

博士論文

**The Performance of Farmer Groups
in Yogyakarta Special Region, Indonesia:
Organizational Structure and the Role of Leadership**

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SUMMARY

The Performance of Farmer Groups in Yogyakarta Special Region, Indonesia: Organizational Structure and the Role of Performance

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Now, Indonesia has more than 300,000 farmer groups located in 70,000 villages. Indonesian government started farmer group development policy in 1948. The development of farmer group has accelerated when Indonesia faced serious food shortage in 1960. Farmer group (FG) as a united group of farmers are founded based on similar needs, similar socioeconomic condition and solidarity among them in order to obtain better life and better economic condition. Recently agriculture ministry proclaimed to establish farmer groups taking advantage of existing of social groups in the villages. As a result, during 3 years from 2011 to 2013, there numbers of farmer groups are increased.

However, increasing number of farmer groups has not followed by advanced farmer groups increased. In 2001, only 8% of existing farmer group in Java Island has been classified as advanced farmer group by the government. During 2001 to 2012, in Yogyakarta Special Region, the advanced farmer groups are decreased while pre-intermediate and beginner farmer group are increased. Farmer groups established by external-initiators are likely to be less successful. When the farmers can feel the needs, farmer group has a possibility to be a well-performed one.

This study attempts to explore the historical process and present situation of advanced farmer groups in Yogyakarta Special Region. It focuses on two pioneering farmer groups based on chili farming, which are located on coastal sandy land, the Bugel FG and the Garongan FG. These two

farmer groups are reputed as advanced FGs and have been successfully conducting collective activities for both chili farming and chili marketing.

The coastal sandy land had been abandoned because it was unfertile land. Both Bugel farmers and Garongan farmers had faced a poverty problem. However, in Bugel, the area of wetlands was larger than in Garongan, so 50% of previous generation of Bugel farmers had more opportunity to cultivate paddy and chili alternately on wetlands. The income from paddy and chili could be used to send their descents to high school. The next generation of Bugel farmers could have higher education background than those of Garongan farmers. Nowadays, Bugel farmers can easily find an off-farm job because of their better education. The impacts of having off-farm job are to gain experience and knowledge other than farming. However, they became busy with off-farm job which make them difficult to maintain close relationship. As a result, in Bugel village, customary group of exchange labor (*sambatan*) could no longer exist.

As pioneers of chili farming on coastal sandy land, the farmers in the Bugel FG always attempt to invent new technology like well and plastic mulch to ease the most difficult tasks of cultivating on marginal land. Those innovations diffused to neighboring villages, including Garongan. Meanwhile, the Garongan FG initiated institutionalized land planning for the sustainability of chili farming. Then, Garongan FG could introduce this institutional innovation taking advantage of shared norms as a community. Bugel FG adopted land utilization, being motivated by the individual economic benefits. Thus, the Garongan FG becomes the pioneer of chili collective marketing in the coastal chili farming region. The collective marketing diffused to the neighboring village of Bugel and has been adopted by them.

Looking at the differences, the Bugel farmers have been concerned with individual preferences and time economization to counter their off-farm business, so they succeeded in

developing a pattern of technological innovation. Conversely, the Garongan farmers have been concerned with community relations, so they developed a community-based activity, which eventually resulted in economic benefits.

Through social network analysis can be gained the pattern of network. A radial pattern appears in the Bugel FG whereas an interlocking pattern appears on the Garongan FG. The radial pattern is observed by the relationship between members of Bugel FG and FG leaders. There are three focal persons which are regarded as FG leaders. Those are FG head, secretary and treasurer & CM head. These important persons are the key actors who drive the activities of the Bugel FG so that majority of members who seek information are likely to go to these persons. The members utilize individual relationship with them in order to gain new and important information of Bugel FG. This relationship can be observed as an advice network type. Unlike the case of Bugel FG, interlocking pattern appears which is marked by the existence of reciprocal ties and cliques in the network. The relationship is not only appeared between members and leaders but also among members are connected each other.

In the Bugel FG, even though the network structure among members is not developed but the activity of Bugel FG are based on the relationship between leaders and members. In this situation, Bugel FG seems to be organized by the power of certain persons but this FG still can be regarded as organization because those certain persons are elected leaders which mentioned on FG board structure while members are registered and identified, and all of them conduct same activity on chili farming and marketing. Considering the network structure of the Garongan FG, organization of Garongan FG coordinates with RT (neighborhood association) based on territory. The ties among RT members have been developed by RTs based activities like custom help labor of *sambatan*. In the case of information, both the RT heads and FG leaders take a role in delivering

information regarding FG activities. Thus, the interaction of members in the Garongan FG is maintained by the existence of periodical meeting, rules and norms. In Garongan Village, FG is managed strongly supported by the community network while in Bugel Village, FG is functional organization and the relationship with the community is rare.

In order to know the individual performance, the member individual performances are measured by individual performance of chili farming, individual performance of chili collective marketing and the relationship between individual performance of chili farming and individual performance of chili collective marketing. Individual member performance of chili farming in the Bugel FG is not only influenced by economic condition but also with the position of members towards FG leaders and their position in organization. The members who are closer with FG leaders can enjoy FG service and information of new technology. Any Bugel farmers are responsive to adopt new technology because they could get debt from the third parties to buy the input which is new on chili farming. Unlike the case of the Bugel FG, in the Garongan FG, the performance of chili farming mostly influenced by economic condition of farmers. Only the farmers with strong economic condition are responsive with the innovation because the outside finance supports are not existed in Garongan FG. In addition, Garongan farmers with the higher position on organization have a feeling of responsibility to adopt new technologies earlier. They are expected to take risk to conduct risky trial of new technologies. In term of the individual performance of chili collective marketing, in both the Bugel FG and the Garongan FG, is influenced by economic condition, organizational structure and the role of leadership. The existence of third parties in Bugel Village which provide a debt as a mechanism to buy inputs weaken the individual performance of chili collective marketing because once they bought input by debt they should sell some proportion of their chili product to return the debt. Meanwhile, in the Garongan FG, delayed payment in the chili

collective marketing become crucial to be concerned because some farmers need immediate cash for daily life, tuition fee, medical treatments and especially for pay wage of agriculture labors. The performance of larger area farmers of Garongan FG on chili collective marketing can be observed as good performance because they can sell more chili product and meet the quality requirement. The influence of the role of leadership on chili farming and chili collective marketing of each FG is different each other. In Bugel FG, members who want to access group facilities and information are motivated to be closer to FG leaders. In the case of Garongan FG, the equality and evenness for each farmer are a basis of FG management. The enforceability of consensus trigger members of Garongan FG achieves good performance together. However, the strong relationship among them emerges the feeling of dissimilarity for those who work as sub-intermediate chili traders as an off-farm job. They choose to make a distance to FG leaders because they could not perform on collective marketing as much as others.

The function of leadership concerning leader-member exchange (LMX) can influence group performance. The results of analysis using structural equation model of Partial Least Square (PLS) show that LMX plays an important role in the leadership of farmer groups to enhance group performance. Considering the function of LMX, leaders and members that experience regular group meetings, such as in the Garongan FG, can reach a group consensus and follow the rules of FG so the personality of the leader is not crucial factor on managing FG. On the other hand, for groups that lack group meetings, such as the Bugel FG, the leaders should take a role in organizing the farmer group by providing reliable information through individual relationships. The leaders, who have charisma, inspire the members, and are knowledgeable, can affect the exchange between the leaders and members. It implies that FG should select the leader by considering his personality and

capability but leaders should show their insight to members in order to accumulate members' understanding.

From this study, it can be concluded that even though the starting situation for each FG is different, once the group realizes the characteristics of their community, they should find original strategy as a proper pathways to be a successful farmer group. To promote an advanced farmer group, "ease by case approach" regarding its own characteristics should be taken into consideration. Strong leadership by means of centralized position only on leaders cannot guarantee the sustainability of FG. The FG should facilitate members by creating the activity by which members are able to have intensive interaction. To enhance the performance of individual members, farmers should be responsive with the new technology. The limitation on adopting new technology is usually caused by economic power. The FG can take a role as micro-finance institution by developing saving and borrowing mechanism. This mechanism also can hamper the disturbance of third parties who take advantages by the absence of micro-finance institution.

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CHAPTER 1

INTRODUCTION

1.1. Nature of Farmer Groups in Indonesia

Farmer groups in Indonesia started to develop in 1948, when the Balai Pendidikan Masyarakat Desa (BPMD), or Community Village Council, built on each sub-district as a center of rural education. However, the development of farmer groups has increased since several programs were developed to increase paddy production in order to address serious food shortages in 1960 through the formation of farmer groups and extension agents. These programs include Massive Guidance (BIMAS) in 1968, Special Intensification (INSUS) in 1979, and SUPRA INSUS in 1986/87. The existence of farmer groups could help the performance of extension officers' guidance towards farmers to be efficient and effective. Up to now, the guidance of extension officers has been performed when a government project appears, for which the adoption of technology has been limited.

According to the Indonesian Ministry of Agriculture, a *Kelompok Tani* (farmer group/FG) is defined as a united group of farmers including livestock holders, fish capture, and smallholder planters. Such a group is founded based on farmers who share similar needs, socioeconomics, and solidarity in order to improve the farmer member's business. In 1997, while the issue of agribusiness developed in Indonesia, farmer groups were formed as units with functions of learning, cooperation, and agriculture production. Farmer groups should function as a unit of business in order to empower the farmer's positions. The government created an additional farmer institution called GAPOKTAN (farmer group union) at the sub-district level to enhance the farmer's business and manage the capital from government and business units.

Agriculture Ministerial Decree No. 82/Permentan/OT.140/8/2013 mentions that in Indonesia, many farmers still do not belong to any farmer group, which has resulted in extension officers facing difficulty in empowering farmers' capacity and capability. As a result, the agriculture ministry proclaimed to establish many grassroots farmer groups by making use of the former social groups in the community. For instance, farmer groups should be established with the smallest unit of a community such as a neighborhood association, which has 20-35 households.

In accordance with Decree 82/Permentan/OT.140/8/2013, the Center for Agriculture Data and Information System (2013) revealed that from 2011 until 2013, there were an increasing number of farmer groups in Indonesia, with around 18,367 new groups. In Java, around 6,155 new farmer groups were established (Figure 1.1). The government program to establish many farmer groups in 2013 had succeeded.

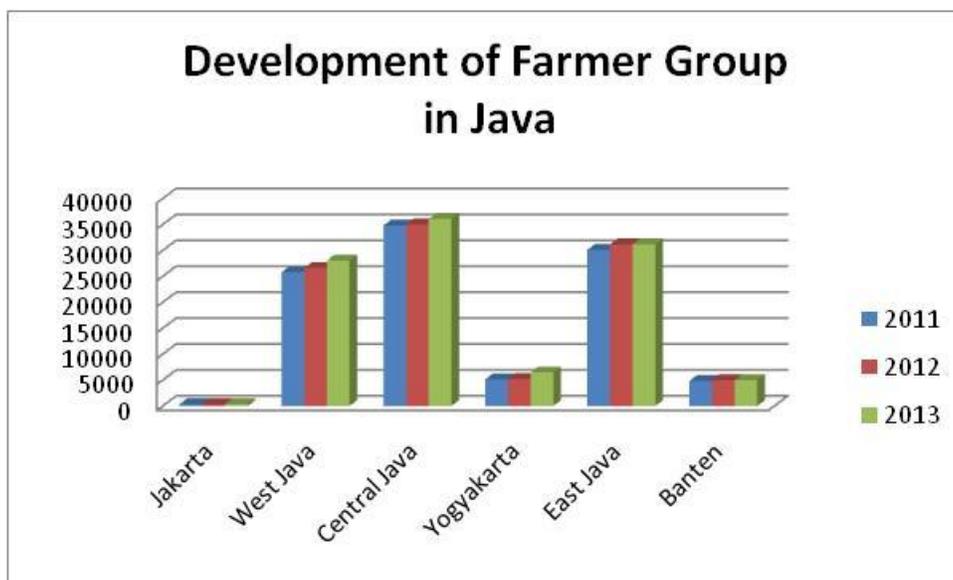


Figure 1.1 Farmer groups in Java between 2011 and 2013

Source: Statistics of Agricultural Human Resources and Farmer Institutions, 2013

According to Hermanto and Swastika (2011), the increased number of farmer groups has not been followed by an increased number of qualified farmer groups, because much of the purpose of establishing farmer groups is only for accessing government subsidies. In order to empower the function of farmer groups, the Act of the Ministry of Agriculture No. 41/Kpts/OT.210/1992 released an assessment of farmer group abilities, which resulted in the classification of farmer groups. Based on a numerical score of farmer group abilities, the farmer groups are categorized into 4 classes: beginner, pre-intermediate, intermediate, and advanced. A majority of farmer groups in Indonesia are classified in the beginner and pre-intermediate classes, while less than 10% are classified in the advanced class of farmer groups (Figure 1.2). Hariadi (2012) found that only advanced farmer groups could be classified as active farmer groups.

