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The Role and Performance of Farmer Group in Organic Vegetable Business

Mubarokah, Noor Rizkiyah, Wahyu Santoso, Putri Nurmalita Sari *

Department of Agribusiness, Faculty of Agriculture, University of Pembangunan Nasional "Veteran" Jawa Timur, Surabaya, Indonesia

*Correspondence Email: putri.nurmalita.fp@upnjatim.ac.id

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ABSTRACT

Natural substances are used instead of synthetic chemicals in organic farming, which eschews the use of synthetic insecticides, fertilizers, and plant growth regulators. The purpose of this study is to (1) Identify the role of farmer groups in the development of organic vegetable businesses; and (2) analyze factors that affect the performance of organic vegetable farmer groups. Technique sampling set is 40 farmers Respondents were selected purposively, taking into account capacity and capability. Qualitative descriptive analysis and SEM-PLS, two data analysis techniques, are being applied. The findings of this study demonstrate how well-suited a farmer organization to play a role in organic vegetable production from upstream to downstream. External factor variables have a positive effect on performance variables but are not significant. This is due to the relatively low capacity of farmer group members due to low education. On the other hand, land size, member involvement, production facilities and member access all have an influence on community performance. The influence of community competence on performance reveals that the initial sample value, 1.146, is positive. This value indicates that there is a favorable association between the competency variable and community performance. However, when linked to the role of the group in terms of marketing access, there is still a need for additional knowledge, skills, and farmers are still very dependent on community leaders for the sale of crops, which has an impact on the fighting power of farmers.

Keywords: *organic agriculture, performance of farmer group, role.*

BACKGROUND

Philosophically, farmer organizations were founded to answer difficulties faced by farmers that could not be solved individually. The development of farmer groups is a process of establishing consolidated agriculture so that it can produce effectively and efficiently. Because integrated agriculture in farmer groups allows for cooperative procurement of production facilities and sales of produce. Farmers are currently being urged to modify conditions in order to model the sustainable adoption of such practices, thereby providing opportunities for messages, extension, and agricultural

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policies and strategies to achieve sustainable agricultural development, despite the fact that forming a one-time adoption decision has left a great deal of interest (Mgomezulu et al., 2023). Despite being aware of the potential contribution of peasant collectives to the transition to sustainable development, little is known about the flow of their activities. (Slimi et al., 2021).

There are many challenges on Indonesia's efforts to implement sustainable agriculture, starting with the shrinking amount of agricultural land due to population expansion (Janah et al., 2017) as well as the unchecked expansion of cities (Nurokhman, 2019). Conversion of agricultural land and decrease in the number of workforces in the agricultural sector (Susilowati & Hery, 2016). Faced with this issue, some countries have begun to implement technical advancements in order to increase farmer welfare, agricultural output, and the food sector's economy. (Chavas & Nauges, 2020). Several studies have looked at agricultural issues from the perspective of developing agricultural infrastructure (Supriadi & Roosganda, 2007), agricultural credit (Ashari, 2016) and empowering women in agricultural development (Roosganda, 2016).

Empowering farmer groups is very important in rural areas. Farmer groups function well as a forum to organize various activities and accommodate the information needs in farming business, if they can be carried out in accordance with their function effectively (Purwantini & Sunarsih, 2020). The function of the farmer group according to (Ministry of Agriculture RI, 2013) is a teaching and learning forum for members to increase knowledge, skills, and attitudes so that they grow and develop into independent farming. The problem in the community is that there are group members who do not routinely do farming due to decreased farmer consistency in the organic vegetable business, low productivity which has an impact on the unstable availability of organic vegetables. This is due to the high production risk, high greenhouse maintenance costs and the existence of more promising jobs.

