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Characteristics of Effectively Farmer Groups to Manage Agricultural Machinery Rental Business: A Multi-Case Study Approach

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Abstract

The Ministry of Agriculture provides machinery grants to farmer groups to accelerate agricultural mechanization and rental business capital. Therefore, this study aims to identify the characteristics of farmer groups that were effective in managing agricultural machinery rental businesses. This study used qualitative methods, a multi-case approach, and thematic analysis. The locations were the farmer groups in Kebakkramat District. The Informants from agricultural extension civil servants were selected according to their place of duty. Informants from the chairpersons and members were determined using the snowball sampling method. The data collection techniques used in-depth interviews and focus group discussions. There were two stages of data analysis. The first was to assess the effectiveness of each farmer group. The second was to compare the characteristics of the effective and less effective farmer groups. Only one of the nine farmer groups was effective. The characteristics of farmer groups that were effective in managing the machinery rental business were: (1) have relatively several members who are willing to involve in management, (2) have members who are willing to become loyal customers, (3) choosing a certain form of business entity, (4) requires members to deposit capital, (5) distribute profits to members, (6) give members ownership rights to the grant, (7) requires management to run farmer group operations, manage business units, and make financial reports, and (8) give the management salary rights. Farmer groups that manage businesses with business entities had more effective farmer group characteristics than groups without business entities.

Keywords

characteristic of farmer groups, agricultural mechanization, the effectiveness of farmer groups, business entity

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The Ministry of Agriculture provides machinery grants to farmer groups to accelerate agricultural mechanization and rental business capital. Therefore, this study aims to identify the characteristics of farmer groups that were effective in managing agricultural machinery rental businesses. This study used qualitative methods, a multi-case approach, and thematic analysis. The locations were the farmer groups in Kebakkramat District. The Informants from agricultural extension civil servants were selected according to their place of duty. Informants from the chairpersons and members were determined using the snowball sampling method. The data collection techniques used in-depth interviews and focus group discussions. There were two stages of data analysis. The first was to assess the effectiveness of each farmer group. The second was to compare the characteristics of the effective and less effective farmer groups. Only one of the nine farmer groups was effective. The characteristics of farmer groups that were effective in managing the machinery rental business were: (1) have relatively several members who are willing to involve in management, (2) have members who are willing to become loyal customers, (3) choosing a certain form of business entity, (4) requires members to deposit capital, (5) distribute profits to members, (6) give members ownership rights to the grant, (7) requires management to run farmer group operations, manage business units, and make financial reports, and (8) give the management salary rights. Farmer groups that manage businesses with business entities had more effective farmer group characteristics than groups without business entities.

Keywords: characteristic of farmer groups, agricultural mechanization, the effectiveness of farmer groups, business entity

Introduction

The Ministry of Agriculture implements farmer empowerment based on Law Number 19 (2013) about the Protection and Empowerment of Farmers. The objectives of this empowerment are (1) developing farmer competencies, (2) increasing profits, and (3) developing farmer groups into farmer-owned enterprises in the form of cooperatives or limited companies that are independent and highly competitive. Furthermore, the government established farmer groups as an extension tool and distributed grants to increase on-farm agribusiness profits.

The previous study has proven the benefits of farmer groups/organizations to members. The members benefit from higher rice yields and are more technically efficient (Bairagi & Mottaleb, 2021), increase access to markets (Frese & Gielnik, 2014), effective empowerment tools (Desiana & Aprianingsih, 2017), and increase their profits (Abdul-

Rahaman & Abdulai, 2020; Dan et al., 2021). Other benefits of farmer groups include reducing exploitation and opportunistic behavior of traders buying agricultural products, being members of the organization (Sathapatyanon et al., 2018), a representative of the farming community (Wang et al., 2017), having access to various sources of knowledge (Dolinska & D'Aquino, 2016), reduced fertilizer (Tolno et al., 2015), and transaction costs (Mbeche & Dorward, 2014).

The Ministry of Agriculture provides grants for tools and machinery to farmer groups to accelerate agricultural mechanization and as capital for the business unit to become a farmer-owned enterprise that is independent and highly competitive. Mechanization has the benefit of overcoming labor shortages, increasing agricultural productivity, overcoming the adverse effects of climate change (Aryal et al., 2021). Harvesting activities are more efficient in labor, cost, and time and reduce yield losses (Purwantini & Susilowati, 2018). Furthermore, mechanization increases productivity through labor substitution but has a negative impact on farmers who do not have capital equipment (Qing et al., 2019). To avoid the potential negative effects, agricultural mechanization needs to consider economic, agro-climatic, and social factors (Daum & Birner, 2020).

Member participation in farmer group activities was still low. The participation of members attending farmer group meetings was only 26.6 (Irawan et al., 2017). Only 50.2% of members participated in agricultural extension (Alif, 2017), and 70% of members participated in less than 50% of the extension held (Putri et al., 2019). Low member participation indicated that members perceived the farmer group to have not provided the expected benefits. The reason people participate in organizations is to get benefits (Kong et al., 2015). The greater the benefits obtained, the more actively participating in the organization. Several farmers' organizations abroad had provided benefits to their members, indicating high member participation. In Uganda, 89% had a high collectivist participatory culture, and 75% of members felt they had fulfilled their goal of joining a farmer group (Agole et al., 2021). In China, members of farmer cooperatives managed to increase their income by 2.77% compared to non-members (Dan et al., 2021). In Bangladesh, farmers who were members of farmer organizations had higher rice yields (11% more) and were more technically efficient (1.4% higher) than farmers who were not members of the organization (Bairagi & Mottaleb, 2021). The successful achievements of overseas farmer organizations could motivate the Ministry of Agriculture to implement policies that can improve the ability of farmer groups to increase farmers' income.