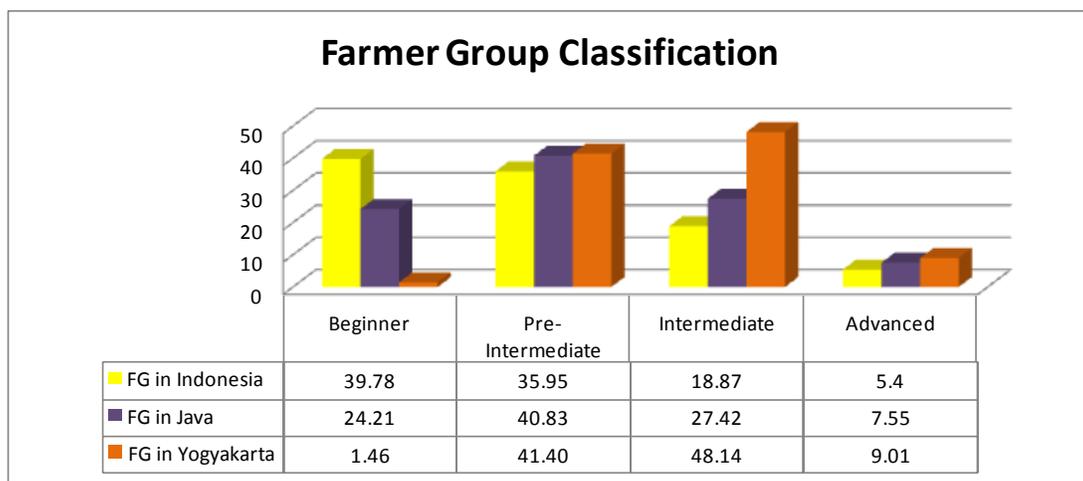


Figure 1.2 Farmer group classification by percentage, 2001

Source: Agriculture Extension Centre Ministry of Agriculture Republic of Indonesia (2001)

Hermanto and Swastika (2011) clarified that either some of the farmer groups were misclassified, or they no longer existed. This is an impact of the low performance of farmer group management. The establishment of farmer groups had not considered farmers' needs, but only

followed the blueprint of the government project. Meanwhile, the advanced farmer groups sustain the activity of farm production through high participation of members, good group management structure, and visible leadership. These groups improved the economic conditions of each member and developed cooperation with third parties such as input providers and market production (Hermanto, 2010).

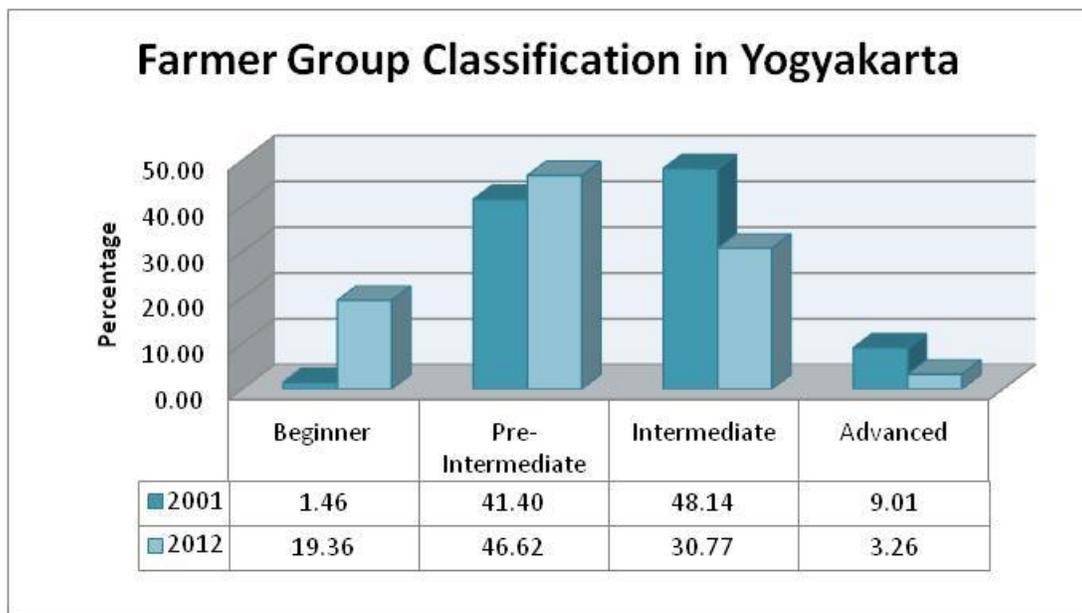


Figure 1.3 Farmer group classification in Yogyakarta, 2001 and 2012
 Source: Agriculture Extension Centre Ministry of Agriculture Republic of Indonesia (2001) and Agriculture Extension Officer in Yogyakarta (2012)

According to Figure 1.1, farmer groups in Yogyakarta Special Region have increased in number, but according to Figure 1.3, the percentages of the intermediate class and advanced class have decreased. The appearance of farmer groups in Indonesia, particularly in Yogyakarta Special Region, still needs significant improvement. To develop better farmer groups, we should learn from the successful farmer groups.

This study focuses on two pioneering chili farmer groups located in the coastal sandy land of Yogyakarta Special Region: the Bugel FG and the Garongan FG. These two farmer groups are categorized as advanced farmer groups and are successfully conducting collective activities in chili farming and chili marketing. These two groups are exceptional among successful farmer groups in Yogyakarta Special Region because they are self-initiated farmer groups driven by indigenous innovations. The Bugel FG is well-known on its indigenous technological innovation, which altered the unfertile coastal sandy land to become land for chili farming. The Garongan FG can be characterized on indigenous institutional innovation to support chili farming and chili collective marketing. The sustainability of chili farming encourages the emergence of a new marketing system which ushers better economic conditions for all farmers in the coastline area of Yogyakarta Special Region.

The different baseline conditions of each farmer group bring a different approach of indigenous innovation. The different approaches of innovation develop different patterns of individual and group performance. In order to conduct a comparative study, this study intentionally selects those two farmer groups as mentioned above. They are located nearby each other, and hence share the same agro-ecology. Both of them are cultivating chili on coastal sandy land, and market access and ethnical background is similar with each other. In addition, their performances seem to be both successful. However, their historical background, organizational structure and the function of leadership differ significantly.

This study addresses two objectives: 1) to describe the different pathways of indigenous innovation historically, and 2) to analyze the different patterns of current farmer group performance. By observing the process of farmer group development, it will be conformed that the

pathways to succeed are unique and plurals process are existed. Each farmer group needs its own way to achieve well performance.

1.2. Literature Review

1.2.1. Historical Process of Existing Farmer Groups

1.2.1.1. Limitation of External Initiators Approach to Farmer Group Formation

Indonesia has made use of farmer groups as one approach to develop rural communities. The policy of rural development in the ‘group’ means that the government should assist in the foundation of farmer groups. Then, farmers were instructed on what to do and were given incentives through the provision of cheap credit to follow these instructions. As program of farmer group development was initially initiated, Indonesia government instructed farmers to increase only rice production even though other commodities have also been important (Resosudarmo and Yamazaki, 2011). As a result, there are not many farmer groups with active members that are functioning regularly. Recently, the focus of farmer group activities are mostly only on the technological adoption (Muktasam, 2001). Furthermore, the effectiveness of farmer groups in rural development is still arguable. The majority of farmer groups are in the earlier (beginner) stage of development (Ministry of Agriculture, 2001).

Muktasam (2001) found that in terms of group development in Indonesia, the less successful (intermediate) farmer groups are not able to develop into advanced groups because they tend to be inactive when poverty alleviation projects have finished. Muktasam also revealed that an external-initiator approach to group formation tended to have negative effects on group role performance.

Islam, Grey, Reid and Kemp (2011) showed that in developing countries, numerous farmer groups which formed or developed through external assistance such as donor-funded projects survive only as long as the funding support continues. Hermanto and Swastika (2011) also emphasized the fact that farmer groups collapse as soon as external funding support ends. On the other hand, community-initiated groups had been successfully promoted and sustained voluntary action (Islam et al, 2001). Farmer groups established by projects were likely to be less successful, but when the farmers could feel the need for the groups, farmer groups had the possibility of being sustained and active (Muktasam, 2001).

According to Bourgeois et al. (2003) active farmer group is a group of farmer which handles the activities like buying or selling together, exchanging information on technique, and it has regular meeting, a board, and the members are identified and become a regular member. An active farmer group can be regarded as a farmer organization.

1.2.1.2. Social Groups as a Basis of Farmer Groups

Heemskerk and Wennink (2004) revealed that farmer groups are mostly informal (without formal membership and operating mainly at community level. FGs can either be based on existing group in community or specifically built. According to Hermanto and Swastika (2011), farmer groups should function as a social group, but in Indonesia, many farmer groups function as task groups to reach a government task project. Regarding the function of social groups in the community of farmers, capital factors such as social capital, human capital, and economic capital should be taken into consideration to foster the dynamic process between groups and their members in order to increase their capacity to produce favorable outcomes (Topolsky, 1997). Turner and Reynolds (2010) conceptualized social groups as a number of individuals who internalize the same

social category as a component of their group identification. In a social group, individuals affiliate with each other for many reasons, and the group emerges to stabilize the reciprocal form. In the reciprocal form between two or more individuals, a norm and trust, as is social capital, is needed to promote cooperation between individuals.

All forms of traditional culture of social groups are based on shared norms, which are used to achieve cooperation. Despite the fact social groups have a narrow range of trust (Fukuyama, 2001). Putnam (1993) defined social capital as the features of a social organization such as networks, norms, and trust to facilitate coordination and cooperation for mutual benefit. Davidsson and Honig (2003) emphasized that social capital relate to the ability of actors to extract benefit from their social structures, networks, and membership. According to Rasmussen, Amstrong, and Chazdon (2011), the benefit can be organized into two poles: one that emphasizes the benefits of social capital for individuals, and another one that emphasizes the group benefit. Nahapiet and Ghoshal (1998) clarified that social capital is multidimensional and occurs at both the individual and the organizational levels, but Coleman (1988) emphasized that social capital is inherent in the structure of relations between actors and among actors.

IAC (2004) *cited in* Heemskerk and Wennink (2004) stated that farmer groups can only be developed if they are voluntary organized, economically viable, self-sustaining, self-governed, transparent, responsive to community and producer-based group. The basic philosophy of farmer groups approach is to empower farmers to analyze their farming situation, to identify and prioritize farmers' agricultural problems and to seek solutions by integrating farmers' indigenous knowledge and skills into the generations, testing and adaptation of new technology.

1.2.1.3. Social Learning and Innovation

Rolling and Jiggins (1998) defined social learning as being about the interactive way of accomplishing things in a society with actors who are interdependent with natural resources or environment services. Woodhill (2002) defined social learning as being related to institutional change as a process by which society democratically adapts its core institutions to cope with social and environment change in ways that will optimize the collective well-being of current and future generations. Woodhill and Rolling (1998) revealed that social learning is a framework of thinking about the process to obtain knowledge that underlies innovation. Kroma (2008) described social learning as being reflective of a learning approach in which person are actively and collectively engaged in building new alternatives as a challenge.

According to Rogers (2003), an innovation is an idea, practice, or object that is perceived as new by an individual or population. Most of the new ideas have been recognized as technological innovation. The newness of an innovation should be expressed in terms of knowledge, persuasion, or a decision to adopt. Reader (2003) defined an innovation as a new or modified learned behavior not previously found in the population. In this sense, innovation is also a changing behavior in order to set up a new modified behavior. In the latter definition of innovation, social learning plays a critical role in innovations and also in spreading it quickly. This is done through sustained dialogue among actors and exploration of alternative perspectives and experiences (Kroma, 2008).

Kilpatrick and Falk (2006) revealed that social learning in farmer groups is not mere understanding and communication among farmers, but it enhances farmer capacities and actions to change toward more ecologically and socially sustainable practices. Central to social learning in the groups is learning how the groups behaves, what processes to follow, and what attitude and values to hold. Aldana et al. (2007), Muktasam (2001), and Hermanto and Swastika (2011) revealed that

continuous learning or sustained learning in farmer groups fosters its success. Continuous or sustained learning refers to the social learning that the groups or communities will find as another feature of their own capital (Kilpatrick and Falk, 2006), because social learning can help to identify the strengths, shortcomings, and factors of success related to the groups (Wildemeersch et al., 2006). Through social learning, the groups can navigate complex and uncertain conditions. Shaw and Kristjanson (2014) found that social learning holds the potential to identify key factors in agricultural production and livelihood by aligning the efforts of important actors (i.e. leaders) and the organization toward sustainable agriculture systems.

1.2.1.4. Community Capital

A community is a group of interdependent inhabitants residing in the same region and interacting with each other through particular relationships (North, 1990). A community consists of a number of persons that connect in some way that distinguishes them from others (Homan, 2004). Each community relies on different forms of capital to maintain itself and grow stronger, which is called community capital. Pretty (2000) identified a number of sources of community capital, including physical capital, economic capital, human capital, and social capital. Physical capital refers to the things that have been added to the natural environment by human hands, such as buildings, roads, and other infrastructure.

Social capital refers to the community wealth derived from the active engagement of individuals with other members of the community. Social capital at the group level is defined as the value of the group in terms of the relationships formed by its members for the purpose of engaging in collective action (Nahapiet and Ghosal, 1998). Putnam (2000) conceptualized social capital as features of social groups, such as network structures, norms, and trust that facilitate coordination

and cooperation for mutual benefit within a society. Islam et al. (2011) presented that social capital alone is not a sufficient condition to ensure group sustainability unless other factors such as economic (group funds) and human capital (leaders) are present. Tangible economic benefits for all members are vital for group sustainability, while an effective leader can enhance the group dynamic towards group sustainability.

Economic capital refers to the way to allocate resources and make decisions about material, which is important to create a stable and viable economy (Roseland, 2012). According to Callaghan and Colton (2007), economic capital comes from engaging in economic activities and the provision of services and products. Nguyet (2002) stated that economic activities make the community strong, but economic activities that are inconsistent with the texture of the community will have a deleterious effect on community capital.

According to Rasmussen et al. (2011), human capital refers to the collective power of individuals' knowledge, skills, abilities, and social competencies. Human capital is embodied in the skill and knowledge, and it has been seen as an important source of competitive advantage to individuals, organizations, and societies (Dakhli and Clercq, 2007). Communities can enhance their human capital by focusing on improving the skills of leaders. Muktasam (2001) revealed that improving the skills of leaders can contribute to the farmer groups' success.

Farm activities should end up with commercial activity and marketing the product. In this sense, farming in a group managed by farmers should be able to create a viable economy. Nowadays, to be successful, farmer groups should be engaged in marketing activities because they are suffering from the exploitation of middleman as a result of marketing activities they can enjoy the stable economy. (Aldana et al., 2011; Salifu et al., 2012, and Semwal & Willemsen, 2009).

1.2.2. Contributing Factors for Group Performance

Groups are usually conceptualized as complex performance systems because they emerge from and sustain patterns of coordinated interdependencies among individual members. According to Forsyth (2010), groups as a system should recognize factors that set the stage of workgroups (i.e. historical processes), as well as processes in the group interaction such as group dynamics and performance as consequences that result from the group's activities.