The efforts of farmer groups in organic farming have been looked at in a number of studies. Like (Methamontri et al., 2022), who concentrated his research on the variables influencing organic rice farmer groups in Thailand's Yasothon Province's engagement in joint marketing. Age and agricultural loans had a negative impact on the level of participation in farmer groups' collective marketing, while education, rice cultivation area, non-agricultural income, experience in organic rice farming, length of membership in the group, and perceived financial benefits had a positive impact. (Alotaibi et al., 2021) their study's findings showed that extension services were not thought to be the primary information source that organic farmers usually consulted. The two main sources of information are other organic farmers and organic agricultural groups. Building social capital is a skill that organic farmers excel at while looking for knowledge to solve their difficulties. (Utaranakorn & Yasunobu, 2016) stated that farmers with high abilities, especially group leaders and group administrators, have more opportunities to increase their network by becoming a consultant and transferring knowledge/technology. As a result, their social network is more active and stronger, both inside and outside their village. Furthermore, Syukur and Melati (2016) state that organic agriculture can not be separated with economic, environmental, and social dimensions.

The "Brenjonk" community is a pioneer of organic farming development in East Java province. The community's activities are mostly concentrated on the application of Rumah Sayuran

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Organik (RSO) technology for farmer empowerment. This organic community is expected to preserve and promote organic farming techniques while improving the welfare of farmers. In addition to increasing productivity, organic farming is also intended to improve the quality of life that is environmentally friendly. However, the current existence of organic farmer group coaching is still unsatisfactory due to the inability of the institution to engage with agribusiness actors and other rural economic entities. (Putri ED, 2018). In their research, Tri Bastuti P. and Sunarsih (2020) showed that community empowerment initiatives in Indonesia have not benefited entirely from the participation of farmer group organizations. This leads to less than ideal income since farmers still have limited access to markets and there is no collaboration with agricultural organizations. Such a state indicates that cooperatives, groups, and businesses must continue to work together in order to develop new markets and support productivity-boosting initiatives.

Organic farming is the fastest growing sub-sector in agriculture, accounting for 1% of the world's agricultural area. Organic farming provides solutions to most food production problems. Organic farmers are health conscious by avoiding pesticides and chemical fertilizers commonly used in agriculture (Pandiselvi et al., 2017). Consumption of organic products is a corrective measure for health such as reducing the use of antibiotics where production and processing conditions can be harmful to human and animal health (Ebitu et al., 2021). Organic farming emerged in the early 20th century as a reaction to rapidly changing agricultural practices (Kulasooriya et al., 1994). In Indonesia, the organic food market continues to strengthen both on a global and domestic scale with a growth rate of 20% per year (Sulaiman A, 2023). The "Brenjonk" community developed organic farming since 2007, but since 2018 the group's performance has tended to decline. This has an impact on productivity decreasing, increasingly unable to guarantee the sustainability of production.

The main problem is the declining motivation of farmers due to declining income and competition with the development of tourism which is considered capable of providing continuous income. Various technological changes to encourage consistency and synergy are expected to overcome the difficulties of organic farming sustainability while increasing income through increased productivity. The Brenjonk organic vegetable community is predicted to be able to solve or eliminate existing challenges while improving income through increased production. This study aims to (1) Identify the role of farmer groups in the development of organic vegetable businesses; and (2) analyze factors that affect the performance of organic vegetable farmer groups.

RESEARCH METHODS

The total population of organic vegetable farmers is 205 people. According to Arikunto (2010), if the research population is greater than 100, then a sample of 10-15% can be taken, so that the sample set is 40 farmers consisting of community leaders, 1 PPL, 3 farmer group leaders and 35 farmer group members. Respondents were selected purposively, taking into account capacity and capability, as they were considered capable of providing as complete information as possible so that the data collected could be recognized for its accuracy in the field.

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Qualitative Descriptive Analysis was used to characterize the role of the group in the organic product sector. Role measurement is done by looking at relevance, effectiveness, coherence and sustainability. According to Rijali (2018) Qualitative Descriptive Analysis is a research method that utilizes qualitative data and is described descriptively. without intending to make general conclusions or generalizations (Sugiyono, 2017). Structural Equation Modeling (SEM) Partial Least Square (PLS) Analysis was performed to examine several variables that influence group performance in the production of organic vegetables.

