

Agricultural Institutional Models to Support Food Crop Agribusiness Development (Case Study: Indonesia – Malaysia)

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ABSTRACT

This research demonstrates the importance of identifying and developing food crop agribusiness, particularly lowland rice, in Indonesia and Malaysia. It is hoped that this research will formulate a model for developing food crop agribusiness in Indonesia and Malaysia. The research subjects were 60 respondents of rice paddy farmers consisting of 30 respondents of rice paddy farmers in Indonesia and 30 respondents of rice paddy farmers in Malaysia and registered in farmer groups, which became the object of research, namely the appropriate strategies and models in developing food crop agribusiness. Data Analysis Method To analyze the problems studied using descriptive analysis, namely providing clear and in-depth problem information interpreted according to the results of the research conducted based on theoretical support related to the research object to measure farmer perceptions by analyzing using the Likert scale method. Farmer groups in the research area not only serve as a forum for improving the quality and quantity of production, but also as a channel for introducing the latest technology, expanding market access, and improving farmer welfare through collective marketing and economic empowerment. From the Index Score obtained, there is a comparison of agricultural institutional models between Indonesia and Malaysia. From the benchmark of farmer group institutional activity, the farming subsystem (on-farm), Indonesia is higher than Malaysia. From the benchmark of production facility subsystem (Upstream), marketing & processing system (Downstream), supporting service subsystem, Malaysia is higher than Indonesia, while inhibiting factors and potential for farmer institutional development between Indonesia and Malaysia still need to be improved again so that farmers are more prosperous. In general, Malaysian agricultural institutions are more supportive in the development of food crop agribusiness than Indonesia with a score difference of 3.9%. With an index score of 73.4% higher than Indonesia's 69.5%, it shows the adoption of agricultural technology and more equitable irrigation infrastructure that ensures a more stable water supply, so that the average yield per hectare is maximized. Higher levels of use of modern agricultural mechanization (such as combine harvesters and monitoring drones) and large-scale commercial land management are more dominant in Malaysia. Farmer groups in the research area not only serve as a forum for improving the quality and quantity of production, but also as a channel for introducing the latest technology, expanding market access, and improving farmer welfare through collective marketing and economic empowerment. From the Index Score obtained, there is a comparison of agricultural institutional models between Indonesia and Malaysia. From the benchmark of farmer group institutional activity, the farming subsystem (on-farm), Indonesia is higher than Malaysia. From the benchmark of production facility subsystem (Upstream), marketing & processing system (Downstream), supporting service subsystem, Malaysia is higher than Indonesia, while inhibiting factors and potential for farmer institutional development between Indonesia and Malaysia still need to be improved again so that farmers are more prosperous. In general, Malaysian agricultural institutions are more supportive in the development of food crop agribusiness than Indonesia with a score difference of 3.9%. With an index score of 73.4% higher than Indonesia's 69.5%, it shows the adoption of agricultural technology and more equitable irrigation infrastructure that ensures a more stable water supply, so that the average yield per hectare is maximized. Higher levels of use of modern agricultural mechanization (such as combine harvesters and monitoring drones) and large-scale commercial land management are more dominant in Malaysia.

Keywords: *Agricultural Institutional Model, Agribusiness Development, Lowland Rice, Indonesia, Malaysia*

1. INTRODUCTION

Farmer-level institutions are organizations developed from, by, and for farmers, whose primary function is to champion the interests of farmers. These include agricultural commodity associations and councils, as well as farmer groups (gapoktan) or farmer groups (poktan). Farmer institutions play an important role in supporting agricultural development, so their existence requires attention and proper management so that their roles and functions can run optimally [1].

Agriculture, as a priority sector in an agrarian country, is the key to achieving food security, economic growth, and agricultural development. Agricultural development is a social change that leads to growth, progress, development, economic distribution, improved farmer and community welfare, and environmental sustainability. [2]

Parties involved in agricultural development include the government, farmers, and the community. The government plays a very dominant role in agricultural development, one of which is through market access policies for farmers by becoming a government that collaborates with technology and investors [3]. Agricultural development policies based on technological innovation are felt by farmers and the community in the form of increased production, increased farmer income and farmer capabilities so that the level of food security increases [4]. Success in developing and empowering farming communities lies in the hands of trainers and experts as partners, at least until the community is able to manage their businesses and organizations professionally and independently [5]. One of them is through extension programs. Agricultural extension programs are important for the success of agricultural development despite differences in the form of activities both at the macro and micro levels. The role of extension workers is in the position of facilitator, motivator, consultant, and innovator with factors that influence performance, namely the frequency of job training [6]. The paradigm in policy through intensive cultivation, market-oriented, and production efficiency, but in reality at the local level only as project orientation [7].