Group dynamics are the actions, processes, and changes that occur within groups and between groups over time (Forsyth, 2010). Group dynamics contain many factors which can trigger success, such as governance and leadership, group activities, group size, member participation, and external group relationships. Group governance tends to be effective when the members devise group rules and regulations. The rules and regulations will also be effective when the leader can carefully identify the situation of individual members to set up social interaction and control social pressure. Salifu et al. (2012) declared that social action is closely related to social pressure, so group members tend to leave voluntarily when they know that they are not meeting requirements for participation. Once farmer groups are set up, meetings are important, and they should be interesting for every member, or farmer groups should find an alternative way to develop social interaction among members. According to Leeuwis and Aarts (2011), both formal communication through meetings and everyday communication have a critically significant connection to re-ordering social relationships.

1.2.2.1. Social Structure in the Community and Organizational Structure

The community as a social group is related to the shape and size of the community network. A community network is an arrangement between individuals or groups in the community which

could describe the social structure. Determining the social structure will also lead to understanding of the tendencies of community members to relate to each other, directly or indirectly.

From a sociological perspective, the social network structure is embedded with the social capital of the community, because social capital promises to produce new insight into describing why certain person and organizations perform better than others. In the process of performance, social capital is related to factors such as coordination, creativity, learning, and teamwork. With social capital, person who act better are basically better connected. Some particular persons are connected to other particular person. Trusting and obliging to support others in the structure of exchange can be an asset in the form of social capital (Burt, 2000). Coleman (1990) defines social capital as a function of social structure, to which Putnam (1993) added the argument that social capital is a function of social structure which can improve the efficiency of society by facilitating coordinated action. Burt (2000) wrote that social capital in social structure is a kind of capital that can create particular individuals or groups of competitive advantage so that better connected person enjoy higher returns.

Based on Burt's research, the network dimension of social capital can be seen through the effect of the flow of information, network closure, network constraint, network size, and network density. First, the flow of information begins with the assumption that communication takes time. Information can be expected to spread among person in society, but it will circulate within groups before it circulates between groups. Moreover, person in society are not simultaneously aware of opportunities in a group, even if high-quality information reaches everyone. Individuals who are aware and informed early have an advantage. Second, network closure is closely related to the network through which everyone is connected, and it usually means the network is dense. Every actor in the network has strong relations with his contacts and creates reliable communication

channels. The consequence of network closure is a set of effective sanctions that can monitor and guide behavior. Third, network constraints describe the extent to which a person's network is concentrated in redundant contacts. Fourth, network size is the number of contacts in a network, and it is expected that more contacts would be more advantageous as long as they do not weaken norms. Fifth, network density is the average strength of connection between contacts. Contacts in a dense network are in close communication, so they can easily enforce sanctions against individuals who violate shared beliefs or norms.

Communication among members of the network reflects the state of relations between powerful members and ordinary members. Communication in the network shows how the community or groups are structured and developed (Kitetu, 2005). Social relationships are the outcome of the social process and interaction between organizational members and new knowledge could be created through the interaction of organizational information (Wen-Huang and Wei Liu, 2007). Since the establishment of social structure is based on informal interactions between organizational members, it is essential to understand the function of organizational structure. Organizational structure is regarded as one of the forms of organizational control which aims to encourage organizational members to behave towards organizational goals (Cardinal, 2001). Organizational structure determines how information flows within the organization. Understanding the organizational structure of an organization tells the characteristic of an organization and the values it believes in. Organizational structures are sets of relations between the roles of an organization (Grossi, Royackers & Dignum, 2007). Wen-Huang and Wei Liu (2007) concluded that organizational structure is a good predictor of organizational innovative capability however the influence of social structure in the community cannot be ignored either.

1.2.2.2. Individual Member Performance

Individual members are actors who take part in collective action in order to enhance the performance of the group. Individual performance can be influenced by human capital, social capital, and economic capital. Indicators of human capital could be age, education, income, off-farm activities, and so on. Actors as members of groups are one type of human capital for a group. According to human capital theory knowledge provides individuals with increased cognitive abilities, leading to more productivity and efficiency of potential activities (Davidsson and Honig, 2003). Moreover, human capital is not only the result of formal education, but it includes experience and practical learning in solving the problem (Becker, 1964).

An individual as an actor in society or in an organization is also related to the social capital theory in reference to the ability of actors to extract benefit from social structures, networks, and memberships (Lin, 1999). Social capital can perform a useful role by three mechanisms: the sharing of information among members, the reduction of opportunistic behavior, and the facilitation of collective decision making (Grootaert, 1997 and Collier, 1998). According to Islam et al. (2011), individuals in a farmer group will sustain performance in the group when enough economic incentives are provided. As a result, the group will accumulate members' funds and revolve the funds for income-generating activities. Islam et al. suggested that tangible economic incentives for a good number of members in farmer groups are vital for group sustainability.

1.2.2.3. Leadership and Leader-Member Exchange

Another important aspect to consider once developing the farmer groups is the management capacities of leaders (Nguyet, 2002; Islam et al., 2011). The appearance of a good-quality leader enhances the possibility of farmer groups succeeding over time (Ostrom, 2000). Islam et al. (2011)

found that an effective leader is one who is fair, innovative, tenacious, and has a self-sacrificing attitude. A leader has to struggle and negotiate with third parties such as bankers, the government, and input providers (Seetharaman & Shingi, 1992). Therefore, a leader should come from better-off families, have social status, and be part of and have respect for farming households (Chamala & Shingi, 1998). The leader's capability to motivate and inspire members to act collectively in groups represents human capital. At the level of human capital, a leader must understand the capacity of individual members to develop new capabilities of the group (Cohen & Levinthal, 1990).

In addition, leaders and members should maintain a good relationship in a network among the group members. This is a concept of leader-member exchange theory. The network between members and leaders is closely related to social capital, based on which members will act better when they have a better connection with others, particularly with the leader. Moreover, managing human capital will lead to effective development of the group (Hitt and Ireland, 2002).

1.2.3. Brief Conclusion of Literature Review

The literature review has been conducted based on these as follows 1) the historical process of farmer groups, which involves a external-initiator approach of farmer group formation, social groups as a base of farmer groups, the function of social learning and innovation, and community capital; and 2). The contributing factors for group performance, which consist of three parts: the organizational structure from the approach of social network structure, individual member performance, and the role of leadership from the view point of leader-member exchange. This study analyzes the activity of successful farmer groups and should consider the historical process. Contributing factors for group performance should be taken into consideration for predicting the enhancement of success in a farmer group.

The historical process of farmer groups is embedded in social groups in the community. Farmer groups built by an internal initiator tended to be more sustainable than farmer groups built by external funding. Concerning the existence of social groups in the community, community capital is the backbone of community activities and should be taken into consideration. Community capital consists of physical capital, human capital, social capital, and economic capital. Utilizing community capital should be consistent with the community needs, such as human needs, social needs, and economic needs. Such needs can be realized through contemplation of the function of social learning. The process of social learning in the community leads to new ideas and indigenous innovation, which can also trigger diffusion and adoption processes. In this sense, social learning will help groups to identify the strengths and weaknesses and to find a pathway to be success.

The latter part of the literature review engages with the factors contributing to the group performance. The factors are social structure in the community, individual member, and the role of leadership. In order to find the social and organizational structure of a community, the community network should be measured while considering the social capital. The flows of information and the position of leaders in the network represent the social and organizational structure. The leader of the group has a task of driving the groups and directing the members toward understanding the group's goals. So, human capital is a key point for investigating the function of leadership. Economic capital is a prominent aspect related to the individual member factors.

1.3. Analytical Framework

This study attempts to explore the historical process and the current situation of advanced farmer groups (the Bugel and Garongan farmer groups) located in the Bugel Village and Garongan Village of the coastal sandy land of Yogyakarta Special Region.

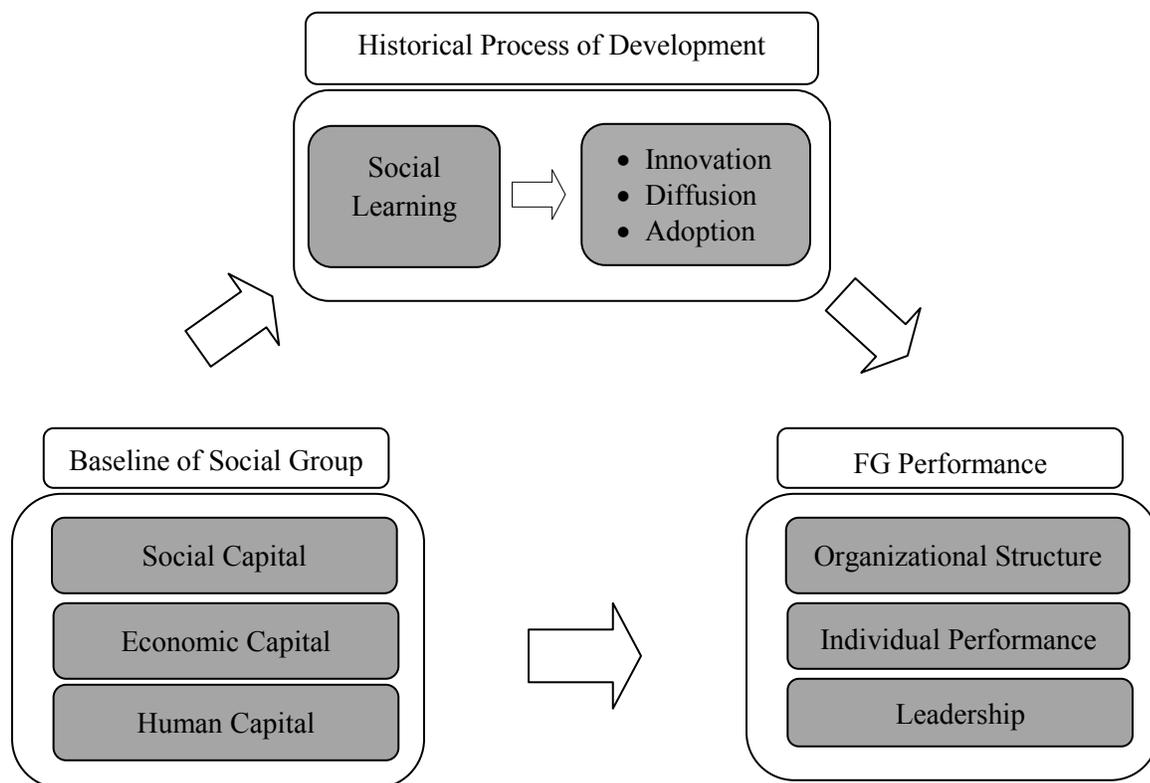


Figure 1.4 Analytical framework

As the baseline condition, the historical process of social group development should be described. The emergence of indigenous innovation is related to the social, economic, and human endowed capital. Human capital tends to foster the emergence of technological indigenous innovation, while economic capital tends to foster the process of applying the innovations. Social capital tends to preserve the relation between individuals in the social groups, which affects the process of diffusion of innovation and organizing the social groups itself.

In order to trigger the development of farmer groups, the characteristics of the network should be taken into consideration to understand the community. Community could be understood as involving networks of farmers who sustain those networks through a certain style of interaction or exchange. In this study, a social network structure is adapted to identify the exchange ties

between the group and members and among members. Organizational structure is related with the flows of information within the group so that the values of organizational structure should be taken into consideration.

Considering the aspect of socioeconomic conditions and the distance of farmers from the leader, individual performance of a farmer group's members is the next stage in this study, because it can be used to understand the participation of members in each farmer group. However, with regard to achieving the group's goals through measuring group performance and group member behavior, the role of leadership is a tendency to take part in reaching the group goal dynamically. The roles of a leader are in accordance with the activity of the farmer group, although many farmer group leaders drive the group for only purposes which could deteriorate the motivation of members. Spreading the group vision, values, and norms could be an issue in strengthening the satisfaction and commitment of groups in order to develop a farmer group.

The organizational network structure is also an important factor for detecting the exchange between leaders and members. The farmer groups with high density will determine the collective approach under consensus in the leader-member exchange, while the groups with less density tend to introduce interpersonal relations in the leader-member exchange. As a result, performance of the groups can be seen as a product of collective action or an aggregate of individual behavior.

With attention to some of the factors above, this study is designed to compare the difference between the Bugel FG and Garongan FG in achieving success. Although they seem to be equally successful, performances measured by institutional and technological adoption are not the same. Thus, by comparing two farmer groups, this study examines the organizational structure and the role of leadership on the performance of farmer groups in Indonesia.

Through understanding the differences, this study explores the different pathways to success of each farmer group. The objective of this study is analyzing the differences through the following:

1. Historical process of chili farming and collective chili marketing in each farmer group
2. Quantitative analysis of farmer group's current situation
 - a. Analyzing the different patterns of organizational structure through social network structure.
 - b. Analyzing the different individual performance measured by their performance in chili farming and chili collective marketing
 - c. Analyzing the different patterns of leadership by measuring transformational leadership, leader-member exchange, satisfaction, commitment, group member behavior, and group performance.

The findings of this study will contribute to the suggestive applicable implications in development of farmer groups in Indonesia. Farmer groups in Indonesia are distributed at various levels which clearly possess different baselines of community capital. The lower level of community capital should not be a restriction of farmer groups for success. Farmer group can develop by one part of community capital such as only social capital or only human capital. If social capital alone is not enough so farmer groups can formulate social learning in order to accumulate capital to get success.

1.4. Research Method of the Study

The basic structure of this study is a comparative case study on two neighboring farmer groups on coastal sandy land in the west sub-district of Yogyakarta Special Region. The methodology of this study are historical description analysis use of information gotten by interview

with leaders and members of two farmer groups and a cross-sectional study comparing two farmer groups, the Bugel FG and Garongan FG, in order to look at the differences of present situation of them.

The approach of this study includes both qualitative and quantitative analysis. Regarding the data, this study examines primary data. The primary data was collected in three ways: 1) interview 2) one-to-one interviews with a closed-structure questionnaire and 2) focus group discussion (FGD) with an open-structure questionnaire.