SEM-PLS is a statistical research area that can evaluate a number of linkages that are challenging to quantify all at once. According to Santoso (2014) SEM is a multivariate analysis technique which is a combination of factor analysis and regression (correlation) analysis, which aims to examine the connection between variables in a model, both between indicators and constructs. Variables and indicators in this study can be seen in Table 1.

Table 1. Variables and Indicator Research

No.	Variables	Indicators
1	Group Performance (Y)	Productivity
2	Community Competition (X_1)	Farm Planning ($X_{1,1}$) Land Preparation ($X_{1,2}$) Planting ($X_{1,3}$) Maintenance and Fertilization ($X_{1,4}$) Pest and Disease Control ($X_{1,5}$) Harvest ($X_{1,6}$) Post-harvest Handling ($X_{1,7}$) Marketing ($X_{1,8}$)
3	Community External Factors (X_2)	Land ($X_{2,1}$) Interaction with Cadres/Extensioners ($X_{2,2}$) Production Facility ($X_{2,3}$) Community Engagement ($X_{2,4}$) Credit Access ($X_{2,5}$)

RESULT AND DISCUSSION

The ability of participatory community empowerment to use technology at the farmer level will be able to revitalize farmer groups and related institutions like marketing and extension. In addition to serving as a response to government initiatives that mandate group work from farmers, farmer groups also serve a variety of purposes in strengthening their own communities. These functions include serving as a platform for knowledge sharing about farming and organization, a

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means of fostering cooperation, and a unit for farming output. In addition, farmer groups contribute by offering comments on a technology's performance, which helps to create assessment data for future advancements.

Farmer Group Role in Organic Vegetable Agribusiness

Farmer group is an organization that have a very important role in organic vegetable business. This community based local groups are more effective in influencing members involved in group activities and are being prepared to serve information needs (Anil et al., 2015). Group members work together in carrying out farming activities including solving problems starting from input, on farm, off farm and marketing subsystem. The role of the group's coaching aimed to increase the ability and the performance of its members, adding more insights and motivation to its members, evaluating and monitoring as well as cooperation to deal with threats, challenges, obstacles, in the organic vegetable business (Rahim & Hastuti, 2005). Farmer groups as a supporting service subsystem perform their role as a driving force in increasing members' insight and cooperation in dealing with threats, obstacles related to supplies distribution of inputs, production assistance, post- harvest handling and marketing. Detailed performance of farmer group Brenjonk can be seen in Table 2.

Table 2. Role of Farmer Group in Organic Vegetable Business

Community Cadres' Role	Good	(%)	Not Good	(%)
Input Facility Provider	31	77,4	9	22,6
Production Assistance	39	96,8	1	3,2
Harvest and Post-Harvest Handling	26	64,5	14	35,5
Organic Vegetable Marketing	29	71,0	11	29,0

Source: Primary Data Analyzed, 2023

Table role of farmer group in organic vegetable business explained that the input subsystem includes all planning, processing, procurement, and distribution of production facilities to enable the application of farming technology and optimal utilization of agricultural resources. The community member's role Brenjonk in this subsystem is still quite good, this can be seen from the cadres' role in fulfilling the needs for seeds, organic fertilizers and organic pesticides. Farmers obtained various types of vegetable seeds, therefore like spinach; lettuce; kale; cucumber; beans; long beans and some other vegetable seeds according to the market's demand. Another facility production is a group-made organic fertilizers which are also distributed to simplify and speed up the process of preparing organic fertilizers in addition to reducing the farming expenses. The green house maintenance is still Horne by farmers who receive assistance, this aimed to educate farmers towards self-sufficiency. However, efforts are still needed in increasing the community's role that is starting to be undisciplined in carrying out their role due to other activities or lack of raw materials.