The Ministry of Agriculture had spent funds to establish 615,575 farmer groups and assigned 67,853 agricultural extension civil servants (Agriculture Ministry, 2019). In addition, grants had been provided for tools and machinery from 2008 until 2019 with about 299,652 units, with the majority being hand tractor machinery (Directorate General Agricultural Infrastructure and Facilities, 2018, 2020). The regulation of the Minister of Agriculture of the Republic of Indonesia Number 4 (2012) states that the objectives of machinery grants to farmer groups are: (1) to become the capital for farmer groups to run a machinery rental business, and (2) lowering machinery rental costs to increase farmers' profits. These two things were expected to increase the participation of members in participating in farmer group activities, increase the participation of members in agricultural extension to improve farmer competence and develop farmer groups into independent legal entities. However, this regulation does not regulate how to manage machinery grants. As a result, managing a machinery rental business differs depending on the characteristics of the farmer group, so the effectiveness of managing the machinery also varies between farmer groups. This research was conducted to find out how farmer groups operate the machinery rental business.

Purpose of the Study

The urpose of the study was to identify the characteristics of farmer groups that were effective in managing agricultural machinery rental businesses with a grant from the government to realize the goal of farmer empowerment. Farmer empowerment was the government's obligation based on Law Number 19 (2013) regarding the Protection and Empowerment of Farmers. This obligation was carried out by the Ministry of Agriculture, among others, by providing agricultural machinery grants to farmer groups. Before receiving a machinery grant, farmer groups had the characteristics of a non-profit-oriented organization, namely an organization used by the Ministry of Agriculture to distribute the grant to farmers and a means of gathering farmers to conduct agricultural extension. After receiving a machinery grant, farmer groups were required to manage machinery rental business units to reduce machinery rental costs and develop farmer groups into an independent business entity, but without clear management regulations. Thus, farmer groups had changed their characteristics from non-profit oriented to non-profit-oriented and profit-oriented.

The purpose of this study was to analyze the characteristics of farmer groups that were effective in managing the agricultural machinery rental business. If the farmer groups effectively in managing this business, the farmers would benefit from low machinery rental rates. Knowledge of the characteristics of farmer groups also provided benefits for the Ministry of Agriculture and Non-Governmental Organizations to create more effective farmer empowerment programs to increase farmers' income.

Literature Review

Characteristics of Farmer Groups

Farmer groups are regulated by the Regulation of the Minister of Agriculture. This establishment began in 1979 based on the Circular Letter of the Minister of Agriculture number 130/Mentan/II/1979, then underwent several revisions. The last was revised by Regulation of the Minister of Agriculture number 67 (2016). This regulation explains that farmer groups are farmer organizations formed by the government with an area of 25-40 hectares of rice fields in one village, making the owners of these fields as members. One farmer group has 25-150 members. One village has 4-6 farmer groups depending on the area of rice fields owned. This regulation also states that farmer groups are a tool for the Ministry of Agriculture to provide an agricultural extension to improve farmer competencies and distribute the grant to farmers in subsidized fertilizers, seeds, and agricultural machinery. The characteristics of these farmer groups include non-formal farmer organizations, non-profit oriented, funding sources from the government, establishment, and development carried out by agricultural extension civil servants, a place to learn, and cooperation.

The regulation of the Minister of Agriculture of the Republic of Indonesia Number 4 (2012) controls grants of tools and machinery to farmer groups as capital for running a professionally managed rental business to gain economic benefits. The groups that have received the grant, apart from being non-profit, also become profit-oriented organizations. However, the government does not provide guidelines on managing the grant but gives the groups the freedom to choose the appropriate way. Hence, members do not have clear ownership of grants and profit-sharing (Hanggana, 2017). The unclear rights and obligations of members cause the benefits received by members to be unclear. As a result, it is not possible to increase the participation of members to become customers of machinery belonging to farmer groups. Kong et al. (2015) stated that 87.21% of people become

members of the organization because they want economic benefits. The way to increase member participation is to provide economic benefits to members by forming a business entity to manage the machinery rental business. The existence of a form of business entity clarifies the rights and obligations of members so that the benefits received by members become clear. The form of business entity suggested by Law Number 19 (2013) is a cooperative and limited company.

Characteristics of Cooperative and Limited Company

Hassink et al. (2016) identified two types of agricultural organizations, namely cooperative and corporate. In Indonesia, it is called a cooperative and limited company with legal entities resulting from developing farmer groups (Law Number 19, 2013). The forms of cooperative business entities and limited company have different characteristics, especially in terms of capital, profit sharing, and voting rights in decision-making.

The characteristics of the cooperative based on Law Number 25 (1992) states that the characteristics of cooperatives are: (1) members as owners and users of cooperative services, (2) the organizational apparatus consists of a meeting of members, management, and inspector, (3) the decision of the members' meeting is based on deliberation to reach a consensus. When it fails, then the decision is made based on the majority vote, where each member has the right to one vote, (4) the members' meeting has the authority to elect or appoint, ask for accountability, and dismiss the management and inspector, and (5) the members' meeting has the authority to determine the amount of cooperative capital and profit-sharing. This capital comes from their principal and mandatory member savings, reserve funds, and grants.

Yu and Huang (2020) defined a cooperative as a democratically controlled enterprise established to meet the economic, social, and general needs of its members. Furthermore, cooperatives are widely regarded as an important institutional innovation that helps overcome the challenges that hinder smallholder farmers' access to markets (Ma & Abdulai, 2016).