The first research was conducted in 2011 (August) to elaborate the history of chili farming and marketing in Bugel Village and Garongan Village along with a pre-survey socioeconomics study. In order to conduct the pre-survey of the socioeconomic structure, 30 households (HHs) from the Bugel FG and 30 HHs from the Garongan FG were selected based on stratified land cultivating area and random sampling. Focus group discussions were held to understand the comprehensive historical process of chili farming and marketing in each farmer group.

The second research was conducted in 2012 (February-March) to measure the socioeconomic structure of farmers in the Bugel FG and Garongan FG (Chapter 2), as well as the institutional factors and technological adoption that influence the individual member performance in chili farming and chili collective marketing (Chapter 4). 60 HHs on each farmer group were selected by stratified land cultivating area and random sampling. Stratification was divided into 3 areas: large, medium, and small land cultivation areas. Furthermore, 1) the demographic data characteristics such as age, educational level, and number of household members 2) economic conditions such as, land holding, chili income, off-farm income, remittance and total income, 3) percentage of chili collective selling, 4) usage of input on chili farming such as non-subsidized

fertilizer, seed from FG, plastic mulch and wage laborers. Then data was analyzed by Probit regression, Tobit regression and crosstabs Pearson chi-square test.

The third research was conducted in 2012 (July-August) to measure the attribution of leadership and group dimensions, and to conduct a pre-survey of the social network. In measuring the dimension of leadership, all members were interviewed. 94 HH from the Bugel FG and 86 HH from the Garongan FG were interviewed in person by closed-structure questionnaire through variables of transformational leadership, leader-member exchange, satisfaction, commitment, group performance, and group member behavior. Before analyzing through Partial Least Square (PLS), the reliability of the construct and the validity of the factors were measured to meet the requirements of PLS analysis.

The fourth research was conducted in September 2013 to collect data about networking among members and leaders of each farmer group. All members of the Bugel FG and Garongan FG were interviewed. To determine the membership network, the roster method was used. Each respondent was free to choose as many names of members on a list as desired. Then, the data was analyzed by Pajek 3.15, which measures the size, density, distance, degree, and cliques of the network. The data of distance to RT heads and distance to FG leaders, and position of member in the organization: number of in-degree and number of out-degree are used as explanatory variables on Chapter 4.

CHAPTER 2

RESEARCH MONOGRAPH OF THE TWO FARMER GROUPS FROM THE VIEW POINT OF HISTORICAL BACKGROUND

2.1. General Conditions of the Research Site

Research was conducted in the western region of Yogyakarta Special Region (see Figure 2.1). There are three types of areas in this province, which are categorized as highland, hilly, and lowland terrains. Lowland areas have coastal sandy land, which is 22 km long and 1.8 km wide, covering 3000 ha. Farmers started to cultivate this sandy land around 1970, but they could only cultivate cassava, peanuts, and corn based on rainfall. Since 1985, farmers have been cultivating the coastal sandy land with chili and watermelon.

The research site was selected on account of the pioneering farmer groups cultivating chili as a new farming commodity in this area. The Bugel FG and Garongan FG have pioneered chili farming and collective marketing activities. Fortunately, the location is between two rivers, the *Bogowonto* River and *Progo* River, which provide the opportunity to have a fresh water supply by simply digging a well approximately 5–8 m in depth.

Bugel Village and Garongan Village are located on the coastal sandy land, but are partially on wetland. The wetland area of Bugel Village is approximately 115.51 ha, whereas the wetland area of Garongan is only 69.77 ha. The Garongan coastal sandy area is approximately 373.03 ha, while that of the Bugel area is around 359.99 ha.



Figure 2.1 Map of research site

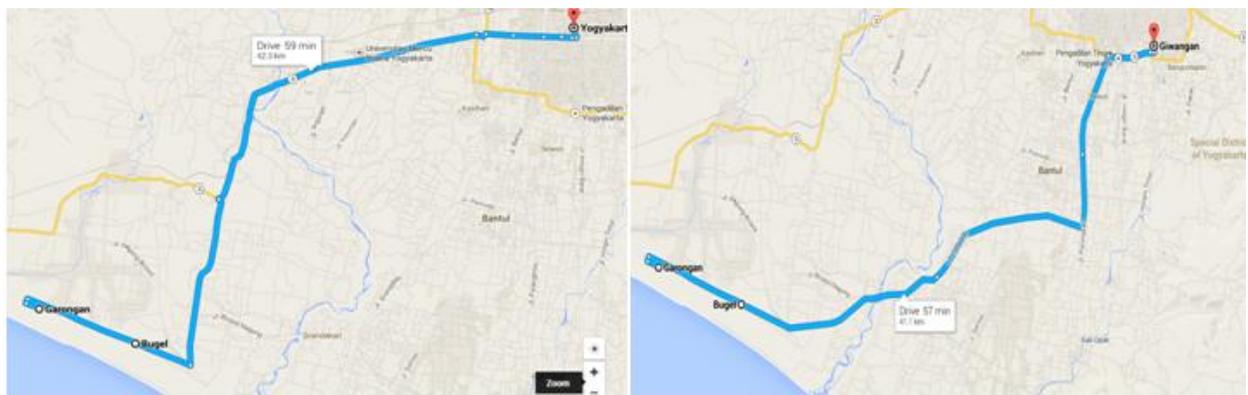


Figure 2.2 Access from Garongan and Bugel Villages to Yogyakarta City and local market

Garongan Village is near Bugel, and the distance between the two village centers is around 5 km. Garongan and Bugel are located on the coastline area of the Indian Ocean in the western part of Yogyakarta Special Region. It is approximately 39.4 km from Garongan Village to Yogyakarta city and 39.6 km to the central market of Yogyakarta Special Region, while Bugel Village is located 35.3 km from Yogyakarta city and 34.2 from the central market (Figure 2.2).

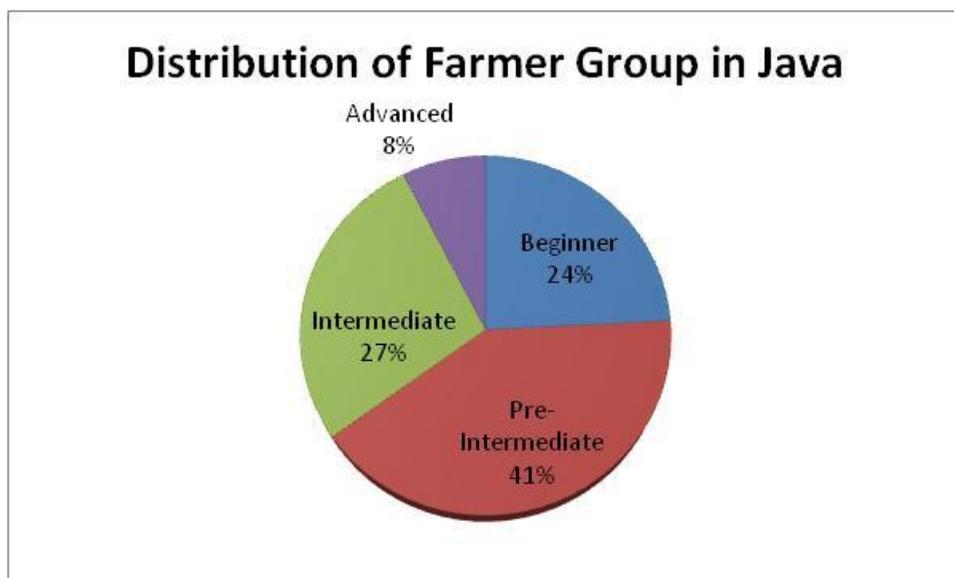


Figure 2.3 Distribution of class level of farmer groups in Java Island
Source: Agriculture Extension Centre, Ministry of Agriculture, Republic of Indonesia (2001)

In 2001, around 100 thousand farmer groups existed in the Java Islands, which are categorized by the Ministry of Agriculture of the Republic of Indonesia into four classes: 24% beginner, 41% pre-intermediate, 27% intermediate, and 8% advanced (Figure 2.3). Beginner farmer groups are able to plan group activities in order to gain the necessary input for farmers. A pre-intermediate level farmer group is able to plan the necessary input and make it function correctly and rationally. The intermediate level farmer group is able to conduct the planning of the necessary input, make it function correctly and rationally, and create institutional relationships with the input providers and cooperatives. The advanced level farmer group has not only reached the three conditions of the intermediate level, but also it applies technology and uses information to manage the group dynamically with regard the contribution of members. This is demonstrated by high production and economical achievement.

Based on the findings of research on farmer groups in Indonesia, there are some factors that reduce the performance of farmer groups (Hermanto and Swastika, 1997):

1. If a farmer group is created only for gaining government subsidies or as a project, the group will not be able to develop or be sustainable after the project has finished.
2. If gaining a subsidy is their only purpose, many farmer groups cannot persuade members to participate in the activities of the farmer group.
3. Based on the decree of the Indonesian Ministry of Agriculture, which regulates the function of farmer groups, the farmer groups should become a union of farmers who could work collectively on both production and marketing activities. However, most members carry out farming and marketing individually.
4. An external initiator approach and a blueprint approach will hamper the development of the farmer group.
5. Building the farmer group by neglecting the *social capital* and *indigenous culture* will hamper member participation.
6. The individual performance of members could not support the bargaining position of the group against the power of a third party such as input providers, financial institutions, or traders.

The Bugel FG and Garongan FG are categorized as advanced level farmer groups because they are able to create and maintain relations with other institutions and apply technology to enhance productivity. The Bugel FG and Garongan FG are also able to shorten the chili marketing chain, which used to be such a long chain that it brought disadvantages for the chili price, through introducing collective marketing using auctions as a bargain mechanism to sell the chili product to

the central market traders. Figure 2.4 shows the area of chili marketing, which was held by local traders and intermediate traders before collective marketing was introduced.

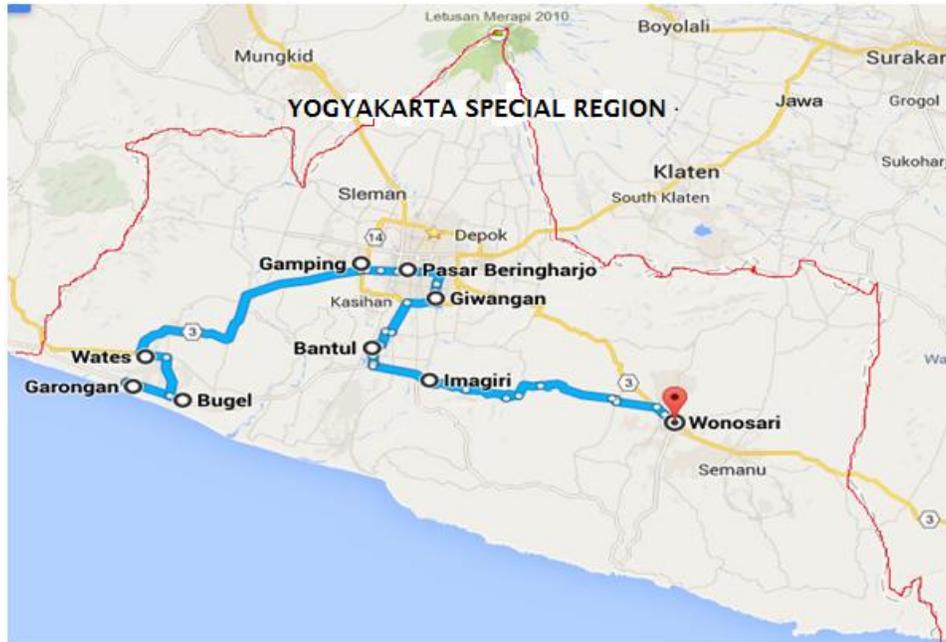


Figure 2.4 Local market of chili marketing of Garongan and Bugel in Yogyakarta

Figure 2.5 shows the distribution area of marketing for Bugel's and Garongan's chili product, which has been transported by an assembler trader who joins the auction market held by the Bugel and Garongan FGs. Since the auction market has been held by the farmer groups, the area of selling has changed from the local market to the central market on the islands of Java and Sumatra.