Brenjonk organic community as a reforming agent in Trawas, works with the Government of

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Mojokerto in its institutional context that has a mature program with a work plan in carrying out organic farming activities so that it can be carried out properly. The Brenjonk community plays a role apart from giving training programs to organic farmers and increasing welfare which also provides awareness to farmers to live a healthy life by consuming foods from organic materials. The highest achievement on organic vegetable business was in this subsystem namely 96,8%, meaning that the group cooperation in the process of production was very good and complied with established organic standards.

The cultivation subsystem includes cultivation coaching and development activities in order to increase production. Brenjonk community cadres carry out its role in recording every activity in every farming activity starting from site selection, land preparation, planting, fertilizing, maintenance, to harvesting activities in accordance with applicable quality standards. In general, it was found that the role of cadres as cultivation assistants was at a good level. This can be seen from the implementation of routine inspection activities both for growth and identification of problems with the aim that vegetable plants are controlled or properly managed to produce quality organic vegetables, with this in mind to minimize losses. The biggest obstacle was in the marketing subsystem with the lowest achievement compared to the other subsystems, namely 64,5% meaning that many members in organic vegetable marketing were not as expected. In general, it can be said that farmers in the post-harvest handling process do not pass grading so that many are returned and sold at the same price as non-organic vegetables. So that's when the farmers lose money.

The Marketing Subsystem includes harvesting and post-harvest activities of organic vegetables. The role of the group is to provide direction to the members starting from harvest time by observing the condition of the leaves, fruits, and the physical stems of the vegetables; the process of washing vegetables must use clean water and then place them in a place that is clean and free of contamination; equipment and baskets used exclusively for organic systems; cleaning the production site, clothing used by workers for sorting, grading and packing vegetables free from chemical contamination; vegetable packaging must use permitted / non-chemical materials such as PE PP PEP type packaging; parallel production records must be clearly separated so that the packaging activities of organic vegetable crops are guaranteed to be of the appropriate grade and ready to be marketed. After the vegetables have been sorted and packed in packaging that has guaranteed its quality, the products are divided into two grades, namely grade 1 and grade 2. Grade one, is an organic vegetable product that has been sorted with good quality and is marketed outside the region, however the grade two, is a vegetable product that quality grade is below grade one, sold to a local market at a slightly cheaper price than the grade 1 organic vegetable product.

Important role marketing is handed over to the heads of community institution in facilitating market that already has customer or consumers in the Surabaya area and its surrounding, namely: D'natural Restaurant, Kinagro, Twelveorganik, Media Informasi Kita (MIK), Ciputra University, and several other customers that are sent every week in every Monday and every Thursday. The same thing was said from the research results by Pratiwi (2019) about the role of farmer group which stated that the role of the farmer connection between farmer organic rice cultivation in Mojogedang District,

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Karanganyar Regency: there is a very significant relationship between the role of contact farmers as educators and organic rice cultivation.

Factors Influencing Group's Performance

Based on the results of data analysis carried out through the SEM-PLS approach, it shows the relationship between the dependent and independent variables which will be explained in detail in Figure 1, which includes about:

1. Measurement model evaluation (Outer model)

a. Validity test

Validity tests through SEM-PLS can be seen from the loading factor value for each indicator construct. A high loading factor value indicates that each construct indicator is convergent at one point. The rule of thumb that is usually used to assess convergent validity is that the loading factor value must be greater than 0.7 for confirmatory research and a loading factor value between 0.6-0.7 for explanatory research is still acceptable (Ghozali, 2018). The validity test was carried out to find out whether the loading factor value that was generated in the study was valid or not.