The implementation of agricultural development must include meaningful and sustainable economic, social, and environmental sustainability benefits. It is necessary to manage natural and human resources to strengthen the institutional role, effectiveness, and efficiency of alternative and renewable energy. It is necessary to adjust regulations and efficiency of comprehensive and structured development programs according to regulations, infrastructure, and other institutions and according to the type, time, quantity, and subject. With additional income and farmer welfare, to achieve food and energy self-sufficiency, food security [8]. Fundamentally, agricultural development policies contain a mission that the agricultural sector must be able to provide and meet the food needs of the community, both in quality and quantity. In addition, the agricultural sector must also be able to drive the development of various activities, both upstream and downstream, in every agricultural area development [9]. The agricultural sector must and needs to be strengthened so that the strategic role of the agricultural sector as a food provider is still achieved. In addition, the agricultural sector also plays a role in providing raw materials for industry, creating jobs and business opportunities, as well as a consumption role, namely as a consumer of industrial products (agricultural tools and machinery or agricultural machinery and production facilities) and even plays a role as a contributor of foreign exchange for the country [10]. Agricultural development, particularly in Indonesia, is directed toward sustainable agriculture, which is the development of an agricultural system that can be implemented continuously and can survive for future generations without damaging the environment. Sustainable agriculture can be defined as an agricultural

business that utilizes and simultaneously conserves resources to achieve optimal production and productivity throughout time [11].

There are four problems related to rice harvest conditions in Indonesia. First, the average area cultivated by farmers is only 0.3 hectares. Second, approximately 70% of rice farmers are poor and low-income. Third, almost all rice farmers use half of their harvest for personal consumption. And fourth, the average income from rice farming is only 30% of total family income. Under these conditions, almost all rice fields are cultivated conventionally.[12]

In Malaysia, rice is the third most important food crop, after oil palm and rubber. Rice is planted twice (planting seasons) each year. The main season (humid weather, August-February) relies on a non-irrigation system, while the non-monsoon season (dry weather, March-July) requires an irrigation system. Generally, rice granaries are spread across Peninsular Malaysia, Sabah, and Sarawak [13]. In addition to these recognized granaries, there are 74 secondary granaries and 172 minor granaries distributed sporadically in Malaysia and contribute to an area of 28,441 and 47,653 hectares, respectively. In the Southeast Asian region, Malaysia has the smallest total rice planting area, namely 689,268 ha [14]. Two-thirds are spread across Peninsular Malaysia and the rest in Sabah and Sarawak [15]. Approximately 195,000 farmers are working hard in rice cultivation and productivity [16].

2. LITERATURE REVIEW

2.1 *The Concept of Farmer Institutions*

Institutions are social systems that regulate the rules, processes, and roles of each supporting component to achieve common goals. According to [17], farmer institutions are organizational structures or institutions formed by, for, and from farmers to optimize their potential and meet their needs. These institutions play a crucial role in regulating relationships between members of the farming community and bridging farmer interests with the government, traders, and agricultural input providers. Ministerial Regulation No. 67 of 2016 concerning Guidelines for the Development of Farmer Institutions states that farmer institutions are institutions established by and for farmers with the aim of strengthening and advocating for their needs.

This Ministerial Regulation also outlines the scope of farmer institutional development, which includes:

1. Farmer groups are groups of farmers formed to improve and expand their farming businesses. These groups are formed based on shared interests, environmental conditions, and mutual familiarity.
2. Gapoktan (Farmer Group Association) is a collaborative forum between farmer groups aimed at strengthening coordination and empowering farmers at a broader level.
3. Agricultural Commodity Associations are farmer associations focused on a specific commodity to develop and protect farmers' interests in that specific commodity.
4. The National Agricultural Commodity Council is an institution whose members are Agricultural Commodity Associations, whose purpose is to champion the interests of farmers. These institutions enable farmers to exchange knowledge, expertise, and experience regarding crop cultivation,

post-harvest handling, and agricultural product marketing. In addition, Farmer institutions help farmers maintain their bargaining position in the agricultural value chain.