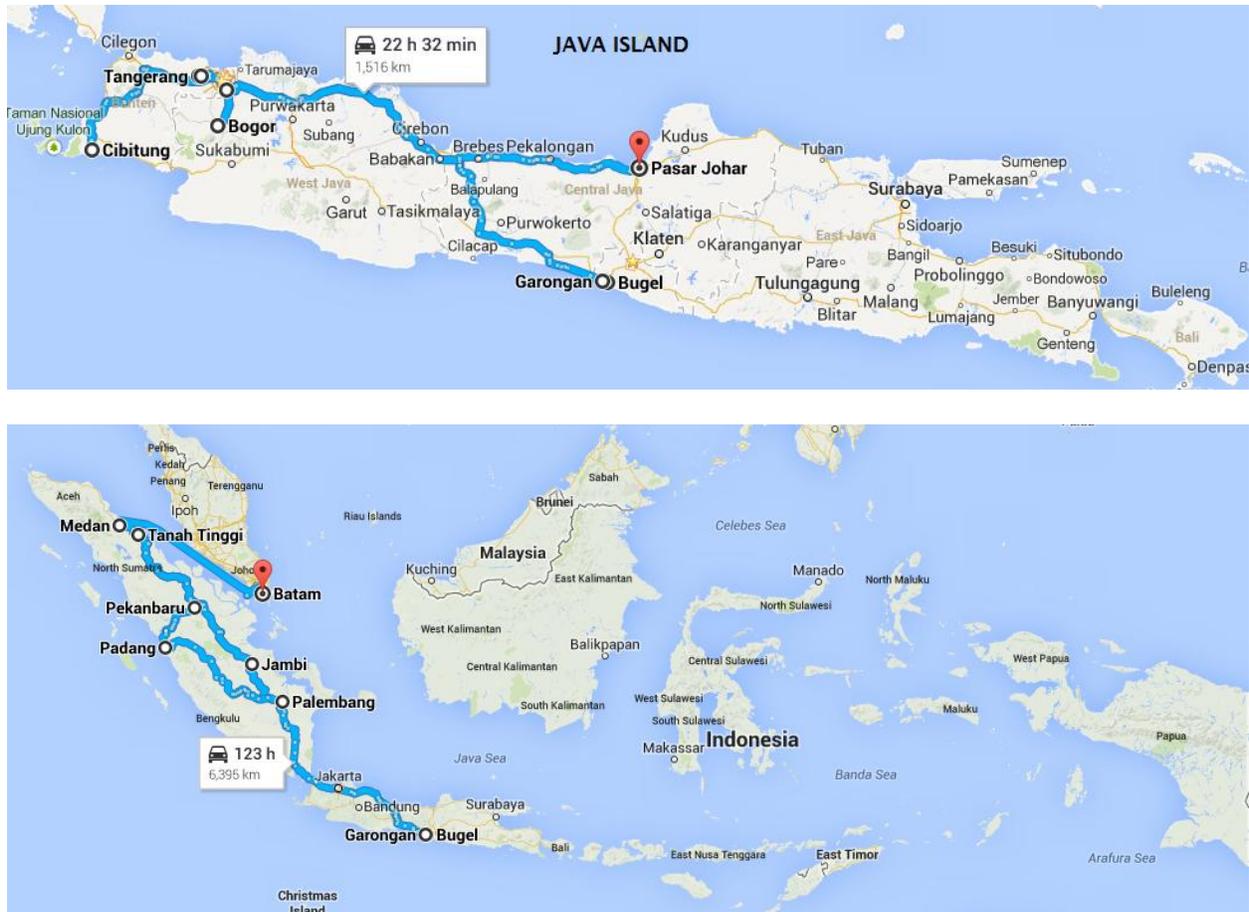


Figure 2.5 Chili marketing from Garongan and Bugel Villages Through Java and Sumatera Islands

This study takes a sample of advanced farmer groups, which is only 8% of the population of farmer groups in Java Island. Both groups are exceptional compared with the number of farmer groups existing in Java, because the majority of farmer groups were founded by government projects, gaining subsidies as mentioned above, while these two groups were built by considering the group's own needs, which then brought out their technological and institutional innovation indigenously. Regarding the innovativeness of both these farmer groups, this study intends to explore the important lessons from the advanced farmer groups. The achievement of this research

will contribute to developing the beginner, pre-intermediate, and intermediate farmer groups into advanced farmer groups.

This study focuses on the innovativeness of each farmer group and the diffusion process and adoption of innovation in the neighboring village in order to understand how those farmer groups have been developed. The innovativeness of both farmer groups is divided into three categories: the technological innovation of coastal sandy land chili farming, the institutional innovation of chili farming, and the institutional innovation of the chili marketing system. These innovations are achieved by the farmers, who are influenced by their social and economic historical background.

2.2. Historical Process of Chili Farming and Collective Chili Marketing

In this section, we focus on innovation, diffusion, and adoption of technological and institutional chili farming activities. The process in both farmer groups is as follows:

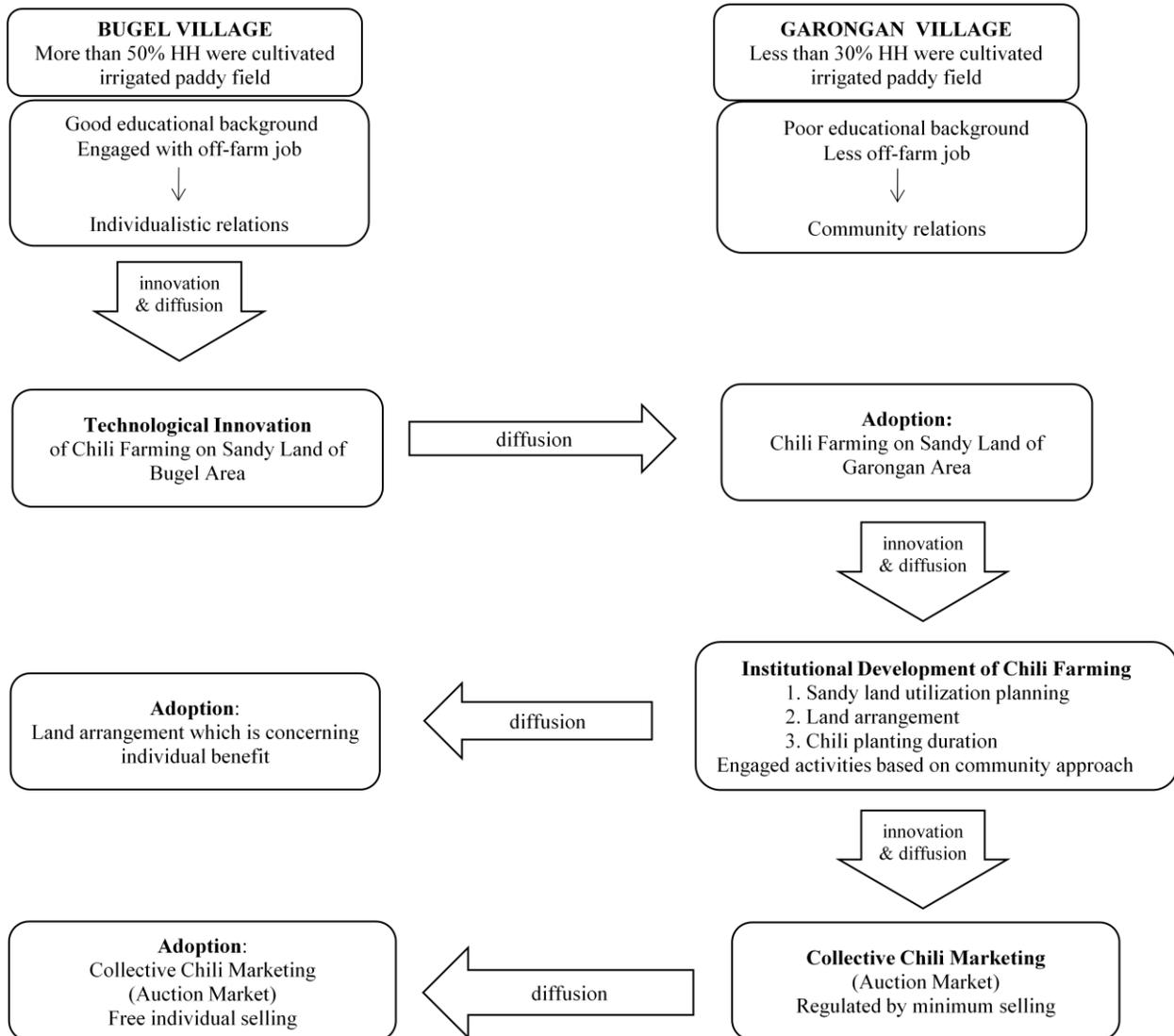


Figure 2.6 Chart structure of the sub-section on the historical process of chili farming and marketing

Source: Field Survey, 2011

Each of the historical processes in Figure 2.6 will be explained in the following sub-sections.

2.2.1 Initial Conditions and Discovery Stage of Chili Planting in Coastal Sandy Land

The coastal sandy land area had been abandoned for many years. Before 1942, some farmers cultivated cassava on the coastal sandy land for subsistence, but under the era of Japanese occupation in 1942, the Japanese army made a salt evaporation pond for producing salt, so farmers were not allowed to conduct any subsistence activities in the coastal sandy land area. After the independence of the Republic of Indonesia, the first president of the Republic visited the coastal sandy land in 1948 and permitted the villagers to use the land.

The coastal sandy land area is divided into 2 categories of ownership: 1) that owned by villagers if the villager can provide the *eigendom* (a letter of ownership since the colonial era), and 2) *swapraja* land, which is managed by the government. Actually, the ownership of *swapraja* has been debated between the government and *Kasultanan Ngayogyakarta Hadiningrat* (The Yogyakarta Sultanate). In this study, to simplify the explanation of that, *swapraja* is regarded as owned by the government. The coastal sandy land was only a dune of sand with doubtful productivity.

The wetland area with irrigated paddy fields was limited in both villages, but the Bugel farmers had more opportunity for paddy cultivation, because the area of wetland was larger (25%) than in Garongan Village (13%). Bugel farmers who cultivated an irrigated paddy field had a better income. The reverse condition applied to the Garongan villagers, who could not escape subsistence conditions because of the geographical limitations mentioned in Table 2.1.

Table 2.1 Initial conditions of Bugel and Garongan Village and their impact on Villagers' Lives

Initial Condition	Facts	Impacts
Bugel Village	<ul style="list-style-type: none"> • The area of 25% wetland and 75% coastal sandy land. • In 1970, more than 50% of households could cultivate paddies and chili on irrigated paddy fields. • In 1970, the government provided acacia for reforestation of the coastal sandy land area. 	<ul style="list-style-type: none"> • In 1980, some farmers could finish senior high school. • More opportunities to have off-farm jobs. • Traditional custom help (<i>sambatan</i>) was displaced by hired labor.
Garongan Village	<ul style="list-style-type: none"> • The area 13% wetland and 87% sandy land. • In 1970, less than 30% of households could cultivate paddies and chili on irrigated paddy fields. • In 1970, the government provided acacia for reforestation of the coastal sandy land area. 	<ul style="list-style-type: none"> • In 1980, a majority of farmers had a low education level. • They became agricultural laborers. • Traditional custom help (<i>sambatan</i>) still remained.

Source: Village monographs, interviews with FG leaders, and FGD with FG board, 2011

Prior to 1970, farmers in Bugel and Garongan Villages who owned and cultivated coastal sandy fields utilized them limitedly because they only used the valley area of the sandy dune, which could pool rainfall. They only cultivated invaluable commodities such as cassava, peanuts, and corn for their own consumption during the rainy season (May to September). In 1970, the government provided acacia for reforestation of the area of the *swapraja* sandy land. The acacia trees were planted in order to prevent sand storms during periods of strong wind from the Indian Ocean. Sand storms would cause eye illness for the villagers in the coastline area.

In contrast, a few Bugel farmers who possessed an irrigated paddy field to cultivate paddies and chili as a secondary crop could experience prosperity. Some Bugel farmers who were able to enjoy a prosperous life could send their children to complete higher education. In the 1980s, a better educational background could improve the conditions of their life, because they could find an off-farm job. Then, in the 1990s, they could also send their children to high-standard educational institutions.

Around 1980, a Bugel farmer who finished senior high school and owned an irrigated paddy field in Bugel accidentally found a chili plant growing on the coastal sandy land. This person realized that chili could grow during the rainy season when water was available. He then conducted a trial by planting chili on his own area of coastal sandy land. He had tried cultivating chili in the rainy season (November to March), but he faced a big problem in that heavy rain had swept the chili plants away, because the sandy soil had not withstood the flow of rainfall. After facing the problem, late in 1981, he tried cultivating chili in the dry season (June to October). While seeking a solution for obtaining fresh water, from a 15-m x 15-m sandy field, he could harvest chili for the first time, even it was only 0.25 kg.

The farmer had found fresh water through digging in the sandy soil. Surprisingly, he could find fresh water after digging holes only approximately 5 meters from the surface, since there are two rivers which cross this area. As a result, in the dry season of 1983, he could harvest as much as 17 kg of chili from an area of 300 m². From that period, he believed that chili could be yielded from the coastal sandy field.

2.2.2 Innovation of Chili Farming Technology in Bugel

According the theory of *Diffusion of Innovations* by Everett M. Rogers in 1962, there are five categories of adopters: innovators, early adopters, early majority, late majority, and laggards (Rogers, 2003). The innovators are person who desire the rash, the daring, and the risky to pursue higher refund. The prerequisites for being innovators are the ability to control substantial financial resources, the ability to understand and apply complex technological knowledge, and the ability to cope with a high degree of uncertainty about an innovation at the time of adoption.

The innovator of the chili farming technology in Bugel was a farmer who possessed an irrigated paddy field, had a high educational background, and had experienced an off-farm job. Possessing the irrigated paddy field could help the farmer to achieve a high educational background and also help in managing financial necessity. The high educational background could help the farmer to innovate the way of managing coastal sandy land become ready for chili cultivation.

A summary of the history of technological innovation in chili farming in Bugel Village can be shown in Table 2.2.

Table 2.2 History of technological innovation of chili farming in Bugel Village

<ol style="list-style-type: none"> 1. Around 1980, a farmer discovered that chili could grow on coastal sandy land. 2. Around 1980, the farmer tried to plant chili in a coastal sandy field during the rainy season but failed. 3. The farmer discovered a way to supply fresh water to the coastal sandy field: <ol style="list-style-type: none"> a. In late 1981, he dug the sandy soil to a depth of 5 m to find fresh water. b. He placed a buffer partition in the hole of fresh water to make a well. The buffer partition was made from a bamboo braid called a <i>bronjong</i>, which had been used since 1985. c. In 1995, farmers replaced the <i>bronjong</i> with brick for the buffer partition in the well. d. Being experienced in off-farm labor, the farmer could find technology for raising water by machine. In 2009, farmers made a <i>pantek</i>, a pumping machine to raise the water without using the well. 3 Plastic mulch application: <ol style="list-style-type: none"> a. In 1999, an agriculture extension officer introduced the use of plastic mulch but failed to implement it because it was applied as if on an irrigated paddy field, which was incompatible with the character of the coastal sandy land. b. In 2010, the farmer tried a modified way of applying plastic mulch and succeeded. Then, in 2011, some other Bugel farmers used plastic mulch in their chili farming.

Source: Interview with FG leaders and FGD with FG board, 2011

Realizing the condition of the coastal sandy land and the probability of succeeding in cultivating chili, the farmer who started the chili cultivation sought ways of pooling fresh water from the ground. However, he could not pool the fresh water without buffer partitions because of the sandy soil conditions. So, in 1984, he made use of the *bronjong*, which is made of a bamboo braid and is commonly used to carry goods. The invention of the *bronjong* well was the indigenous idea of a Bugel farmer.

After the invention of the *bronjong* well, some Bugel farmers who possessed neither an irrigated paddy field nor sandy land tried to cultivate of abandoned sandy land in the coastline area. In order to cultivate coastal sandy land that had been abandoned for many years, the farmers needed to arrange the area and also prepare *bronjong* wells.