Table 3. Value of Loading Factor

No.	Variable	Item Indicator	Loading Factor	Result
1	Community Competence	$X_{1,1}$	0,712	Valid
		$X_{1,2}$	0,773	Valid
		$X_{1,3}$	0,671	Valid
		$X_{1,4}$	0,879	Valid
		$X_{1,5}$	0,617	Valid
		$X_{1,6}$	0,740	Valid
		$X_{1,7}$	0,740	Valid
		$X_{1,8}$	0,727	Valid
2	Community External Factor	$X_{2,1}$	0,863	Valid
		$X_{2,2}$	0,791	Valid
		$X_{2,3}$	0,946	Valid
		$X_{2,4}$	0,921	Valid
		$X_{2,5}$	0,962	Valid
3	Community Performa	Y	1,000	Valid

Source: Primary Data Analyzed, 2023

The results of the analysis show that the loading factor values for all indicators are greater than 0.6 and 0.7. This value means that all the question indicators in this study are valid and can be used for further analysis. Besides being seen from the loading factor, validity testing can be seen from the value of the Average Variance Extracted (AVE). If the AVE value is more than 0.5, it means that all the indicators used can really be trusted to measure the construct.

b. *Reliability test*

The reliability test is carried out to see whether or not the indicator of a variable is feasible.

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Indicator reliability can be seen from the composite reliability value and Cronbach's alpha above 0.7. If the composite reliability and Cronbach's alpha values are more than 0.7, it indicates that the constructs in the model can be said to be reliable (accurate, consistent, and reliable).

Table 4. Value Composite Reliability and Cronbach's Alpha

Variable	Composite Reliability	Cronbach's Alpha	Result
Community Competence	0,903	0,881	Reliable
Community External Factor	0,954	0,939	Reliable
Community Performa	1,000	1,000	Reliable

Source: Primary Data Analyzed, 2023

The results of the analysis show that all composite reliability and Cronbach's alpha values are more than 0.7 so that they are said to be reliable. This value proves the accuracy, consistency and precision of the instrument in measuring variables. So, it can be concluded that these indicators can be trusted and relied upon in measuring latent variables and can be used as a consistent measuring tool.

2. Structural model evaluation (Inner model)

a. R-square

Inner model is evaluated with R-Square for the dependent variable. Changes in R-Square can be used to assess the effect of a certain laten independent variable on the dependent latent variable. R-Square values of 0.75, 0.5, and 0.25 respectively can be categorized as strong, moderate and weak models. The higher the R-square value means the better the prediction model of the proposed research model. The results of the R-Square analysis of this study used the Smart PLS software. The R- Square value of the community cadre performance variable is 0.460. meaning that community performance variables are influenced by community competency variables and community external factor variables by 46%. The remaining 54% is influenced by other variables outside of this study, meaning that the model used in this study has a moderate relationship. Ghozali (2018) stated that the moderate variable is the independent variable which will strengthen or weaken the relationship between the other independent variables and the dependent variable. This is because the moderator variable does not depend on the other variables and both affect the dependent variable.

b. Path coefficients

Based on the SEM model that has been analyzed using SmartPLS, can be seen by the effect of each variable. The influence of variables can be seen from the values of the structural path coefficients (path coefficients) which shows the parameters of the connection between latent variables and indicators along with their significance values. The magnitude of the influence of each variable

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and the direction of the variable contact is indicated by the original sample value. If the original sample value is positive, then the variables give a positive response. The rules of thumb used in this study are t-statistics >1.96 with a p-value <0.05 is significant, if the p- value is > 0.05 then it is not significant.

There is a contact between external factors and community performance indicating that the original sample value is positive, which is equal to 0.483. This value means that between community external factor variables and community performance have a positive response. The T-Statistics value obtained shows that it is greater than 1.96, namely 2.212. Meanwhile, the P value shows less than 0.05, which is 0.027. This means that community external factor variables and community performance variables have a significant relationship. Operationally the implementation of organic vegetable farming in Penanggungan Village, Trawas District, still receives attention from community members, both from the use of inputs to the on-farm process. Even so, there are still obstacles in terms of greenhouse maintenance, which seems to have to look for a network of partners for the benefit of accessing funds and product marketing. In detail, the results of the analysis can be seen in Table 5.