Research conducted [18] reinforces the idea that effective farmer institutions can help farmers establish broader marketing networks and adopt agricultural technology innovations. This research focuses more on farmer groups, which in rural areas are important instruments and driving factors for local economic development. According to [19], farmer groups are groups that contribute to the sustainable economic growth of farmers. Ministerial Regulation No. 67 of 2016 states that farmer groups are non-formal farmer institutions with the following criteria:

1. Characteristics of Farmer Groups
 - a. Know each other, are familiar with, and trust each other
 - b. Share similar perspectives, interests, and beliefs about agriculture
 - c. Share similarities in traditions, settlements, locations, types of businesses, socioeconomic status, culture, customs, language, and environment.
2. Binding Elements of Farmer Groups
 - a. The farming area is a shared responsibility among members.
 - b. The benefits of activities carried out within the farmer group are felt by the majority of members.
 - c. Cadres are able to mobilize farmers with leadership that has the approval of members.
 - 4) There is a fair division of tasks and responsibilities among members.
 - d. There is encouragement from community leaders to support established programs.
3. Functions of Farmer Groups
 - a. Farmer groups serve as educational platforms where members can gain knowledge, skills, and perspectives to grow and develop independent farming businesses. Farmer group members can use and access information and technology resources to increase their productivity, income, and quality of life.
 - b. Farmer groups serve as a place for better collaboration with fellow farmers within the group and with external parties. This allows them to be more productive and better able to face threats, challenges, and obstacles.
 - c. Farmer groups serve as production units where the overall farming efforts of each group member can be developed to achieve economies of scale while maintaining continuity, quality, and quantity. Farmer groups have been proven to provide numerous benefits to their members, such as easier access to production inputs, improved farming knowledge and skills, and better access to markets and capital sources. Farmer groups remain a crucial tool for improving farmer welfare and sustainably advancing the agricultural sector, despite facing numerous challenges, such as adapting to technological changes and farmer regeneration.

2.2 *The Concept of Local Economic*

Development Local economic development is an economic development process that involves collaboration between local governments, communities, and the private sector to manage available resources to create jobs and drive economic growth. The concept of local economic development emphasizes empowering endogenous potential or internal strengths, by involving the entire community in development planning and implementation. The long-term goal of local economic development is to alleviate poverty and improve the quality of life of the community in a sustainable manner. [20]

1. Objectives of Local Economic Development

To achieve long-term goals, local economic development has the following objectives:

- a. Accelerating economic growth by creating added value
- b. Creating and expanding job opportunities
- c. Increasing income and better income allocation
- d. Improving the competitiveness of the regional economy compared to other regional economies
- e. Creating and developing beneficial collaborations between regions.

2. Factors Influencing the Success of Local Economic Development

The success of local economic development is determined by several fundamental, interrelated and supportive factors. The following factors influence the success of local economic development:

- a. Local economic development depends on local institutional capacity.
- b. Human resources (HR) with sufficient competence and qualifications are a crucial factor in local economic development.
- c. Having access to capital, technology, and data.
- d. Local economic development depends on strong social capital.
- e. Legal support and government policies are significant external components.
- f. Long-term sustainability of the local economy will be ensured if communities can manage and conserve natural resources, develop green economic practices, and create sustainable development models.

3. Principles of Local Economic Development

According to [21], several key principles underlie the concept of local economic development, including:

- a. The primary orientation in formulating regional economic development strategies focuses on expanding employment opportunities and mitigating poverty levels. This is because poverty and unemployment are fundamental problems faced by regions.
- b. Strategic targets for local economic development need to be directed at disadvantaged segments of society and groups that tend to be marginalized in the micro and small business sector. This is done to facilitate their substantive involvement in regional economic dynamics.