Cooperative has several benefits for members by contributing to improving working conditions and market access (Gava et al., 2021), as well as effectively improving performance and increasing incomes (Wassie et al., 2019). Also, they play a positive role in the rural economy, society, and environment, although Chinese cooperatives have special structural attributes (Ji et al., 2019). Furthermore, they have an important social function in food security and pro-environmental technology communication to increase the level of farmers' happiness (Liu, 2017). Regarding technology adoption, membership has a positive influence, which increases welfare (Abebaw & Haile, 2013; Kolade & Harpha, 2014); Wossen et al., 2017) and improves food security in rural areas (Gebremichael, 2014). Law Number 40 (2007) states that Limited Companies have the following characteristics, namely (1) the organizational apparatus consists of General Meeting of Shareholders, the Board of Directors and Commissioners. The General Shareholder Meeting is the highest power holder, (2) decisions are made based on the majority of votes, where each member has voting rights according to the number of shares owned, (3) the authorized capital of the company is entirely divided into shares, (4) the liability of shareholders is limited to the shares they own, and (5) the amount of authorized capital of the company is at least IDR 50,000,000 (fifty million IDR). However, the authorized capital of IDR 50 million is a difficult requirement for farmer groups to fulfill.

Agricultural Mechanization

The Indonesian government has carried out a mechanization program by providing grants for tools and machinery to farmer groups. Agricultural mechanization is the process of replacing human labor with other energy sources, such as animal power, fossil, or renewable energy, in all value chains (Malabo Montpellier Panel, 2018). According to the theory of induced innovation (Ruttan, 1977), mechanization as a labor-saving technology will be increasingly needed due to the increasing labor scarcity in the agricultural sector. The adoption of these technologies is associated with greater economies of scope (EOS) between rice and non-rice crops but lower EOS among non-rice crops (Takeshima et al., 2020). To increase the potential for successful mechanization, it should refer to machines that are easy to use and suitable for smallholder land, in accordance with local agronomic conditions and limited resources (Loona et al., 2020).

The benefits of agricultural mechanization include overcoming seasonal rural labor shortages due to rural to urban migration and increasing non-agricultural employment opportunities (Zhang et al., 2014), saving production costs, reducing tedious work (Mahmud et al., 2014), and increasing rice productivity in smallholder farming systems (Paudel et al., 2019). In addition, smallholders can benefit from using machinery through low-cost rentals to reduce the individual farmer's cost burden to purchase, own, and maintain machinery (Diao et al., 2018).

Mottaleb et al. (2016) concluded that wealth, land tenure, and access to credit are positively related to ownership of a machinery at the household level. The problems faced in mechanization are lack of funds for establishment, lack of collaboration among value chain actors, high dependence on government projects, and provision of leadership and advocacy to address issues at the governance level (Loona et al., 2020). Farmer groups have a great chance of successfully running a machinery rental business. This is because farmer groups get machinery grants and have members who need the machinery service.

Social Capital Theory

Social capital uses of informal networks to secure access to resources and opportunities (Bailey, 2012). Regulations issued by the government cause the groups to have social capital, receive agricultural machinery grants, receive farming business guidance, network with other groups, have leaders and managers who are willing to be unpaid, receive support from farmers and the government. Social capital can be an asset for the organization through value creation, as well as an asset for members through improving the skills of workers (Chegini & Zamani, 2014).

Social capital is an ability that arises because of trust, norms, and networks (Fukuyama, 1999). Trust is shown by honest, orderly, and cooperative behavior based on shared norms. Meanwhile, norms consist of understandings, values, expectations, and goals that are believed and shared by a group of people. The norms come from religion, moral guidelines, and professional codes of ethics. Therefore, the number of networks owned will facilitate economic transactions and reduce transaction costs. Fathy (2019) defined social capital as concrete capital, where individuals or groups can utilize relations including values, networks, and trust to obtain economic and social benefits. Ostrom and Ahn (2001) explained that social capital consists of trustworthiness, network, and institutional.

It also strengthens microenterprise innovation, entrepreneurial competence, and competitive advantage (Corvino et al., 2019), as well as motivates business growth, increases sales, gains competitive advantage (Sallah & Caesar, 2020), and increases well-being (Calcagnini & Perugini, 2019). Social capital positively affects the three components of

intellectual capital, namely, human, structural, and relational capital, that lead to innovation (Allameh, 2018). Becoming a member of a cooperative increases self-confidence and strong social capital for partnering (Wuepper & Sauer, 2016). Farmer groups get machinery grants, and extensions from the Ministry of Agriculture are social capital that can be used to increase farmers' income.

Effectiveness of Farmer Groups

This effectiveness is how efficiently the organizational goals are achieved. The more goals that are realized, the more effective the organization. Ambarwati (2018) stated that organizational effectiveness is the targeting accuracy of a process that occurs informal institutions that organize collaboration with components that are coordinated with each other to achieve goals. To increase the effectiveness of farmer groups, extension civil servants must understand how farmers think, make decisions, and what influences their farming practices to optimize technology transfer and select appropriate interventions for farmers (Krauss et al., 2009).

