducted by (Huanza et al., 2025) titled "Effectiveness of GAPOKTAN as Formal Farmer Group in Supporting Sustainable Rice Farming", which states that the institutional effectiveness of Gapoktan has a significant relationship with the adoption of sustainable agricultural practices by rice farmers, including the distribution of inputs, communication, collaboration, and knowledge sharing. Although organizational effectiveness in general is still categorized as medium, there is a significant influence on behavior change and improved results. According to (Idawati et al., 2024) farmers have the ability to collaborate in developing agricultural businesses and seek information as a continuous process or a series of continuous events without stopping from various sources such as government, partnerships, and the general public. This is in line with this study that institutional effectiveness significantly affects the empowerment of farmers.

This research is not in line with the research conducted by (Bulkis et al., 2023) berjudul "The Influence of Characteristics and Institutions on the Empowerment of Cocoa Agribusiness Farmer Groups in South Sulawesi, Indonesia", which states that the empowerment of cocoa farmers is more influenced by individual and group characteristics, as well as extension services, than by the effectiveness of the institution itself. The effectiveness of institutional organizations has not yet become a dominant factor in increasing empowerment, in contrast to the influence of human resource character and the role of direct counseling. This is not in line with this research that organizational effectiveness has a major role in empowering farmers.

The Influence of the Role of the Service (X1) on Farmer Empowerment (Y) through Organizational Effectiveness (Z)

Based on the results of the analysis of respondents' responses, it was found that the mediation path through organizational effectiveness (Z) showed a significant influence. The role of the Agency (X1) as a regulator has been proven to significantly encourage an increase in organizational effectiveness, which is indicated by a T value of 19.375 with a P significance of 0.000, smaller than the error rate of $\alpha = 0.05$. Furthermore, organizational effectiveness (Z) significantly strengthened the empowerment of farmers (Y), as seen in the influence of mediation with a T value of 4.352 and a P of 0.000.

The value of the determination coefficient (R^2) for the farmer empowerment variable (Y) reached 0.974, which means that the direct and indirect influence of the role of the Service through organizational effectiveness is very strong in explaining the empowerment variable. Although some role indicators, such as facilitators and dynamizers, were excluded from the model because their outer loading values were less than 0.70, the path of influence from the role as a regulator to organizational effectiveness and ultimately to farmer empowerment remained potent and significant. Thus, it can be concluded that the institutional structure and managerial functions carried out by the Palopo City Agriculture, Livestock, and Plantation Office are key factors in supporting the success of farmer empowerment in Mungkajang District.

The results of this study are in line with the research conducted by (Apriyani et al., 2024) titled "The Role of Agricultural Extension Workers in Farmer Group Activities and Their Relationship with Rice Field Productivity", which states that the coaching of farmer groups (through extension workers) has a positive impact on the productivity and empowerment of farmers, with the effectiveness of extension organizations as an important mediator in the process

of transforming knowledge into productive practice. This is in line with this research, where the effectiveness of extension organizations is a bridge that connects the role of institutions (extension workers/agencies) with the results of empowerment or increased productivity.

The results of this study are not in line with the research conducted by (Indrawati & Yuliantoro, 2022) entitled "The Role of Extension Workers on Community Empowerment in Watershed Management", which states that the category of facilitators and mediators is very low (very low to low), although the educational role is quite good and contributes moderately to high to moderate to high to high levels of community empowerment in watershed management. This is not in line with this research, where the role of facilitators/mediators in the context of service does not contribute to organizational effectiveness or empowerment, even though formal institutional structures exist.

Managerial implications

In the future, this research could be carried out on a larger scale, with the coverage of all farmer groups in Palopo City. This would be accomplished by comparing the farmer group in each regional work unit. This would make it possible to evaluate the role and effectiveness of agriculture, livestock, and plantation service organizations in farmer empowerment.

CONCLUSION AND SUGGESTIONS

The study findings indicate a strong and positive correlation between all variables in supporting the empowerment of farmers in Mungkajang District, Palopo City. This is inseparable from the role played by all staff of the Service and the role of all agricultural farmers in supporting the programs that have been implemented. Overall, the results of the research are described as follows: The role of the Agency (X) has a positive and significant effect on Farmer Empowerment (Y) in Mungkajang District, Palopo City; Organizational Effectiveness (Z) has a positive and significant effect on Farmer Empowerment (Y) in Mungkajang District, Palopo City; The role of the Service (X) has a positive and significant effect on the Effectiveness of the Organization (Z); Role (X) has a positive and significant effect on Farmer Empowerment (Y) in Mungkajang District through the Organizational Effectiveness (Z) of the Palopo City Agriculture, Livestock and Plantation Office.

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Conflicting interests

The authors of the research have stated that they do not have any conflicts of interest to disclose concerning the current investigation.

Contributions by the authors

Each of the writers made an equal contribution to this article, and they were the primary contributors. Every author of the final paper reads it and gives their approval.

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