The speed of adoption of innovation is influenced by characteristics of innovation. The technology of chili cultivation on coastal sandy land which was invented by a Bugel farmer seems to be easy to be adopted by other farmers in Bugel Village because some of them had cultivated chili on irrigated paddy field alternately with paddy. The technology of *bronjong* was compatible to be adopted because they could braid the bamboo by them. Furthermore, farmers knew that chili product could increase their income because price of chili tended to be higher than other horticulture crops. In this sense, the technological innovation of chili cultivation on coastal sandy land could be implemented functionally. Even though, farmers should be considered about the flatten area of sandy dune.

1. *Bronjong* Partition



2. Brick well



3. *Pante* pumping machine showering



Figure 2.7 Staging of watering innovation technology of chili farming in a coastal sandy land

Before starting chili cultivation, the coastal sandy land, which was planted with acacia or still being neglected as a sandy dune, had to be prepared for cultivation. In 1985, the process of land preparation consisted of two steps: 1) cutting some acacia to make a field, and 2) flattening the sandy dunes. In order to cut the acacia, they needed to obtain permission from the government. Meanwhile, flattening the sandy dune was physically very hard work, and they needed to find laboring help from families and neighbors. Some of them also had to hire laborers.

As mentioned before, the *bronjong* was made from bamboo, which farmers had to braid themselves. After ten years of use, some farmers realized that *bronjong* wells would break easily, and they needed to be changed every two years. In order to find a stronger buffer partition, some Bugel farmers made use of brick wells in 1995. These brick wells were usually used for pooling fresh water in a residence. Even though the brick well was available for pooling the fresh water, farmers needed to pick up the water by a bucket in order to water the chili plants. In the dry season, the temperature and evaporation in coastal areas is high. The chili plants needed watering two times a day, which took around three hours per hectare. In this sense, maintaining chili growth was very hard work for the farmers. The farmers needed to spend all their time on the farm, especially for watering chili plants. The hardest situation was not only spending the time on the sandy field, but also the strong physical conditions that were needed, because farmers had to carry two pails on their shoulders, pick up the water, and water the chili plants under the heat of the sun.

Currently, the farmers do not need to deliver the water by pails, but rather use a water pumping machine to lift up the water and spray the chili plants. Starting in 2009, the secretary of the Bugel FG developed new technology for watering chili plants using a pump and sprayer called a *pantek*. His experience as a construction worker led to the idea of using a pumping machine to lift fresh water up from the ground and using the sprayer to cover a large area for watering chili plants. Technological innovation arose again when considering the conditions and observing farmers' own potential skills.

The triumph of achieving functional coastal sandy land was also heard by agricultural extension officers and university researchers. Some of them came to witness the chili cultivation conditions and were also welcomed by the Bugel FG leader. The researcher was shown around the demonstration plots for trials of other commodities. Just after chili farming had begun, some

farmers in the coastal sandy land area started alternately cultivating just two commodities: chili and watermelon. However, after research on the Bugel area, some vegetables such as eggplant, bitter melon, and mustard could also be grown by Bugel farmers. In 2000, Bugel farmers attempted to cultivate such novel crops. Currently, they are trying to grow paddies and oranges in the coastal sandy land. It can be concluded that Bugel farmers have been responsive to trials of new technology, including choosing various commodities.

In 1999, the extension officers introduced the use of black plastic mulch for adjusting the sunlight to trap the humidity of the soil and to increase light radiation, enhancing photosynthesis. With the introduction of plastic mulch, the Bugel FG provided a demonstration plot for the extension officers conducting the mulch experiment. In the experiment, the black plastic mulch was applied after rolling up soil under the mulch. This way of applying plastic was not compatible with the coastal sandy land because rolling up the soil has resulted in water pooling at the edge, while the water inside the rolled up soil would be penetrate quickly to the ground. Thus, the experiment to apply mulch failed.

However, 10 years later, in 2010, the Bugel FG leader tried to modify the method of applying plastic to the flatten soil instead of roll up soil, taking into consideration the characteristics of porous soil in the coastal sandy land, which was successful. He already recognized the usefulness of the mulch to prevent weed growth based on his experience managing an irrigated paddy field nursery, in which plastic mulch was also utilized. His new method of mulch application was welcomed by other farmers who are so busy with off-farm jobs, but they are seeking an alternative way to save weeding labor. Just after the trial of applying plastic mulch, with its success, many farmers had applied it to their own plots. Then, in 2011, the Bugel FG members start to use plastic mulch to save weeding labor and fertilizer. The innovation in Bugel spread easily among Bugel

farmers. The new technology brought the advantage of saving time for on-farm activities and giving more opportunity to conduct off-farm jobs.

2.2.3. Diffusion and Adoption of Chili Farming Technology in the Neighboring Village

The conditions of the neighboring Garongan Village, in which the majority of villagers do not possess either an irrigated paddy field or a coastal sandy field, are worse in economic terms. From 1970 to 1980, they lived by subsistence and could not afford good education for their children. Although they also worked as agricultural laborers in irrigated paddy fields and sugar cane fields in the other villages, their life could not promise better economic conditions. Some of them migrated to cities outside Yogyakarta Special Region, and some of them migrated to other island, Sumatra.

The farmers who lived in the area of irrigated paddy fields surrounding the Garongan Village called the Garongan villagers as a *Cubung* community, which means a community of inferior person. One of the activities of the Garongan Village community was an *endong-endong*, a villagers' gathering to have conversations, which was usually conducted in different villagers' houses almost every night. This activity was done only to pass time without any reason, but since they met intensively, a collective feeling was developed. They realized that they had to maintain the customary relationship.

Table 2.3 Process of diffusion and adoption of technological innovation of chili farming to the neighboring village

1. In 1982, a Garongan farmer heard about the possibility of cultivating chili on coastal sandy land.
2. Around 1983, a farmer prepared the plot by cutting down acacia, but he was arrested by the police.
3. After he was released from the jail, he explained the purpose of cutting the acacia and negotiated to local government. Then, the local government allowed him to conduct a trial of chili cultivation.
4. In 1985, some farmers adopted technological innovation of *bronjong* and cultivated chili on coastal sandy fields.

Source: Interview with FG leaders and FGD with FG board, 2011

According to Table 2.3, in 1982, information about the possibility for planting chili on coastal sandy land was heard by a Garongan villager. He shared this information with the other villagers during a gathering. He was interested in trying chili cultivation, but he had no *eigendom* land. He tried cultivation on *swapraja* land, so he had to cut some acacia in the reforestation area, which resulted in his arrest, being accused of illegal cutting of the acacia by the local police. He explained his purpose of chili planting to local police. A while after he was released, he persuaded local government to allow him to try chili cultivation on *swapraja* land. He got a permission to conduct chili planting and started chili planting on 1983 but he failed.

In 1983, some Garongan villagers were deliberating on whether to plant chili, a new commodity. They were still hesitant because of the conditions of the area with dune hills and the unavailability of fresh water. Once they heard that the Bugel farmers had harvested some chili from a sandy field and about the possibility of obtaining fresh water from the ground by putting in the *bronjong*, then on 1985, they determined to initiate preparations for chili cultivation by working collectively on land clearing.

2.2.4. Institutional Development of Chili Farming in the Coastal Sandy Land

Before the chili farmer groups existed in either Bugel or Garongan Villages, in Bugel Village a farmer group of the rice commodity promoted by the agriculture extension officer had been founded in 1983. The chili farmer groups are different one from existing groups based on the rice commodity. Chili farmers of Bugel Village and Garongan Village considered what the farmer group needed to unite them and to work together to prepare for chili cultivation.

As a result, both farmers in Bugel and Garongan Villages formed units of farmers which were later known as farmer groups based on the chili commodity. The first activities of the farmer groups were clearing and arranging the land, building a well, and preparing a farm road. A primitive farm road was built to access to the sandy land area. In 1985, farmers in Bugel formed a farmer group called *Gisik Pranaji*, a name meaning “useful sandy land”. There were approximately 60 households living in Bugel Village at the time, but only ten households joined the chili farmer group. This group was registered officially in 1992. After establishment of Bugel FG in 1985, other Bugel farmers who wanted to cultivate chili on coastal sandy land should inform the Bugel FG. In response, the Bugel FG allowed any farmers who were resident of Bugel Village to cultivate chili while they also would be entitled as members of Bugel FG. At that time, farmers, who were cultivating chili on coastal sandy land, were expected to work collectively for land preparation, road access preparation, etc. Recently, those activities are still existed but the busy members are permitted to substitute their absence by either fund contribution or hired neighbors for working together on behalf of them.

Table 2.4 Institutional development of chili farming in the coastal sandy land area

1. In 1985, in Bugel, around ten households were interested in cultivating chili on the coastal sandy fields. They prepared the fields by clearing the land, flattening the mountainous sandy hills, and building the *bronjong* well collectively.
2. In 1985, in Garongan, there were 25 households who desired to cultivate chili on the coastal sandy fields. They coordinated to clear land, flatten the sandy dunes, and build the *bronjong* well collectively.
3. The households who started chili farming organized themselves as a group of chili farmers. The Bugel FG was known as *Gisik Pranaji*, and the Garongan FG was known as *Bangun Karyo*.
4. The number of members of the farmer groups increased thereafter.
5. Both farmer groups were registered official by the government in 1992.
6. In 1995, the Garongan FG initiated land categorization for chili farming and conducted an arrangement of the location. The village officer executed the idea. Then, the Bugel Village officer and Bugel FG followed the idea. However, they only conducted land arrangement.
7. In 2000, the two farmer groups coordinated for the duration of managing chili farming and decided that chili farming should be started on March 1.
8. In 2001, Garongan FG started collective chili marketing.
9. In 2002, the farmer groups changed seed source from local seeds to hybrid seeds. Then, the groups managed collective hybrid-seed buying by maintaining a relationship with the hybrid seed distributor.

Source: Interview with FG leaders and FGD with FG board, 2011

The farmer group in Garongan is called *Bangun Karyo*, which means “work hard,” and it was also founded in 1985. At that time, 25 households were members out of the 50 households. The Garongan FG managed the farmers based on the territory that covered four *Rukun Tetangga* (RT), or neighborhood associations consisting of about 20-35 households. Farmers who want to be member of Garongan FG should be registered himself while then Garongan FG board will affirm it through FG meeting. Members are required to work collectively, to participate on regular meeting on FG level and RT level and to obey the rules which are determined by Garongan FG.

Observing the number of farmers who joined the chili farmer groups in Bugel Village and Garongan Village, the Garongan FG had more members in number than the Bugel FG because some farmers in Bugel were already have enough income from paddy production and hesitant to cultivate chili on the coastal sandy fields. On the other hand, many Garongan farmers who had never cultivated neither on wetlands or coastal sandy land believed that it would be a good opportunity for them. After both Bugel and Garongan farmers recognized that chili brought a new hope for their life, many farmers wanted to follow the early-comer farmers by cultivating abandoned coastal sandy land plots. Since 1985, farmers who were interested in chili cultivation could choose their plot location freely. Consequently, the location of plots was scattered.

The Garongan FG leader recognized the necessity for planning the utilization of the coastal sandy land area in order to achieve rational and sustainable chili production, preventing disorderly and excessive development of the coastal sandy land area. At the same time, after the leader's experience of being arrested for illegal logging, he wanted to make a tenancy contract with the village office to certify the legal legitimacy of cultivation of the coastal sandy land area by the Garongan FG members. The leader expected the plan would make his proposal for the contract more persuasive.

In 1995, the Garongan FG leader started making plans for utilizing the coastal sandy land area. He proposed the idea that the coastal sandy land area should be divided into four areas and four different categories: 1) an area which would be used by all farmers individually; 2) an area which would be used collectively for group purposes; 3) an area which would be used for reforestation; and 4) an area which would be used for the late comers. His idea had the objectives of sustainable chili farming, equality of land distribution among village farmers, and the long-term collective development of the community. The plan was accepted by the Garongan FG members.

The leader succeeded in persuading the village officer to agree to permission contract with the farmer group and to allow their involvement in planning the implementation process.

In terms of the first category of utilization of the coastal sandy land, the Garongan FG divided the area into plots to distribute evenly to every member. Along with dividing up the coastal sandy land, the Garongan FG had arranged the location of the plots by encompassing the scattered ones into a larger plot for each member. The land arrangement had the result of economizing the labor cost for chili cultivation as well as the cost of well construction by minimizing the number of wells. Still, the land arrangement project was a complicated task for the members of the Garongan FG, since every plot had different physical conditions and fertility. So, they needed to spend a great deal of time reaching a consensus on the ways that the plots were exchanged. As a community, shared norms among the members helped them to accomplish the hard work of land arrangement.

Both the Bugel Village officer and Bugel FG learned from what the Garongan FG did. The Bugel Village officer, who had overlooked the chili cultivation on the public coastal sandy land area by the village farmers, recognized that the authorization of the cultivation was necessary. The village officer documented each member's chili plots. The Bugel Village office made a document in order to make a contract between the village office and each individual farmer.

Moreover, the Bugel FG learned from the Garongan FG about the efficiency of land arrangement of gathering the scattered plots into a larger plot to economize the time, labor, and cost of watering. Particularly, because many farmers in Bugel Village had an off-farm business, they were eager to economize the time and labor of chili cultivation. The Bugel FG also faced the same difficulties of arranging the location of plots as the Garongan FG. However, their individual motivation to economize the cost was strong enough to accomplish the arrangement, which took as long as two years. However, the Bugel FG did not conduct utilization planning of the sandy land

area as Garongan did (with four categories of areas). The shared norm among the members as a community is an indispensable condition to conduct the planning, and the Bugel FG was lacking in it.

Learning from the experience of cultivating coastal sandy land, farmers realized that extreme climate and strong winds could cause disease and destroy the chili plants. Thus, according to the Javanese seasonal calendar, based on the direction of the wind across the Indian Ocean (*Pranata Mangsa*), farmers believed that chili farming should be started on March 1. Before 2000, Bugel farmers and Garongan farmers could set up the period of cultivation at their own will. Afterward, starting from 2000, the Bugel FG and Garongan FG coordinated to manage the chili planting time, which had to be followed by all farmers. Differing planting times can result in sanctions, because the emergence of disease on one farm can attack plants on another farm.