Table 5. Path Coefficients Value

Connection Between Variables	Original sample (O)	Sample Mean (M)	Standard Deviation	T Statistics	P Value
External Factors -> Community Performance	0,483	0,473	0,219	2,212	0,027
Community Competence -> Community Performance	0,221	0,246	0,193	1,146	0,252

Source: Primary Data Analyzed, 2023

Table path coefficient value shows the impact of external influences on community performance, with the initial sample value of 2,212 being positive. This score indicates a favorable relationship between external community factor variables and community performance. Meanwhile, the p value is less than 0.05, specifically 0.027. This suggests that the impact of outside forces on community performance metrics is negligible.

External factors in the form of land availability, communication with PPLs, involvement in community activities, availability of production facilities and access to credit have a positive but insignificant effect. This means that each variable needs to be strengthened such as assistance in maintaining green houses whose roofs have begun to be damaged, scheduling meetings regularly with PPLs, increasing group motivation through both formal and non-formal meetings and raising farmers' confidence in order to increase productivity. Thus, more attention is required to institutional conditions such as strong leadership, transparency, regular group assistance, wider access to credit, and increasing farmers' skills and knowledge, all of which lead to an independent organic farming

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system.

The influence of community competence on performance reveals that the initial sample value, 1.146, is positive. This value indicates that there is a favorable association between the competency variable and community performance. Meanwhile, the P value is less than 0.05, at 0.252. This implies that the variable community competency has a positive and significant effect on the variable community performance. Knowledge competency has a strong influence on community performance based on the competency characteristics that have a substantial influence. This was supported by Nasrullah (2016) in research findings, which revealed that knowledge, skills, expertise, and professional attitudes had a positive and significant effect on the performance of Gapoktan administrators in Sinjai Regency both simultaneously and partially.

Overall, the level of farmer competence, which is dominated by variables of on-farm activities such as planning, management, fertilization and pest control, harvest handling, post-harvest and marketing, is in the high category and shows a positive and significant influence. In terms of community competence, in addition to a positive and significant effect, these two variables indirectly influence the productivity of organic vegetable farming. However, when linked to the role of the group in terms of marketing access, there is still a need for additional knowledge, skills, and farmers are still very dependent on community leaders for the sale of crops, which has an impact on the fighting power of farmers. Farmers in these conditions need assistance from local governments, organic activists, non-governmental organizations, and even private companies through CSR (Corporate Social Responsibility) programs to develop inclusive and community-based markets with healthy food product labeling.

CONCLUSION AND SUGGESTION

This research can be concluded based on the outcomes of data analysis such as:

1. The role of groups in organic vegetable farming is still considered quite good in the sense that farmers continue to carry out group activities in accordance with their main tasks and functions, which is consistent with a role value of more than 70%, but their role in harvest and post-harvest is still 64.5%.
2. External community factors have a positive and significant effect on community performance with a value of 2,212 above the P value of 1.96, but the community competency variable has a positive but non-significant effect with a value of 1.146.

Based on the conclusions above, there are several suggestions from the research results that can be used, such as:

1. Enhance Post-Harvest Support: Since the role of groups in harvest and post-harvest activities is relatively lower at 64.5%, consider implementing targeted training and resources to improve post-harvest handling, storage, and distribution processes. This could help increase the overall effectiveness and profitability of organic vegetable farming.
2. Leverage External Community Factors: Given the significant positive effect of external

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community factors on community performance, it would be beneficial to strengthen partnerships and collaborations with external stakeholders such as government agencies and market players. These collaborations could provide additional support, resources, and market access.

3. Strengthen Group Dynamics: Even though the overall role of groups is positive, further efforts could be made to enhance group dynamics and cooperation, particularly in the weaker areas like post-harvest management. This might include leadership training, conflict resolution strategies, and team-building activities to foster a more cohesive and effective group structure.

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