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Linking Farmers' Organizational Functions to Productivity Performance: The Role of Learning, Cooperation, and Collective Production

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Abstract:

Farmer institutions have an important role in strengthening individual and collective capacity through the process of social learning, strengthening collaboration, and optimizing production resources. This study aims to analyzed the institutional role of groups with the level of farmer productivity. The data used came from 38 respondents with the main variables of land area, production, and productivity (kw/ha), as well as respondents' perception data on three group functions: as a learning roles, the role for cooperation, and a production unit. The analysis method used is quantitative descriptive with interpretation based on the Likert scale.The results show that the average productivity of farmers is in the range of 70-75 kw/ha, classified as a medium category. Group institutional variables show a positive role in increasing productivity. The function of learning roles provides an improvement of technical skills and knowledge, cooperation role play a role in efficiency and coordination between members, while production units strengthen the collective economic capacity of farmers. The stronger the institutional function of the group, the higher the productivity produced. Strengthening institutional capacity is the main strategy in empowering farming communities towards efficient and sustainable businesses.

Keywords: Productivity, Group Institution, Learning, Cooperation, Production Unit

Introduction:

Agriculture is a strategic sector that plays an important role in supporting national food security, providing jobs, and being the main source of livelihood for most rural communities (Apetrei et al., 2024; Hoffelmeyer et al., 2022; Ketzer et al., 2020; Paloma;, 2020; Timsina et al., 2023) However, the current agricultural conditions face various serious challenges, including declining land and labor productivity, climate change that impacts planting patterns, and the weak bargaining position of farmers in the agribusiness value chain(Ministry of National Development Planning, 2021; Nguyen et al., 2019) These challenges require strengthening farmer institutions that are able to become a forum for increasing capacity, access to resources, and farming efficiency.(Paloma;, 2020; Srinivasa Rao et al., 2016; Waters-Bayer et al., 2015)

In this context, farmer groups and other farmer economic institutions (such as a combination of farmer groups, cooperatives, and joint business units) have a strategic role for learning, cooperation, and driving of production units. Groups are social instruments that facilitate the process of adopting innovations, sharing knowledge, and building solidarity between farmers(Daeid, 2008; Elia & Yulianti, 2022; Harracá et al., 2023; Sabatino, 2019) Institutionally, the group also strengthens the position of farmers in accessing means of production, financing, technology, and markets.

Thus, the role of groups is not only social, but also has direct implications for increasing the productivity and efficiency of farming.(Ali et al., 2023; Ataei et al., 2024; Vannier et al., 2021; Vinet & Zhedanov, 2011)

The institutional condition of agriculture in Indonesia shows that there are still many farmer groups that are formed administratively without being accompanied by strong institutional capacity(Hilmiati, 2020; Julsrud, 2023; Paloma;, 2020). This leads to low effectiveness of empowerment programs and limited impact on productivity increase. On the other hand, the success of several independent and innovative farmer groups shows that strengthening farmer institutions can be a driving force for productivity and rural economic independence. Therefore, a study of the role of groups in agricultural productivity in an adaptive and participatory institutional framework is very urgent.

Kendal Regency is one of the areas whose economic activities depend on the agricultural sector, even most of the people make a living as farmers. Kendal Regency consists of 20 sub-districts, namely Plantungan, Sukorejo, Pageruyung, Patean, Singorojo, Limbangan, Boja, Kaliwungu, South Kaliwungu, Brangsong, Pegandon, Ngampel, Gemuh, Ringinarum, Weleri, Rowosari, Kangkung, Cepiring, Patebon and Kendal District. The population of Kendal Regency whose main job is in the agricultural sector is 143,353 people (23.97%) (BPS, 2023). The urgency of this research or discussion lies in the effort to understand how groups can function optimally as learning institutions, cooperation roles, and production units that are able to answer productivity challenges in the era of agricultural modernization. The institutional strengthening of farmer groups is expected not only to increase production yields, but also to create a sustainable, inclusive, and highly competitive agricultural system.

Research Methods:

This study uses a quantitative descriptive approach. This research was carried out from February to April 2025 and is located in Karangan Village, Weleri District, Kendal Regency, Central Java Province. The determination of the location of the research was carried out deliberately (*purposive*) based on considerations after conducting a pre-survey that Karanganom Village has active farmer groups, namely the Fertile Farmers Group which has been active since 1992 and the Prosperous Farmers Group which has been active since 2002. The two farmer groups help farmers' problems, especially related to increasing production and productivity of farming.