As a result, the Garongan FG only needed two years to implement the regulation of chili planting duration. All the members of the Garongan FG have been obeying the rules of planting duration since 2002. On the other hand, the Bugel FG needed five years to persuade members to implement the rules of chili planting and duration, and in 2011, the rules of planting duration were weakened when the plastic mulch was introduced. The Bugel FG's members believed that after introduction of plastic mulch, the planting pattern in order to prevent spreading viruses was not needed, but in 2012, they had to face the emergence of the yellow virus.

Nowadays, farmers who cultivate chili on coastal sandy land both in Bugel Village and Garongan Village can become members at farmer group, eventually all chili farmers are members of the farmer groups in each village. There are no regulations about paying a membership fee to become a member.

After a while from the establishment of Garongan FG and Bugel FG, they started to deal with subsidized fertilizer from government. The mechanism to access subsidized fertilizer changes frequently which depend on the government regulation while during 1999 until 2001 Indonesian government did not provide subsidized fertilizer due to the economy crisis. Since 2003, the subsidized fertilizer should be accessed through authorized fertilizer shop due to the problem of non-functioning of village cooperative unit (KUD) as a distributor of subsidized fertilizer. To access the subsidized fertilizer, farmers have to come to the authorized fertilizer shop located in the village. However, only farmers who are member of a farmer group and registered on the proposal for subsidized fertilizer provision can buy it. Even though the authorized subsidized fertilizer agent was chosen by the fertilizer factory, the conditions of each agent are different. The authorized subsidized fertilizer agent of the Bugel FG can supply the subsidized fertilizer whenever the farmers need, whereas the agent of the Garongan FG does not have enough capital to supply a ready stock of subsidized fertilizer.

In 2001, the Garongan FG started chili collective marketing, it will describe later on the sub-section of this chapter. The Garongan FG was the first to cooperate with the hybrid-seed distributor to order collectively in 2005. The Bugel FG started cooperation with the hybrid-seed distributor in 2009. The hybrid-seed distributor is an authorized seller from a hybrid-seed factory located in Yogyakarta Special Region. Once farmers conduct collective buying, the distributor gives a basic price, the same as the price of the input agent.

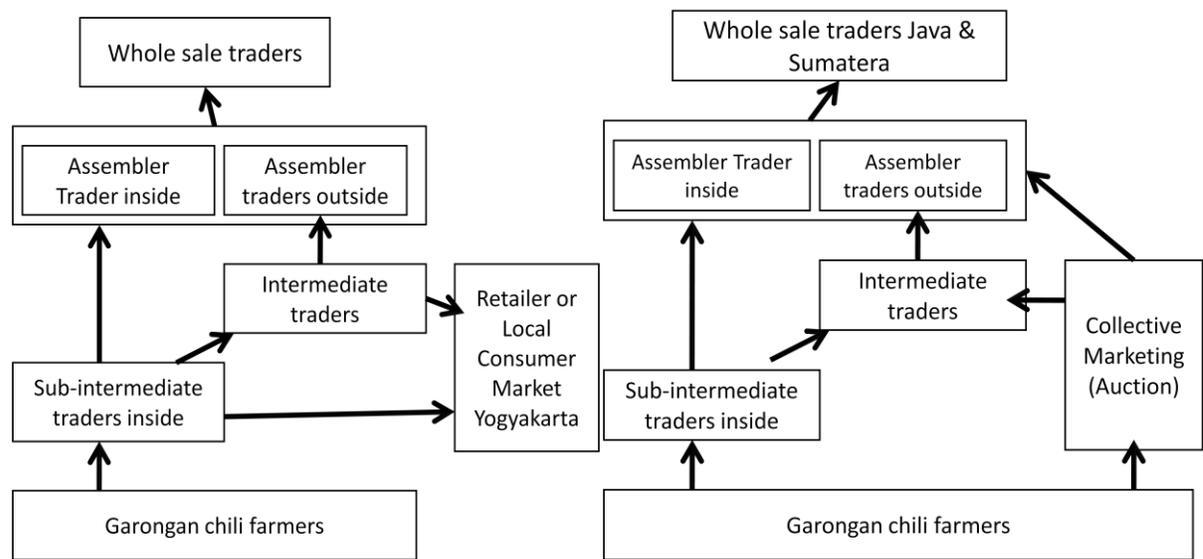
2.2.5. Institutional Innovation of Collective Chili Marketing

Up to now, the government is still concerned about how to produce a high quantity of agricultural product rather than how to manage marketing the agricultural product, especially for

horticultural products such as chili. There are five hierarchical categories of chili traders, which are the wholesale trader, assembler trader, intermediate trader, sub-intermediate trader, and retailer in local consumer markets (Figure 2.8). Most chili farmers are selling chili through traditional markets, which means sub-intermediate traders or intermediate traders purchasing chili directly from farmers before selling either to the local consumer market retailers or to assembler traders, who will transport the chili to wholesale traders.

In Indonesia, chili is consumed as a fresh product, so it is a perishable stock, and the price is dependent on the seasonal demand and availability. Chili prices increase drastically for special holidays and ceremonial days. The character of chili price is fluctuation, and individual chili selling is characterized by price differences among farmers.

A wholesale trader is located in the central market in the capital city. The big wholesale traders are in Jakarta and Sumatra. In order to obtain the chilies, a wholesale trader has a joint venture with assembler traders who have a duty to transport the chilies from the production area to the central market. To find the chilies, assembler traders have to compete with each other, so one assembler trader may join with some intermediate and sub-intermediate traders. The intermediate traders and the sub-intermediate traders have the responsibility of collecting the chilies produced according to the quota that is assigned by the assembler traders. An assembler trader can usually transport the chilies every night in one or two trucks which contain 10–15 tons of chilies.



Before

After

Figure 2.8 Flow chart of chili trading in Garongan before and after collective marketing began. Source: Interview with traders and FG leaders, 2012

In Garongan Village, there is one intermediate trader and three sub-intermediate traders who live in the Garongan village and latter three are also members of the Garongan FG. In Bugel Village, sub-intermediate traders come from outside the village, and one intermediate trader who is not a member of the Bugel FG has appeared in the village. Before collective marketing began, even though sub-intermediate traders and intermediate traders deal with the assembler traders in both villages, they also deal with the retailers in the local consumer market (Figure 2.8). After meeting the ordered quota from assembler traders, they would then sell the remaining chili product in the local market. The price of chilies in the local market was lower than the price of chilies from assembler traders.

Table 2.5 Process of institutional innovation of collective chili marketing in Garongan FG

<ol style="list-style-type: none">1. Individual chili selling produced big price differences (up to one-third) among chili farmers.2. Characteristically for Garongan FG members, who respect collective activity, the price differences of individual selling caused psychological conflict among members.3. In 2000, the leader of the Garongan FG coordinated the collection of chili among members in his house and invited one assembler trader and some sub-intermediate traders from Garongan Village to bargain for the collected chili product.4. In 2000, as a mechanism for bargain for the collected chili product, the Garongan FG introduced an auction system, but with only one assembler trader as winner, the auction was monopolized.5. In 2001, the leader invited not only the assembler but also intermediate traders from outside Garongan Village to join the auction. A substantial auction has been taking place since 2002.6. In 2002, some assembler traders and intermediate traders from outside District and Yogyakarta Special Region asked to join the auction.

Source: Interview with FG leaders and FGD with FG board, 2011

In chili marketing, the sub-intermediate trader works for the intermediate trader, while intermediate traders determine capacity of buying from sub-intermediate traders. When they cannot fulfill the target quota, they will eagerly buy a chili product at a high price, but they can also make the price go down when the quota is satisfied. Farmers who sell chili to the same sub-intermediate traders at different prices criticize each other because of the different price. The different price of chili product among farmers brings out a psychological conflict among them in the Bugel FG and the Garongan FG. The Garongan FG is faced with two problems in particular. First, they used to share the norm of evenness among members, and second, there have been three sub-intermediate traders who were also members of the farmer group. Farmers criticized sub-intermediate traders about their way of buying the chili product. The leader of the Garongan FG had the insight to

realize that the psychological conflict must be reduced before the occurrence of social conflict, which might interfere with the collective activity of the community. In this matter, he thought that each farmer should receive the same price for selling chili.

Thus, in 2000, the Garongan FG leader coordinated some farmers to collect their chili product all together at his house and invited all of Garongan Village's chili traders, including the assembler trader and all the sub-intermediate traders. Every night, the Garongan FG could collect up four tons of chili. All of the traders were required to bargain for the price, and the trader who offered the highest bargained price would be the winner. However, two problems came up. First, the quantity of collected chilies exceeded the buying capacity of the sub-intermediate traders, and second, the chili buying capacity of the assembler trader beat the sub-intermediate traders, so he always offered the highest bid, while sub-intermediate traders failed to fulfill the chili buying quota assigned by their intermediate traders. Meanwhile, the Garongan FG could find neither intermediate traders nor assembler traders to invite to participate in the auction, because the Garongan FG did not have any information about them. As a result, the assembler trader monopolized the auction, whereas the other intermediate traders could not gain enough chilies to sell to their boss (assembler traders).

In this situation, some outside intermediate traders questioned the Garongan FG's leader about the difficulty their sub-intermediate traders had in buying chilies from Garongan Village. This opportunity was used by the group leader to invite intermediate traders to participate in bargaining for the collected chilies. The first sealed-price auction was chosen as a mechanism for bargaining, and only one winner could buy all of the collected chilies. The Garongan FG had become the first auction host of this territory.

In order to conduct a successful auction, the Garongan FG needed to consider the way to amass the chili stock in order to attract the interest of intermediate or assembler traders as bidders.

The group also needed to consider the position of members who also dealt with chili trading as an off-farm job whose businesses was too small enough to join the auction. Regarding these two conditions, the Garongan FG determined that the minimum percentage of chilies to be sold at auction was 80%. There was a consensus about the contribution to the farmer groups: the price of every kilogram of chili sold in the collective marketing would contribute 100-150 IDR for the sake of group contribution. In accordance with the consensus, the Garongan FG also regulated the sub-intermediate trader to buy chili from farmers at approximately 100–150 IDR per kilogram lower than the chili price at collective marketing. In that sense, the farmer can enjoy the benefit and the same price, while the sub-intermediate traders are still able to survive.

2.2.6. Diffusion and Adoption of Chili Marketing Innovation

After collective marketing was set up in the Garongan FG in 2000, the Bugel FG realized that collective marketing could improve the price compared with individual selling to an intermediate trader. Thus, two years after that, the Bugel FG adopted collective marketing. The Bugel FG leader coordinated the members to collect chili in one place at the Bugel FG leader's house and invited the intermediate traders from inside and outside Bugel Village. Some of the intermediate traders were the same intermediate trader, those who had participated in the Garongan auction. As a result, the Bugel FG also started to conduct auction as a mechanism to sell collected chili to traders. The diffusion stages are mentioned in Table 2.6.

Table 2.6 Diffusion and adoption of chili collective marketing innovation in Bugel FG

1. In 2001, Bugel FG leader heard about the advantage of collected chili and sold through an auction mechanism.
2. In 2002, the Bugel FG adopted the collective marketing. The leader coordinated the members to collect chili product in one place and invited the assembler and intermediate traders.
3. Substantial auction and collective marketing started in 2002.
4. The difference between the Bugel FG and Garongan FG is that the Garongan FG determined that a minimum of 80% from the total product of chili production must be sold collectively.
5. The Bugel FG has not regulated the minimum percentage of chili product to sell collectively.

Source: Interview with FG leaders and FGD with FG board, 2011

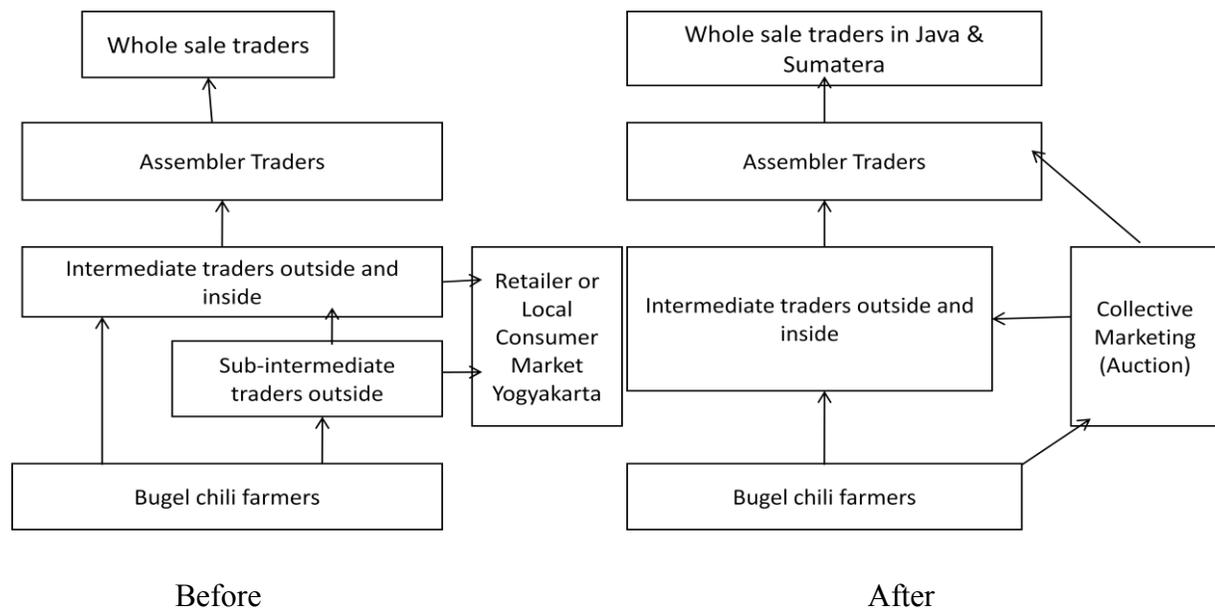


Figure 2.9 Flow chart of chili trading in Bugel before and after collective marketing began. Source: Interview with traders and FG leaders, 2012

After collective marketing began in Bugel FG, the structure of traders became different from when they sold individually. Sub-intermediate traders from outside Bugel Village disappeared, because they could not compete with the intermediate traders at auction to obtain the chilies. Sub-intermediate traders from outside Bugel Village could not pay such a high price for chilies because they usually deal with retailers at the local market and intermediate traders who also deal with the local market. As a follower, the Bugel FG imitated the marketing mechanism without determining the minimum percentage of chili sold, because they believed that farmers would rationally choose collective marketing individually, which always provides a high price compared to another trader. As a result, the Bugel FG and Garongan FG became independent hosts of the auction market. Even though both farmer groups held an auction during the same period of time, the Garongan FG welcomed the Bugel FG's auction because the quota of the assemblers was still bigger than the quantity of chili produced in the Garongan FG.