The effectiveness of the farmer group in managing the business is measured by the success in realizing the goal of empowering farmers. Based on the regulations governing the groups, including Regulation of Agriculture Minister Number 4 (2012), Law Number 19 (2013), Regulation of Agriculture Minister Number 67 (2016), and Decree of Agriculture Minister Number 6 (2019), the effectiveness of farmer groups is measured by:

1) The ability to distribute Minister of Agriculture grant to farmers without complaints from members and agricultural extension civil servants to increase farmer profits.
2) The ability to assist in implementing extension for members to actively participate in improving the competence of enterprises and members to implement agricultural extension civil servants' advice.
3) The ability to realize the quality of machinery yields is at least equivalent to competitors to increase crop production yields.
4) The ability of groups to realize investment savings to develop business units.
5) The ability of groups to realize cheaper rental prices to members than market prices to allow reduced cultivation costs.
6) The ability to realize the management of business units professionally by giving fair salaries in accordance with the rights and obligations of the management.
7) The ability to provide services that satisfy members, at least equal to competitors, to allow members to become loyal customers as capital to maintain the business unit sustainability.

Criteria number 1 to 3 are the goals of farmer groups as non-profit-oriented organizations. While the criteria number 4 to 7 is the goal of the farmer group as a profit-oriented organization. The more goals achieved; the more effective farmer groups are in managing the machinery rental business.

Member Participation

Participation is taking part in an activity. Chesoli (2013) stated that participation is an essential component in generating sustainable actors in the agricultural development process.

Maryani et al. (2017) stated that agricultural development is important for active participation in the form of group action in solving problems and meeting needs based on the potential of farmers. One of the causes of low participation is that the formation of groups is a response to government programs to access the associated benefits (Nuryanti & Swastika, 2011). Reza et al. (2019) concluded that farmer participation is influenced by the bonds of group members, both in the form of ties of race, ethnicity, kinship, and friendship.

The nature of these groups is like farmer cooperatives. The members of farmer groups or cooperatives have the status of owners, managers, and customers. Hanel (1989), with the theory "Tri-angel Identity of Cooperative," explained that in cooperatives, the position of members is as owner, as well as customer (member = owner = customer). The success of cooperatives, as well as farmer groups, is influenced by the participation of their members. There are three dimensions of participation (Ropke, 2003), namely (1) member participation in organizational management, (2) participation in equity, and (3) participation in the utilization of cooperative business services.

Member participation in farmer group activities was still low. Members who participated in less than 50% of the extension held were 70% (Putri et al., 2019). The participation of members attending farmer group meetings was 26.6%, and the willingness of members to pay dues was 22.9% (Irawan et al., 2017). Participation in attending group meetings and attending extensions was easy participation because it did not cost money and gain knowledge, but members were lazy to attend. Participation was more difficult, namely depositing dues and becoming a customer of the farmer group business because members did not receive profit sharing (Hanggana, 2017). Molina et al. (2021) stated the way to increase member participation was to increase the operating profit of its members. Thus, it is necessary to identify the characteristics of farmer groups that can increase member profits so that member participation also increases.

Researchers Profile

Sri Hanggana, M. Si. was interested in increasing the effectiveness of farmer groups in managing their businesses by using their experience in fostering small and medium-sized entrepreneurs. The Ministry of Agriculture every year had an agricultural machinery grant program. He wanted farmer groups to be able to professionally manage the machinery grant so that they provided economic benefits to farmers that were larger, sustainable, and increased the business volume of farmer groups. He took the initiative to conduct research to identify the characteristics of farmer groups that were effective in managing machinery grants. He was a research initiator, collecting data, displaying data, analyzing data, and making research reports.

Prof. Suwarto had a lot of research experience with the object of farmer groups. He determined farmer groups as the object of research, and the themes developed and interpreted data.

Prof. Bandi had a long experience as a member of the editorial team of a study program journal. He played a role in finding references, checking data, interpreting data, and editing research reports.

Dr. Sapja Anantanyu had considerable experience testing and guiding doctoral students of development extension and community development. Dr. Sapja played a role in formulating methodologies, theories used in research, displaying data, analyzing data, and interpreting data.

Research Methodology

This study used a qualitative method with a multi-case studies approach and thematic analysis. The qualitative approach was chosen to understand social interactions and understand people's feelings (Murdiyanto, 2020), understand the meaning of individual or group behavior, and describe social problems (Creswell, 2012). The qualitative approach was chosen because the data needed was related to the opinion of an informant from a certain group on the advantages, disadvantages, and expectations of other groups of informants. In this study, there were three groups of informants, namely the group of chairmen, members, and agricultural extension civil servants.

The multi-case approach was chosen because it is relevant to answer study questions that require a response to descriptions of contemporary, broad, deep, and real-world situations (Yin, 2018). This research was to find out the case of the management of the machinery rental business currently being carried out by farmer groups in-depth and comprehensively. Several farmer groups were selected because the case of the management of the rental business differs between groups to achieve the same goal. The difference in management methods caused the effectiveness of farmer groups to differ so that it provided information on the characteristics of effective and less effective farmer groups.

Thematic Analysis was suitable to be used to identify and explore the pattern of an event that was the object of research (Heriyanto, 2018). The thematic analysis stages were: (1) understanding the data by repeatedly reading notes from the in-depth interview and focus group discussions (FGD) were made during data collection, (2) code and looking for similarities and patterns across data, (3) selecting the developed themes, (4) refining each theme, (5) define, name and analyze themes and sub-themes clearly, and (6) produce a researcher's report using narratives and arguments to support the relationship between themes.This study was conducted from March to August 2021, and the location was the farmer group in Kebakkramat District, Karanganyar Regency, Central Java Province, Indonesia. The location was selected because it had the highest productivity in 2018 and good water management that it was able to plant rice three times a year (BPS-Statistics Indonesia, Karanganyar, 2019). The objects of the study were farmer groups that manage tractor grants that were received before 2021 for the following reasons, (1) all farmers in Kebakkramat already use tractors. Therefore, they are highly dependent on the machine to cultivate their fields. When the tractor is not available, the activities of cultivating the fields stop because no one is willing to replace the role of the machinery. Nevertheless, most farmers still use human labor compared to rice transplanter, combine harvester, and power thresher machinery. (2) The majority of government grants (58%) are in the form of tractors so that all villages had representatives of farmer groups who were the object of research. Apart from tractors, there is no type of machinery that all villages had in Kecamatan Kebakkramat.