Primary data were obtained from 38 respondents through two instruments. Productivity data: including land area (ha), production (kw), and productivity (kw/ha). Institutional perception data: in the form of 24 statements grouped into three variables, namely Group as a Learning roles (8 items), Group as a Cooperation roles (8 items), Group as a Production Unit (7 items). The analysis was carried out by calculating the average score of each variable and relating it to the level of farmer productivity. Interpretation of results was carried out descriptively to describe the relationship between group institutional function and productivity.

Results and Discussion:

The Function of Groups as a Learning Roles

The data shows that farmer productivity ranges from 53.57 kw/ha to 107.14 kw/ha, with an average of about 72 kw/ha. The highest productivity (107.14 kw/ha) was obtained in respondents with a land area of 0.14 ha, while the lowest productivity (53.57 kw/ha) was found in a land area of 0.28 ha. This variation shows that land area is not always directly proportional to productivity, so management, cooperation, and learning factors are important aspects that affect results.

The results of the analysis showed that most of the respondents felt that the group function as a learning medium had not run optimally. Regular meetings, training, and technical discussions are still rare. In fact, in the group that actively carried out learning activities, the average productivity reached 80-90 kw/ha. The role of farmer groups as a better learning roles can help increase productivity outcomes (Akbar et al., 2024; Slijper et al., 2022; Wulandhari et al., 2022).

The Agricultural Extension Center (BPP) of Weleri District usually holds regular meetings to conduct agricultural counseling every year at least once accompanied by 2 or 3 extension workers. But often the head of the farmer group will invite extension workers at any time if there are many complaints from farmers such as the presence of pests and diseases that attack so that the frequency of extension can be much more frequent.

Counseling is usually followed by direct practice to the land so that farmers understand better. The most often carried out counseling is related to the manufacture of organic medicines and fertilizers such as the manufacture of leafhopper exterminators with betel leaves and the manufacture of organic fertilizer from goat dung. So that with the existence of farmer groups, members are helped in terms of rice cultivation. This is in accordance with the opinion (Adawiyah et al., 2018; Wood et al., 2014; Zantsi, 2021) which states that the existence of counseling and training is able to expand farmers' knowledge and is expected to help farmers overcome obstacles and obstacles to their farming so that productivity can increase.

The group is active as a learning roles that allows farmers to gain new knowledge about cultivation technology, balanced fertilization, and pest control, thereby directly increasing land efficiency and productivity(Alam et al., 2024; Bao et al., 2024).

The Function of the Group Role for Cooperation:

The function of the group as a role for cooperation obtained the lowest score among the three (average 2–3). Respondents considered that cooperation between members was still weak, both in the procurement of inputs, division of tasks, and joint activities. In fact, strong cooperation facilitates capital gathering, collective fertilizer purchases, and joint harvesting activities that reduce production costs.

Groups with high levels of cooperation tend to have above-average productivity (±80 kw/ha), while individualistic groups only reach around 65–70 kw/ha. This shows a positive relationship between social cohesion and increased production output. The function of the group as a means to establish cooperation between members is still weak. Some indicators that show low scores may be related to shared participation, division of tasks, and shared decision-making. The causative factors are group activities that have not been actively running, the dominance of certain individuals in decision-making and low trust between members. It is necessary to have a strategy to strengthen social cohesion and trust between members, for example through mutual cooperation activities, group deliberations, and economic cooperation systems such as group social gatherings or mini cooperatives(Abane et al., 2024; Egamberdiev, 2024; Termeer et al., 2022).

Cooperation between members is also not focused on improving technical aspects of production such as land cultivation efficiency, pest and disease control, optimizing planting distance, and others so that it does not lead to an increase in farming productivity. The lack of cooperation with external parties in efforts to increase productivity can also be a possible cause of the role of cooperation that do not have a significant effect on agricultural productivity(Akbar et al., 2024; Wulandhari et al., 2022). Farmer groups have not established cooperation with external parties such as rice milling partners or agricultural marketing institutions so that members search individually. This is in accordance with the opinion of Handayani *et al.* (2019) which states that often cooperation in terms of marketing and processing of rice production products has not been felt by farmers because many farmers only focus on cultivating food for their own consumption and their families.

Function of the Group as a Production Unit:

Most respondents gave a score of 3–4, indicating that the group's economic function is starting to take shape even though it is not yet strong. Some groups have undertaken collective efforts such as joint fertilizer purchases and crop marketing. Groups with good production functions are able to produce stable and higher productivity (≥85 kw/ha). The function of production units strengthens the economic independence of farmers through economic scale, input efficiency, and market bargaining. Groups that have a joint venture can reduce costs while increasing profit margins.