- c. Each region is required to design and implement a distinctive Local Economic Development (LED) strategy tailored to its specific local characteristics and conditions.
- d. The implementation of local economic development must support community-based leadership, active community participation, local asset ownership, and collaborative decision-making processes.
- e. Realizing local economic development requires the formation of strategic partnerships between local government agencies, businesses, and the private sector to collectively address challenges.
- f. The local economic development process optimizes the utilization of local resources, community competencies, and available opportunities to achieve various established goals.
- g. The implementation of local economic development provides regions with the capacity to adapt to ongoing changes, both in the local and national context.

In local economic development, the primary focus is on empowering and optimizing the potential of resources available in a particular region to improve the welfare of local communities. This includes the development of leading sectors that capitalize on the region's unique and comparative advantages, such as agricultural products, creative industries, tourism, or manufacturing industries based on local resources. The primary strategy is to encourage active community participation in the economic development process, from planning, implementation, and evaluation of economic programs. In practice, local economic development comprises many important, interrelated elements. First, strengthening local institutions, which includes the formation and strengthening of cooperatives, business groups, and community organizations. Second, developing supporting infrastructure to accelerate economic activity, including physical and non-physical infrastructure, and third, developing human resources through training, education, and mentoring to enhance the capacity and skills of local communities.

This aligns with the notion [22] that local economic development is closely linked to the empowerment of human potential, institutions, and the surrounding environment. Sustainability and competitiveness must also be considered in local economic development strategies. Developing superior local products, improving the value chain, increasing access to capital and markets, and developing technology and innovation are all part of this. To increase efficiency and expand the market reach of local products, the integration of information and communication technology is crucial in today's digital era. To ensure sustainable development, local economic development approaches must also consider environmental sustainability and local wisdom. Local economic development encourages all stakeholders to work together [23].

The private sector supports investment and market growth, local governments create supportive policies and regulations, and communities are key actors in development. Effective collaboration between these three parties will create an economic ecosystem that supports local business growth and improves community

welfare. Local economic development cannot be achieved without considering regional development as a whole. To generate optimal added value, interregional relationships in the supply chain and markets must be considered. In the context of global competition, the development of integrated economic zones and an industrial cluster approach can be a strategy to increase local economic competitiveness. Therefore, local economic development emphasizes not only economic growth but also equitable and sustainable development.

3. METHODS

The research subjects were 60 lowland rice farmers, consisting of 30 respondents in Indonesia and 30 respondents in Malaysia, registered in farmer groups. The research focused on appropriate strategies and models for developing food crop agribusiness. The data collected in this study consisted of primary and secondary data. Primary data was obtained from information provided by farmers as respondents using a pre-prepared questionnaire. Secondary data was obtained from information from institutions related to this research. Data Analysis Method: The first, second, and third problems were analyzed using descriptive analysis, providing clear and in-depth information about the problem, interpreted based on the research findings, supported by theories related to the research object. The Likert scale method was used to measure farmer perceptions. The Likert scale is a scale used to measure the behavior, attitudes, or opinions of an individual or group regarding an event or social phenomenon.

Based on the operational definitions established by the study, The liket scale or level of agreement with the questionnaire segments is classified as follows:

- 1) Strongly Agree
- 2) Agree
- 3) Neutral
- 4) Disagree
- 5) Strongly Disagree

To measure each variable below, the answers to each statement are in the form of a 5-point liket scale, as follows:

- 1) Strongly Agree: Score 5
- 2) Agree: Score 4
- 3) Neutral: Score 3
- 4) Disagree: Score 2
- 5) Strongly Disagree: Score 1

Mathematically, the class interval for categorization is:

$$i = \frac{a - b}{k}$$

where:

i = Class Interval

a = Maximum Score

b = Minimum Score

k = Number of Classes/Categories.

4. RESULTS AND DISCUSSION

Farmer institutions in the Indonesian and Malaysian regions where the research took place generally take the form of farmer groups, farmer cooperatives, or food crop farmer associations.

These institutions emerged in response to farmers' needs in addressing challenges in food crop farming, such as market access, price fluctuations, and limitations in cultivation technology. The institutional profiles studied included organizational structure, roles, functions, and internal dynamics. The institutions of lowland rice farmers in the research locations generally took the form of farmer groups, farmer cooperatives, or lowland rice farmer associations. These institutions emerged in response to farmers' needs in addressing challenges in farming, such as market access, price fluctuations, and limitations in cultivation technology. The institutional profiles studied included organizational structure, roles, functions, and internal dynamics.