Kebakkramat consists of 10 villages, and each selected one farmer groups as the object of study. Informants or study data sources were agricultural extension civil servants, chairmen, and members of farmer groups. Those from the agricultural extension were selected according to their place of assignment/duty. The Ministry of Agriculture stipulates that each agricultural extension civil servant was tasked with fostering one or two specific villages until he retired or was transferred to work so that he understands the farmer groups he was fostering very well. The chairpersons and members were selected using the snowball sampling method. The first stage of selecting Informants for all the agricultural extension civil servants in Kebakkramat District was seven people. The second stage goes to the chairman of the farmer group. The chairman of the group was ten people from 10 villages who were selected by the snowball sampling method, appointed by the agricultural extension civil servants based on the level of activity. Based on the regulations, the chairperson had the

task of carrying out group operations, making proposals for requests for machinery grants, receiving machinery grants, managing machinery, and making reports on machinery activities to the Agricultural Extension Center Office. Thus, the chairman knew in depth the management of the aid machinery. The third stage is to the group member selected by the chairperson based on the activity of members participating in farmer group activities. Furthermore, the member appointed others, and the selected member who was actively participating in group activities.

The data collection techniques used were in-depth interviews and FGD. The interview data collection method has advantages over surveys in exploratory qualitative research, including faster and cheaper data collection, providing deeper and more detailed insight into the research topic (Jain, 2021). In FGD, informants engage in synergistic discussions so that Informants get many perspectives that enrich their understanding of the topics discussed (Piercy et al., 2011). The main instrument was the research team which used interview guidelines. The interview guide avoids closed questions so that the informant answers according to his wishes and is not influenced by the researcher's wishes (Yeong et al., 2018). Interviews were conducted by researcher with each informant at each informant's house between 60-90 minutes. The interviews were conducted when the researcher and informants were in good health and had no symptoms of COVID-19 and followed the health protocol, namely wearing masks, keeping a distance, and washing hands. The FGD was conducted in each farmer group. The FGD was led by the researcher, followed by 5-7 people, all believed to be in good health, in farmer group huts in the fields (open space), and following health protocols. Interview and FGD data were displayed, analyzed, interpreted, and concluded in FGD, followed by all research teams with zoom links.

There were three data credibility tests in this study, namely (1) triangulation, (2) discussions with colleagues, and (3) member checks. Triangulation was carried out by comparing data from the interview method with FGD, and comparing data from the chairmen, members, and agricultural extension civil servants. Discussions with colleagues were carried out by discussing the data display and its interpretation using a zoom link to get constructive input. Member checks were carried out by the researcher when ending the interview and FGD by reading back the data obtained to get confirmation from the informant.

The first stage of data analysis was to assess the effectiveness of farmer groups and benefit farmer groups for members. The effectiveness of farmer groups as a non-profit-oriented as well as a profit-oriented organization was measured by: (1) distribute government grant to farmers, (2) assisting with extension, (3) quality of tractor yields, (4) investment savings, (5) cheaper rental prices to members, (6) professional management, and (7) satisfying service. Effectiveness assessment of farmer groups in managing business was categorized into three, namely effective, less effective, and ineffective. The goals that have been realized were rated high (H), and those that have not been realized were rated low (L). The criteria for the effectiveness of farmer groups were:

a) Farmer groups with H values of 6 to 7 were considered effective because the farmer groups had succeeded in realizing the goals of non-profit-oriented and profit-oriented organizations.
b) Farmer groups with H values of 3 to 5 were considered less effective because the farmer groups had succeeded in realizing the goals of non-profit-oriented but failed in realizing the goals of a profit-oriented organization.
c) Farmer groups with H values of 1 and 2 were considered ineffective because the farmer groups failed in realizing the goals of non-profit-oriented and profit-oriented organizations.

The second stage analyzed the differences in the characteristics of effective, less effective, and ineffective farmer groups. The characteristics were compared based on the dimensions of member participation which consists of five sub-dimensions, and the business entity, which consists of six sub-dimensions. The results classified the sub-dimensions into two, namely: (1) sub-dimensions that increase effectiveness, and (2) sub-dimensions that reduce the effectiveness of farmer groups in managing agricultural machinery rental business.

Results

Overview of Kebakkramat District

Kebakkramat district is one of the 17 in Karanganyar Regency, which consisting of 10 villages, 123 hamlets, and 389 neighborhoods. The distance from the district capital is 10.5 km to the northwest. BPS-Statistics Indonesia, Karanganyar (2019) reported that the land area of the district is 3,645 hectares, consisting of 2,108 hectares of rice fields and 1,438 hectares of dry land. In 2019, the harvested area of rice fields was 5,834.6 hectares, corn was 15, and soybeans were 32.1 hectares. The population of Kebakkramat is 59,864 people and has an Agricultural Extension Center (BPP) office. The BPP has one Coordinator, one Operational Officer, five agricultural extension civil servants, and it fosters 55 groups. The number of farmers is 7,181 people, the area of rice fields is 2,438 hectares, and the average rice field ownership is 0.4 hectares per farmer.