The group's economic function as a joint production unit has not been running optimally. Some respondents scored higher (4) on indicators related to co-marketing or collective results, which indicates an initial effort towards collective effort, although it is not evenly distributed. The challenges faced are the lack of a clear joint venture mechanism (e.g. collective production or cooperatives), lack of capital and facility support and lack of transparent and fair revenue sharing. The group has the potential to develop as a production unit, but it is necessary to strengthen the group's business management, entrepreneurship training, as well as facilitate capital and market access.

The role of this production unit has an impact on reducing productivity because its implementation is not optimal. This happens because of the factor of production units that are not managed properly by the farmer group so that the equipment is not good and the output is not up to standard, causing inefficiency in results. The equipment in the Fertile and Prosperous Farmers Group is tractors, but the number of farmer groups is only one per farmer group so not all members can use it. The factor of frequent delays in fertilizer assistance can also be the cause, so farmers often buy their own fertilizers at a higher price. The distribution of fertilizer assistance by the government is distributed to farmer groups and then given to farmers. The planning aspect has also not been done correctly by the farmer group because there is no planting schedule for one year for members (Paloma;, 2020; Saiz-Rubio & Rovira-Más, 2020). This is in accordance with the opinion that the role of farmer groups as a production unit in terms of planning is by planning planting time, using seeds, and pest control(Hasdiansyah et al., 2021).

The relationship between group roles and productivity

The Learning role is relatively more prominent than the other two, indicating that the group is beginning to function as a place for knowledge exchange. The Cooperation role is the weakest aspect, it needs social and institutional intervention. The Production Unit is starting to grow, but it still needs economic and managerial support to become a real source of income for members. The group's function is not optimal overall, it is still at a moderate level. The learning aspect is stronger than the cooperation and production aspects. It is necessary to strengthen through intensive assistance in the form of training and regular meetings, increase member participation through joint activities and group economic empowerment by forming joint business units (cooperatives, processed businesses, or collective marketing). With a sustainable strategy, the group has the potential to become a center of learning, a forum for cooperation, as well as a productive economic unit for the community (Elia & Yulianti, 2022; Julsrud, 2023).

Productivity achievement based on the role of farmer groups, based on productivity data from 38 respondents Productivity ranged from 53.57 kw/ha to 107.14 kw/ha. The average productivity is around 70-75 kw/ha, which is moderate. The wide variation shows that there are differences in the ability and efficiency of farmers in managing land.

Preliminary analysis shows that the high and low productivity is not solely determined by land area, but also by the way of management, cooperation, and the role of farmer groups in supporting cultivation and marketing practices.

Farmers who are members of groups with a high learning intensity (frequency of regular meetings, training, technical discussions) show higher productivity, for example above 80 kw/ha. Increasing the capacity of collective learning contributes to the technical ability of farmers in managing land, applying technology, and overcoming pest/fertilizer problems. Group Institutional Relationship with Productivity shows that Respondents with high institutional scores have productivity above 80 kw/ha. Respondents with low institutional scores had productivity below 70 kw/ha. Thus, it can be concluded that there is a positive correlation between the institutional strength of the group and the productivity of the land. The functions of learning, cooperation, and joint production play a role as socio-economic strengthening factors that affect farmers' technical abilities.

Conclusion:

The group that is active as a learning is able to improve skills and increase efficiency so that productivity increases. On the other hand, in groups that have high coordination and mutual cooperation, especially in the procurement of production facilities and joint harvesting, productivity reaches above 80 kw/ha. Strong cooperation accelerates the adoption process of innovation and cost efficiency, thus having a direct impact on productivity improvement. Groups that have started to carry out economic functions such as collective enterprises, yield processing, or joint sales, show more stable yields and higher productivity. Groups that function as production units encourage economic scale, input efficiency, and market bargaining, resulting in higher land productivity. Based on the results of the analysis, the strategy of strengthening group institutions can be directed to strengthening the learning function through technical training, field schools, and visits between farmers. Strengthening the cooperation function Encouraging mutual cooperation activities, regular meetings, and participatory decision-making mechanisms.

Development of the function of the production unit by forming joint business units, cooperatives, or marketing groups to increase the added value of products.

Recommendations:

The function of the Learning needs to be strengthened through technical training, field visits, and farmer field schools so that members are able to implement efficient cultivation practices. The function of the Cooperation Forum must be strengthened through mutual cooperation activities, regular meetings, and the formation of work teams between members. Trust and participation of members need to be grown with transparency in group management. The function of the Production Unit by providing encouragement for the formation of collective business units such as the procurement of joint production facilities, post-harvest processing, and collective marketing. Facilitate access to capital and market partnerships. Continuous mentoring requires the active role of extension workers and accompanying institutions to ensure the sustainability of the group's institutional function. Groups have the potential to become a learning role, but they need to be strengthened through counseling activities, technical training, and exchanging experiences between members so that the group's educational function increases.

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