Lowland rice farmer groups play a vital role in enhancing the competitiveness of food crop agribusiness, particularly in the research areas, which face unique challenges in terms of access to resources, markets, and technology. Through structured organizations and synergy among members, farmer groups can become a key pillar in optimizing the potential of food crop agribusiness sustainably.

The main roles of rice farmer groups in increasing the competitiveness of food crop agribusiness are as follows:

4.1 Increasing Access to Technology and Innovation

Rice farmer groups play a crucial role in introducing new technologies that can improve productivity and grain quality. Through farmer groups, members gain direct access to:

1. **Rice Farming Training:** Farmer group members are taught more efficient cultivation techniques, such as the use of organic fertilizers, proper pruning, and environmentally friendly, sustainable farming methods.
2. **Quality Post-Harvest Processing:** Farmer groups also focus on training to improve post-harvest quality, such as rice farming techniques, good irrigation systems, proper fermentation processes, and the selection of superior seeds.
3. **Adoption of New Technologies:** Farmer groups facilitate member access to new technologies in irrigation, rice plant maintenance, and rice milling machines, ultimately improving product efficiency and quality.

4.2 Collaboration for More Effective Marketing

Lowland rice farmer groups help farmers market their products more efficiently and effectively. Some of the main roles of farmer groups in grain marketing are:

1. **Collective Marketing:** Farmer group members combine their harvests to market together, allowing them to obtain better selling prices than if they were to market their grain individually.
2. **Collaborating with Buyers and Exporters:** Farmer groups act as intermediaries between farmers and markets, both local and international. By establishing relationships with exporters, farmer groups can ensure that the rice produced by their members has access to a wider market and competitive prices.
3. **Branding and Product Differentiation:** Some lowland rice farmer groups have innovated by creating their own rice brands, highlighting the quality and local characteristics that make their rice superior. This allows them to enter the premium or specialty coffee market, which tends to command higher selling prices.

4.3 Economic Empowerment and Farmer Welfare

1. **Rice farmer groups provide direct benefits to their members' welfare through various activities involving economic empowerment:**
2. **Improved Financial Management:** Farmer groups are often trained to manage funds collectively, allowing them to leverage shared profits for further investments in rice production, such as improving processing facilities or building irrigation infrastructure.

3. Improved Farmer Quality of Life: Through programs facilitated by farmer groups, such as training and better market access, rice farmers can experience significant increases in income, ultimately improving the quality of life for themselves and their families.

4.4 Improved Production Quality and Quantity

Farmer groups play a role in increasing the quantity and quality of rice production by:

1. Standardizing Rice Quality: Through training and mentoring, farmer groups can help their members produce rice of uniform quality and in accordance with market standards, which is crucial for meeting consumer needs, both locally and internationally.

4.5 Economic Empowerment and Farmer Welfare

Rice farmer groups provide direct benefits to their members' welfare through various activities involving economic empowerment:

1. Access to Capital and Assistance:

Farmer groups often serve as channels for receiving government assistance or partnership programs, such as assistance with production inputs, subsidies, or training facilitated by NGOs or government agencies. Furthermore, farmer groups also assist members in accessing the business capital needed to increase production capacity.

2. Improved Financial Management:

Farmer groups are often trained to manage funds collectively, allowing them to leverage shared profits for further investments in rice production, such as improving processing facilities or building irrigation infrastructure.

3. Improving Farmers' Quality of Life:

Through programs facilitated by farmer groups, such as training and better market access, rice farmers can experience significant increases in income, ultimately improving the quality of life for themselves and their families.

4.6 Strengthening Social Networks and Solidarity Among Farmers

Rice farmer groups are not only an economic platform, but also a social network that strengthens solidarity among farmers. Some of the social benefits offered by farmer groups include:

1. Increased Cooperation Among Farmers:

Farmer group members often work together in daily activities, such as harvesting together, processing together, and various mutual assistance activities. This creates a strong sense of community and increases collective capacity to face shared challenges.

2. Strong Social Networks:

In addition to serving as an economic platform, farmer groups also serve as a space for sharing experiences and solutions to problems faced by farmers. By sharing knowledge and experience, members can address issues that might not be resolved alone.