Effectiveness of Farmer Groups in Managing Tractor Rental Business

The first stage of analysis assessed the effectiveness of each farmer group by analyzing the number of effectiveness measures realized by each farmer group (Table 1), and the benefits of farmer groups for members (Table 2). Based on the effectiveness value of farmer groups in Table 1, it was known that only one group was effective, while the other nine were less effective. The Pulo Makmur groups in Pulosari Village had an H value of 6.

Table 1
Effectiveness of Farmer Groups in Managing Tractor Rental Business

No.	Farmer Groups	Village	Dimensions of Effectiveness							Total	
			1	2	3	4	5	6	7	H	L
1.	Ngudi Mulyo	Kemiri	H	H	H	L	L	L	L	3	4
2.	Sedyo Utomo	Waru	H	H	H	L	L	L	L	3	4
3.	Ngudi Waras	Nangsri	H	H	H	L	L	L	L	3	4
4.	Simo Makmur	Macanan	H	H	H	L	L	L	L	3	4
5.	Tani Mulyo	Alastuwo	H	H	H	L	L	L	L	3	4
6.	Sri Makmur	Malangganten	H	H	H	L	L	L	L	3	4
7.	Rejo Mulyo	Kaliwuluh	H	H	H	L	L	L	L	3	4
8.	Ngudi Makmur	Lebak	H	H	H	L	L	L	L	3	4
9.	Jati Mulyo	Banjarharjo	H	H	H	L	L	L	L	3	4
10.	Pulo Makmur	Pulosari	H	H	H	H	H	H	L	6	1
		Total H	10	10	10	1	1	1	0		
		Total L	0	0	0	9	9	9	10		

Note. (1) distribute government grants; (2) assisting with extension; (3) quality of tractor yields; (4) investment savings; (5) cheaper rental prices to members; (6) professional management; (7) satisfying service. H =High; L = Low. Source: Processed primary data.

Therefore, they got an effective value. The other nine groups had an H score of three. Hence, they were less effective. The sub-dimensions realized by all farmer groups were the sub-dimensions of the quality of their work, assisting in extension, and distributing grants. Assisting in extension and distributing grants had been carried out before receiving the tractor capital grant. However, the sub-dimension that had not been realized by all farmer groups were the service sub-dimension that satisfies members. This happens because all the groups only had one tractor. Therefore they were unable to serve all members. The sub-dimension that can only be realized by one farmer group was the sub-dimension of cheaper rent, having savings, and being professional by giving salaries to management.

Farmer groups were not able to add tractors for the same reason. Namely, members did not want to deposit capital and found it difficult to add marketing areas. Mr. Suroto as the chairman of the Sedyo Utomo, stated:

> Marketing area and tractor tariffs are regulated by village decree, and tractors belonging to farmer groups have an area of seven hectares, out of 51 hectares of group area. But some members prefer other tractors, so only 5 hectares are worked on. For comparison, individual tractors can work 15 hectares. The profit earned is around Rp. 1,500,000 per season. This profit is used to pay for the group's operational costs such as aiding, providing extensions, servicing tractors, and others. My group doesn't hold regular member meetings because they don't have food expenses for 153 members, and members are lazy to attend meetings. Members do not know the financial condition of the group. They lack a sense of belonging to the group. They want to come when they get seed assistance or take care of farmer cards. With this condition, it is difficult for the group to give cheaper prices to members, let alone have the savings to buy a new tractor.

Benefits of Farmer Groups for Members

The benefits of farmer groups members before receiving tractor grants were obtaining extension and government grants directly. The benefits of the groups' members after receiving the tractor grant increased, namely renting a tractor more easily, getting a share of the profits, and getting ownership of the tractor grant. There were three types of grants that had already benefited members of all farmer groups, namely receiving a grant from the Ministry of Agricultural directly, and it was easier to rent tractors. The three types of benefits were relatively easy to realize by farmer group management. Meanwhile, the benefits for members in profit sharing and tractor grant ownership rights can only be realized by one group.

Table 2 showed the benefits for group members. A value of 1 in the table means members of the group had benefited, while 0 means they had not yet benefited. Members of the Pulo Makmur Farmer Group got five benefits, while others got three. The Ministery of Agricultural grant direct to farmers in 2020 were seeds and cards to buy subsidized fertilizers. To get the seed grant and farmer's card, they needed to be a member of a group. The existence of a tractor grant increased the number of tractors operating in the group, so it was easier for members to access.

Table 2
Benefits of Farmer Groups for Members

No.	Benefits	Farmer Groups										Total
		A	B	C	D	E	F	G	H	I	J	
1.	Get farming business extension	1	1	1	1	1	1	1	1	1	1	10
2.	Get a government grant	1	1	1	1	1	1	1	1	1	1	10
3.	Renting a tractor is easier	1	1	1	1	1	1	1	1	1	1	10
4.	Get profit share	0	1	0	0	0	0	0	0	0	0	1
5.	Get ownership rights of government capital grant	0	1	0	0	0	0	0	0	0	0	1
	Total	3	5	3	3	3	3	3	3	3	3	

Note. A = Sedyo Utomo, Waru Village B = Pulo Makmur, Pulosari Village
C = Simo Makmur, Macanan Village D = Sri Makmur, Malangganten Village
E = Rejo Mulyo, Kaliwuluh Village F = Jati Mulyo, Banjarharjo Village
G = Ngudi Mulyo, Kemiri Village H = Ngudi Makmur, Lebak Village
I = Ngudi Waras, Nangsri Village J = Tani Mulyo, Alastuwo Village
1 = Members have benefit 0 = Members have not yet benefited
Source: Processed primary data.