4.7 Role in Farmer Policy and Advocacy

Rice farmer groups often serve as a channel for farmers to voice their needs to the government or other institutions. Some of these roles include:

1. Policy Advocacy:

Farmer groups can serve as representatives of farmers in dialogue with relevant parties, such as local governments, non-governmental organizations (NGOs), or donor agencies. Through farmer groups, farmers can propose policies that better support their needs, such as technical assistance, market access, or training.

2. Political Empowerment:

Rice farmer groups also help farmers have a voice in decision-making that impacts their farming businesses, both at the local and national levels.

4.8 Respondent Score Index

Table 1. Respondent Score Index Results

Number	Item	Respondent Score Index Results	
		Indonesia	Malaysia
1	Institutional Activity of Farmer Groups	74,2 % (Good)	65,3% (Pretty good)
2	Production Facilities Subsystem (Upstream)	64 % (Pretty good)	77,7% (Good)
3	Farming Subsystem (On-Farm)	83,7% (Very good)	76,8% (Good)
4	Marketing and Processing Subsystem (Downstream)	61,6% (Pretty good)	78,8% (Good)
5	Supporting Services Subsystem	67 % (Pretty good)	81,0% (Very good)
6	Inhibiting Factors and Potential for the Development of Farmer Institutions	66,3 % (Pretty good)	60,8 % (Pretty good)
Amount		416,8	440,4
Average		69,5%	73,4%