Farmer groups that had not been able to provide profit sharing to members had the same reason, namely the small tractor profits were used up for group operational costs, and members did not prioritize the group's tractors. Mr. Supardji as Chairman of the Ngudi Makmur said:

> I am old, I am 63 years old and have been the chairman since 2012, I want to be replaced by a younger one who understands bookkeeping and has ideas for group progress, but no one is willing to become chairman. Indeed, the chairman's duties are many, and there are no rewards. One must be sincere. Farmer groups can only distribute seeds from the government and help with extension. To give profits to members who cannot afford it, because the small profits are used up for group operational costs, and members do not prioritize group’s tractors.

Characteristics of Farmer Groups Based on Member Participation

The second stage of data analysis analyzed the differences in the characteristics of farmer groups based on the participation of members (Table 3) and business entities (Table 4). Table 3 shows the characteristics of farmer groups based on member participation. The characteristics of effective farmer groups make some members become owners by requiring them to deposit capital. Members who do not deposit capital do not get profit-sharing rights but are still recognized as members. Nevertheless, relatively many members are willing to involve in management because they get a salary. Members have the loyalty to use the services of a farmer groups tractor, one of the reasons is getting a share of the profits. Currently, members use tractors that do not belong to the group because the tractor is not available when needed or the member’s fields are not in the working area. The shortage problem is overcome by using privately owned tractors.

Characteristics of groups that are less effective do not make members feel like they are owners of the farmer groups and do not deposit capital. Some groups collect fees, which are not for business capital, but only to finance the operations of the groups. Members who do not make contributions will not be penalized. Relatively few members are willing to involve in management and are less loyal to rent tractor groups because they feel they do not get additional benefits.

Table 3
Characteristics of Farmer Groups Based on Member Participation

Sub Dimension	Effective Famer Groups	Less Effective Famer Groups
Members become owners	Some members become owners by depositing capital	Members feel they are not owners and do not deposit capital
Members become management	Relatively many members are willing to become chairman and other management.	Relatively few members are willing to become chairman and other management
Members become business unit customers	Loyal, members prioritize tractors from Farmers' groups	Less loyal, members don't prioritize tractors Farmer groups
The reason members rent tractors does not belong to the farmer group	a. Not available when needed b. Obey the results of the village meeting c. rice fields are not in the tractor working area	a. Not available when needed b. Obey the results of the village meeting c. rice fields are not in the tractor working area
Efforts to meet the needs of tractors	There is not any yet	There is not any yet

Note. Source: Processed primary data.

Member participation is very low, as stated by Mr. Sriyanto, the Chairman of the Ngudi Waras Farmer Group:

> Here, the only active management is me. All the work of my management is done by myself. Members are also lazy to attend meetings. There have been several times to invite meetings for the formation of the management, but around 20 people out of 99 members attended. Those who come are not willing to be management. Every time there is seed assistance, I take care of it and distribute it to the members myself, wanting to tell people to pay later, while the cash balance is only small, even this is to spare for tractor servicing costs because the tractors are old, so they are often serviced.

Most of the members did not attend meetings or group activities because farming is only a side job, so they think that the activities of the farmer groups were not important. Mr. Bambang, a member of the Sri Makmur Farmers Group said:

> Farmers here on average have narrow rice fields, less than 0.5 hectares, so farming is only a side job, generally many works in factories and craftsmen. I also do not participate in group activities, but I obey the chairman's orders related to cultivation, for example, the policy of planting simultaneously.

Members are lazy to participate in farmer group activities because they feel they do not get economic benefits.

Characteristics of Farmer Groups Based on Business Entity

Table 4 shows the characteristics of farmer groups based on a business entity. Characteristics of farmer groups that effectively manage business choose a certain form of entity. For example, the Pulo Makmur groups chose the form of a cooperative entity.

Effective groups had a clear hierarchy of power holders according to the chosen form of business entity. For example, in the form of cooperative, wherever cooperative was located, the highest hierarchy of power holders was the annual members' meeting. Meanwhile, less effective groups did not have a clear hierarchy of power holders.

Effective farmer groups determined that members should deposit capital, attend meetings, and obey decisions. The obligation of members to deposit capital increases the sense of belonging to the group and business capital. There is also the right of members to get profit sharing and tractor rights. The obligation of members to deposit capital was compensated by the distribution of profits in a larger amount. However, less effective groups did not require members to deposit capital. But members only had an obligation to attend meetings and obey the decisions, and when they were violated, there were no sanctions.

Effective groups determined that the management should carry out the operational tasks of the groups, manage the business and make financial reports for the accountability of the management. As compensation for these obligations, the management got a salary.

Less effective groups gave the management the obligation to carry out the duties of carrying out group operations and managing the business but did not require financial reports. The administrators did not get the right to salary or compensation.

Table 4

Characteristics of Farmer Groups by Business Entity

No.	Sub Dimension	Effective Farmer Groups	Less Effective Farmer Groups
1.	Choice of business entity form	Choose a certain form of business entity	Without a certain form of business entity
2.	The hierarchy of the highest power-holders	It is clear, there is The annual member meeting	It is not clear, there is a village or member meeting
3.	Member's responsibilities	a. Follow the meeting b. Obey the decision c. Deposit capital	a. Follow the meeting b. Obey the decision c. -
4.	Member's rights	a. Get a government grant b. Get a share of the profit c. Get a right of ownership of the tractor capital grant	a. Get a government grant b. No profit c. Do not have the right of ownership of the tractor capital grant
5.	Management's responsibilities	Carry out farmer group salary operations and managing the business	Carry out operational tasks of farmer groups
6.	Management's rights	Get salary	There is no salary

Note. Source: Processed primary data.