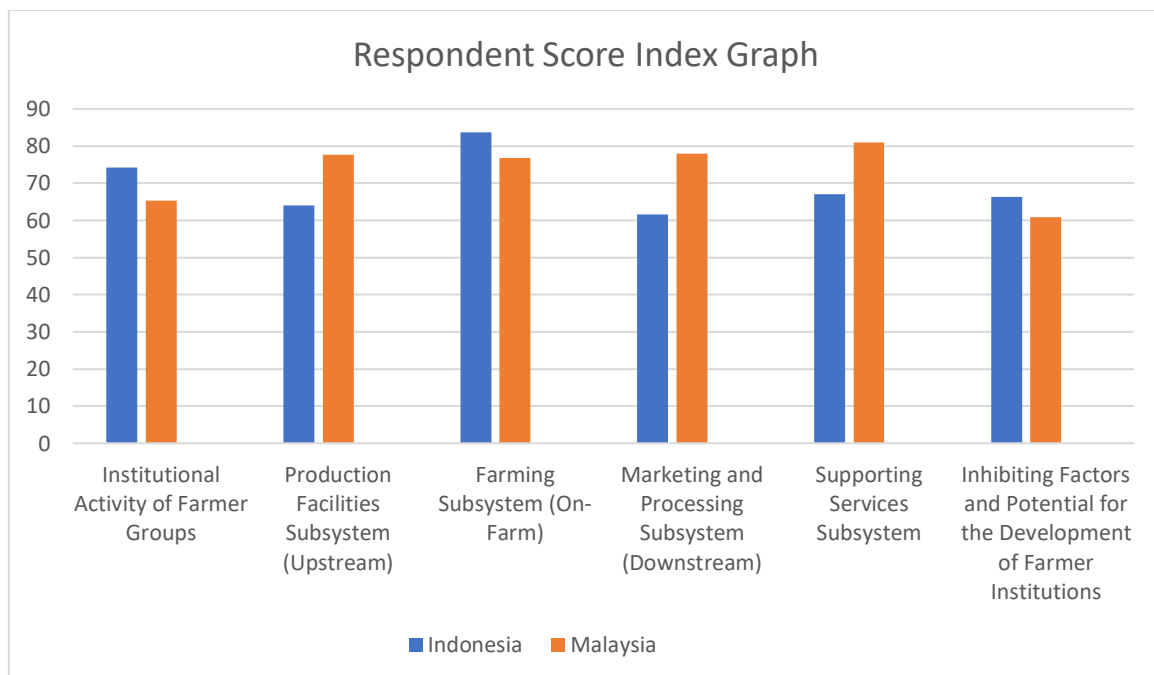


Figure 1. Respondent Score Index Graph

From each benchmark, it can be seen that each score index on the benchmark for each variable is 69.5% for Indonesia, which is lower than Malaysia, which is 73.4%. With details on the benchmark of the Activeness of Farmer Group Institutions in Indonesia reaching 74.2% which means good while in Malaysia 65.3% which means quite good, the benchmark of the Production Facilities Subsystem (Upstream) in Indonesia has a score index of 64% which means quite good while in Malaysia 77.7% which means good, the benchmark of the Farming Business Subsystem (On-Farm) in Indonesia is 83.7% which means very good while in Malaysia it is 76.8% which means good, the benchmark of the Marketing & Processing Subsystem (Downstream) in Indonesia is 61.6% which means quite good while in Malaysia it is 78.8% which means good, the benchmark of the Supporting Services Subsystem in Indonesia is 67% which means quite good while in Malaysia it is 81% which means very good, the benchmark of Inhibiting Factors and Potential for the Development of Farmer Institutions in Indonesia is 66.3% which means quite good while in Malaysia it is 60.8% which means quite good.

4.9 Agricultural Institutional Model Institutional Growth Level

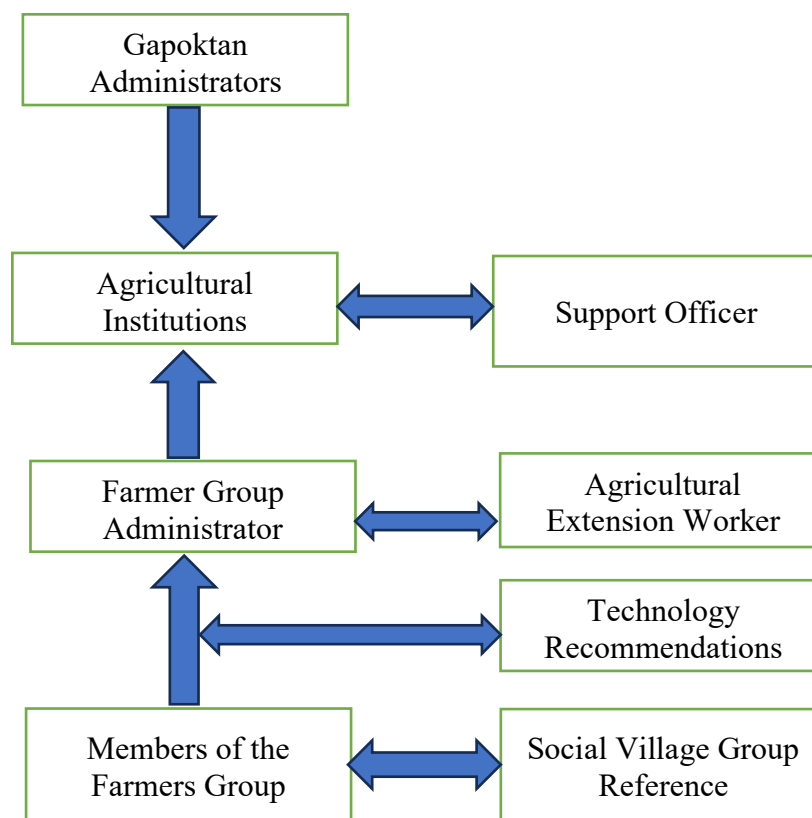


Figure 2. Agricultural Institutional Model of Development Level

CONCLUSION

- 1) Farmer groups in the research area not only serve as a forum for improving production quality and quantity, but also as a channel for introducing the latest technology, expanding market access, and improving farmer welfare through collective marketing and economic empowerment.
- 2) The obtained Index Scores indicate a comparison of agricultural institutional models between Indonesia and Malaysia. Indonesia's scores are higher than Malaysia's in terms of farmer group institutional activity and the on-farm subsystem. Malaysia's scores are higher than Indonesia's in terms of production input subsystems (upstream), marketing and

processing systems (downstream), and supporting services subsystems. However, the inhibiting factors and potential for farmer institutional development in both countries still require improvement to improve farmer welfare. Overall, Malaysia's agricultural institutions are more supportive of food crop agribusiness development than Indonesia's, with a score difference of 3.9%. The index score of 73.4%, higher than Indonesia's 69.5%, indicates a more equitable adoption of agricultural technology and irrigation infrastructure, which ensures a more stable water supply, resulting in a higher average yield per hectare. Higher levels of use of modern agricultural mechanization (such as combine harvesters and monitoring drones) and large-scale commercial land management are more dominant in Malaysia.

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