Mr. Sartono, as the Chairman of Pulo Makmur, told the history of the Pulo Makmur farmer group, which was able to develop Ministery of Agricultural grant capital and become an effective farmer group as follows.

> Farmer group received assistance from the government in 2000 Rp. 35,450,000. I took the initiative to form a cooperative to manage the fund, even though I was not the chairman. Members trust me because I am a civil servant at the Karanganyar Regency Cooperative Service. I believe that if it is managed honestly and supported by my ability in bookkeeping and financial reporting, members will have more confidence in the cooperative. And it has been proven that the farmer group is trusted by the government by getting additional capital, and they are growing until now. When receiving tractor assistance in 2017, it increases the capital and profits of the cooperative so that the profits received by members increase. The essence of the cooperative's success is the provision of profits to members, honesty of the board, and regular financial reports to members.

Discussion

Social Capital Theory and Characteristics of Effective Farmer Groups

The Ministery of Agricultural provides support in agricultural machinery and extension grant. Therefore, the grant become social capital for farmer groups (Fathy, 2019). These grants in the form of tractors and others become assets for organizations to create value to allow for social capital for farmer groups (Chegini & Zamani, 2014). Ministery of Agricultural support in the form of a grant for tractors and other agricultural machinery accelerates agricultural mechanization. This mechanization has the benefit of overcoming labor shortages, lowering cultivation costs, and increasing land productivity (Aryal et al., 2021; Handaka & Prabowo, 2013; Purwantini & Susilowati, 2018; Qing et al., 2019). An extension is the social capital of farmer groups because it can give social networks that provide economic benefits (Fathy, 2019) and networks that increase sales (Sallah & Caesar, 2020). The agricultural extension aims to develop farmer groups to diversify farm operations and good agricultural practices (Kwapong et al., 2020).

Effective farmer groups such as Pulo Makmur proved that farmer groups were able to provide many benefits to members. This finding reinforces the results of Bairagi and Mottaleb (2021), Abdul-Rahaman and Abdulai (2020), Wang et al. (2017), Desiana and Aprianingsih (2017), Sutisna and Hiasinta (2016), and Tolno et al. (2015). Ministery of Agricultural grant to farmers were currently all through these groups. Therefore, when farmers were not members, they will not get an allocation. Bairagi and Mottaleb (2021) stated that farmer organizations were established to support their members in pursuing their individual and collective interests, such as access to agricultural technology, extension services, and credit. Farmer groups were used by the government as a means of empowerment. This finding supports Anwas (2014), who stated that the key to successful community empowerment was participation. Therefore, members' participation in depositing capital can be increased when the management can provide greater economic benefits to members. One of the reasons people become members was to get economic benefits (Bairagi & Mottaleb, 2021; Cherrington, 1989; Olson, 1971).

Farmer groups that manage business units with certain business entity principles cause a clearer arrangement of the rights and obligations of members. This follows Hicks and Gullett (1975), who stated that the characteristics of economic organizations are the

arrangement of the rights and obligations of members. The Pulo Makmur farmer groups, which use the principle of a cooperative business entity, have succeeded in realizing the goal of farmer empowerment. This is in accordance with Yu and Huang (2020), which concluded that cooperatives on average can improve technical efficiency. The results of the FGD with agricultural extension civil servants were known. From the 55 groups in Kebakkramat District, only Pulo Makmur managed the tractor rental business using the cooperative system and got an effective score. Meanwhile, 54 other groups managed businesses without a form of business entity and got less effective scores.

Only one of ten farmer groups that were the object of research was effective in managing a tractor rental business. This result implied that the Ministry of Agriculture must regulate how to manage machinery grants with the model of a cooperative or a limited company. The Ministry of Agriculture must issue regulations that can realize all the characteristics of farmer groups that effectively manage the machinery rental business.

The limitations of the research were only one object of effective research, only one that manages with the cooperative principle. There is no farmer group that manages it with the principle of the limited company. With only one effective object, the identification of the characteristics of farmer groups that were effective in managing business units was not comprehensive. The effectiveness of the cooperative could not be used as a reference, and the effectiveness of the limited company was not yet known. Thus, research was still needed with more research objects, both from cooperatives and limited companies, to comprehensively determine the characteristics of farmer groups that effectively managed the machinery rental business.

Conclusions

The stage of the assessment analysis showed that one farmer group was effective, while the other nine were less effective. The results of the second stage of the analysis were nine characteristics of farmer groups that were effective in managing the machinery rental business. The characteristics based on the dimensions of member participation were: (1) requiring members to become owners, (2) having relatively many members who are willing to become management, and (3) having members who are willing to become loyal customers. Based on the dimensions of the business entity are, (1) choosing a certain form of business entity, (2) having a hierarchy of power holders, (3) giving members the obligation to attend meetings, comply with decisions, and deposit capital, (4) granting members the right to receive grants from the government, to share in profits, and to have tractor rights to government grants, (5) giving the management obligation to carry out the duties of farmer group operations, managing business units, and making financial reports, and (6) give the management salary rights. The research results implied that the Ministry of Agriculture must issue regulations, so that farmer groups establish the cooperative or limited company because both had characteristics that were more effective in managing the machinery rental business than without a business entity form.

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