2.2.7. Chili Collective Marketing Activity of Bugel FG and Garongan FG

Both the Bugel and Garongan farmer groups have conducted collective activities for chili farming and chili marketing. Regarding the activities on chili farming, they are not only to make proposals for seeking subsidized fertilizer, but also to deal collectively with the input providers. Twice a year, the two groups have to make a proposal for the subsidized fertilizer needed for each member of the groups. Then, the authorized fertilizer shop that cooperates with the government will provide the subsidized fertilizer. An authorized fertilizer shop is located in each village.

The authorized fertilizer shop does not only provide subsidized fertilizer, but also other non-subsidized input materials, including non-subsidized fertilizers, which farmers also utilize. Even

though the price of non-subsidized fertilizer is higher than that of subsidized fertilizer, it can produce larger chili fruit. The Garongan FG determines the quality of chili by considering the size and the large chili can be sold by higher price and small chili can be sold by lowest price even if the average price is similar with collective marketing in the Bugel FG. The need for non-subsidized fertilizer in the Garongan FG tends to be higher than in the Bugel FG because they are motivated to pursue higher chili prices in auction. In the Bugel FG, they do not have any requirement for size of chili to be sold on collective marketing.

In Bugel, the input provider, which is also an authorized subsidized fertilizer shop, has a deal as a chili intermediate trader in Bugel Village. In contrast, the input provider of the Garongan farmers is not a chili trader, because he does not have enough capital to deal as a chili intermediate trader. The other input needed for chili farming is hybrid seed. Since 2002, all farmers in the sandy land area used hybrid seed, because it is tough enough to cope with the extreme climate, while local seed is susceptible to disease. Moreover, using the hybrid seed could increase chili production. However, the high price and scarcity of hybrid seed when buying individually from the input provider became an issue for chili farmers. Individual buying of hybrid seed created uncertainty in the price, while the scarcity of hybrid-seed was also a problem for farmers, so the farmer groups determined to initiate a relationship with a hybrid-seed distributor. Through individual buying, the farmer had to buy hybrid seed at around 87,000–89,000 IDR per pack, while through collective buying, the farmer groups could buy hybrid seed at 80,000 IDR per pack and then sell it to members at 85,000 IDR per pack.

Regarding the chili collective marketing activities, the Garongan FG has been conducting collective marketing for approximately 13 years, and the Bugel FG has done so for approximately 11 years. Currently, the chili collective marketing price for the farmer groups is competitive with

the wholesale price. Competition among traders to obtain chili products has been high, so they tend to bid high price to win at auction. According to an intermediate trader, in 2012, the price of chili with collective marketing was approximately 12,000 IDR/kg, whereas the individual selling price was approximately 9,000 IDR/kg.

Although collective marketing always provided a higher price for chili product, the associated delay in payment became a crucial issue. Traders who won the bid did not pay immediate cash before transporting the chili product to the wholesale trader in Jakarta or Sumatra. As a result, farmers had to wait three days or more for payment. The Garongan FG continued in their practice of collective harvesting to economize the amount of wages to be paid through custom help of *sambatan*, thus solving the delayed payment problem. In contrast, the Bugel FG permitted its members to obtain immediate cash by selling chili product individually to intermediate traders. Farmers sometimes pay immediately for unexpected expenditure on daily life commodity, tuition fee, medical treatment, and especially for wages of agriculture labors.

Table 2.7 Farmer group revenue and expenditure in 2011-2012

Year 2011	BUGEL FARMER GROUP			GARONGAN FARMER GROUP		
	Quantity	Price	Total (IDR)	Quantity	Price	Total (IDR)
Contribution of member on CM 2002-2009	1400000 kg	150	210,000,000			
Contribution of member on CM 2003-2009				1200000 kg	150	180,000,000
Fee from seed 2009-2010	1400 pack	5,000	7,000,000			
Fee from seed 2005-2010				3,500 pack	5,000	17,500,000
Contribution of member on CM 2010	202,603 kg	150	30,390,450	215,670 kg	150	32,350,500
Total Revenue			247,390,450			229,850,500
Expenditure						
1. Seed Collective Buying						
Seed collective buying	700 pack	85,000	59,500,000	700 pack	85,000	59,500,000
2. Group Activities						
Ceremony						
a. <i>Wiwitan</i> (Planting)	1 times	500,000	500,000	1 times	250,000	250,000
b. Harvesting	1 times	1,500,000	1,500,000	1 times	1,250,000	1,250,000
Stationery&Equipment	1 pack	262,500	262,500	1 pack	37,000	37,000
Snack for board on duty	175 days	5,000	875,000	150 days	15,000	2,250,000
3. Fee for board of collective marketing						
Person in charge on collective marketing	6 person	2,000,000	12,000,000	30 person	400,000	12,000,000
4. For community purpose			140,000,000			100,000,000
Total Expenditure			214,637,500			175,287,000
Farmer Group Saving			32,752,950			54,563,500
Year 2012	BUGEL FARMER GROUP			GARONGAN FARMER GROUP		
	Quantity	Price	Total (IDR)	Quantity	Price	Total (IDR)
Farmer Group saving on 2011			32,752,950			54,563,500
Fee from chili marketing on 2011	222,263 kg	200	44,452,600	226,657 kg	200	45,331,400
Refund of seed collective buying	700	85,000	59,500,000	700	85,000	59,500,000
Total Revenue			136,705,550			159,394,900
Expenditure						
1. Seed Collective Buying						
Seed	900 pack	80,000	72,000,000	800 pack	80,000	64,000,000
2. Group Activities						
Ceremony						
a. <i>Wiwitan</i> (Planting)	1 times	500,000	500,000	1 times	250,000	250,000
b. Harvesting	1 times	1,500,000	1,500,000	1 times	2,000,000	2,000,000
Stationery&Equipment	1 pack	262,500	262,500	1 pack	328,000	328,000
Snack for board on duty	175 days	5,000	875,000	150 days	15,000	2,250,000
3. Fee for board of collective marketing						
Fee for FG's board on CM duty	6 person	2,000,000	12,000,000	30 person	700,000	21,000,000
Total Expenditure			87,137,500			89,828,000
Farmer Group Saving			49,568,050			69,566,900

Source: Interview with the FG leaders in 2012 and 2013

According to Table 2.7, through collective marketing, every farmer has to contribute 150 IDR per kilogram of chili to the group. From that contribution, basically one-third goes towards the fees of the FG board of the collective marketing, one-third goes towards group capital to buy hybrid seed collectively, and one-third goes to the farmer group for community purpose. The fee contribution was initiated by Bugel FG in 2002. Then, in 2003 Garongan FG adopted the mechanism of fee contribution for collective purpose. During the period of farmer group

development, both farmer groups have built the road, from primitive road into asphalt road, for accessing coastal sandy land to the main road by using the fund from collective fee (one-third of each member contribution) on collective marketing. The mechanism of fee contribution through collective marketing has developed the social responsibility of members towards collective activities on the group and community.

In Bugel FG, the laborers of collective marketing events are the Bugel FG subordinate board members. They work as representative of other members who are busy with their business. In consequences, other members, who are not able to work on the collective marketing events, donate 50 IDR per kg of their chili product to compensate their absence. In Garongan FG, all members should work collectively on the collective marketing events on shifted schedule. Every year, 30 persons are working as laborers and they are paid from the collective fund.

In 2011, the Bugel FG could sell 202.60 tons of chili products collectively, while the Garongan FG could sell 215.67 tons during the harvesting period. They ordered as much as 1000 packs of hybrid seed collectively, but the hybrid-seed distributor could only provide 700 packs. The distributor provided the hybrid seed in three stages to the farmer group. The trend of chili hybrid-seed availability had also influenced the price of chili product in the previous year. In 2010, the price of chili product reached 30,000 IDR per kg, and as a result, many farmers in Indonesia were inclined to cultivate chili, which triggered the unavailability of seed. In addition, the agent of the input provider, who also wanted to take advantage of this situation, held onto the hybrid seed and sold it at high prices when the hybrid seed became scarce.

In parallel with the hybrid-seed issue, the farmer groups had to create a policy to manage the distribution of the collectively bought hybrid seed. In the Garongan FG, all members received the packs equally, regardless of their area of land cultivation, whereas the Bugel FG determined a first-

come first-served policy. Another expenditure of farmer groups is for ritual ceremony. There are two ceremonial events called *Wiwitan* (a planting ceremony) and *Panen Raya* (a harvesting ceremony). The ritual of the planting ceremony comes from paddy farming. The planting ceremony is held at the end of March, whereas the harvesting ceremony is held in June every year.

At the harvesting ceremony, the traders, hired laborers, government officers, and mass media are usually invited. Some of the funds for the harvesting ceremony are paid by sponsors such as the hybrid-seed distributor. Farmer groups provide food and entertainment for all of the participants. With the laborers, the farmer groups maintain a patron-client relationship through this ceremony, which also strengthens the relationship between farmer groups and traders and builds better relations for the next harvesting season. For the hybrid-seed distributor, the harvesting ceremony is a great event to promote their hybrid-seed product. The harvesting event is adopted from Javanese ritual, and starting from 2005, the Garongan FG has conducted a big event to promote the good relationship among all the counterparts of coastal sandy land chili farming. A year later, the Bugel FG also conducted a harvesting ceremony event.

2.3. Socioeconomic Characteristics of Farmers in Farmer Groups

Different characteristics of Bugel and Garongan farmers were observed according to age, sex, education, cultivated land, on-farm income, and off-farm income. The socioeconomic condition of farmers of 60 households was measured, which were distributed between large-area farmers, medium-area farmers, and small-area farmers. On average among the 60 households, Bugel farmer households cultivated 0.43 ha of land, and Garongan farmer households cultivated 0.49 ha. Around 0.32 ha of coastal sandy land is cultivated by Bugel farmer households, with 0.05 ha of irrigated

paddy fields and 0.06 ha of home gardens. Garongan farmer households till 0.35 ha of coastal sandy land, 0.07 ha of irrigated paddy fields, and 0.07 ha of home gardens.

Before the intensive cultivation of sandy land in 1985, some Bugel farmers who possessed irrigated paddy fields had relatively prosperously lived. They could afford to send their children to high school, and their children could have an opportunity to obtain off-farm jobs. Based on an interview, in Bugel, the majority of household head farmers (67%) completed senior high school; in contrast, the majority of household head farmers in Garongan only finished junior high school. Furthermore, 10% of Bugel's household head farmers graduated from college.

Nowadays, the conditions of possessing irrigated paddy fields have been reversed. Garongan farmers are cultivating larger irrigated paddy fields than Bugel's, because some Garongan farmers who were motivated to produce paddies for self-sufficiency with rice tried to buy irrigated paddy fields in the surrounding villages, while Bugel farmers were busy with off-farm jobs.

In 2011, although the on-farm income in Garongan was higher than in Bugel, the off-farm income had the reverse trend. This difference was triggered by the prior economic conditions in the two villages. Bugel farmers' off-farm work contributed as much as 83.42% to their total income, but Garongan farmers' off-farm work contributed 64.48%. Having an off-farm job and receiving remittance from family member working outside contributed to the income structure of the Bugel farmer. Garongan farmers also received remittance from family members who worked outside, but it was limited.

Table 2.9 shows that in Bugel's coastal sandy land, chili production contributed 84% and watermelon contributed 2% to their income from the coastal sandy fields. Bugel farmers extended the period of chili planting from March until November to produce more chilies and gain a better

chili price on a special Islamic holiday. Some Bugel farmers could raise the price of chilies to 6,000 IDR per kg, while the average price for Garongan farmers was only around 3,500 IDR per kg. Garongan farmers, however, did not extend the chili farming duration and changed to watermelon in October. As a result, watermelon contributed 11% and chili 79% to their income from coastal sandy fields.

Two farmer groups have a rule when to start planting chilies and when to change to other commodities. However, there was a difference in implementing the rule between the two groups. The Garongan FG strictly implemented the planting duration, while the Bugel FG did not respect the planting duration so much. All farmers who cultivate on coastal sandy fields, either from inside the village or outside, had to follow the planting duration rules. The Garongan FG could give sanctions to disobedient farmers by revoking plants, whereas the Bugel FG for some reason could not.

However, starting in 2011, farmers in Bugel were allowed to extend the period of chili farming, and in 2012 the implementation of the planting period for chili starting from March 1 was weakened. There are two phenomena which triggered the extension of planting patterns in Bugel: price and plastic mulch. In 2011, the chili price decreased to 3,000 IDR, while in 2010, the chili price had reached 30,000 IDR per kg. So, some farmers tried to extend the period of harvesting in order to obtain a higher price. Since then, the planting duration was not strictly organized by the Bugel FG anymore, which means every farmer was able to start and finish chili farming according to his own will. Moreover, they believed that climate barriers could be solved by applying plastic mulch. Yet, they did not recognize that plant rotation is important to prevent viruses from spreading, especially on sandy fields when the wind from the ocean blows strongly. As a result, at the end of 2012, many of the chili plants of the Bugel FG members were infected with yellow virus.

Table 2.8 Agriculture revenue and expenditure of Bugel and Garongan household farmers

Dimension	Bugel		Garongan	
	IDR (000)	HH	IDR (000)	HH
Coastal sandy land				
Chilies	17,908	60	23,791	60
Watermelon	3,500	60	6,250	60
Other	2,354	60	2,129	60
<i>Coastal sandy land Revenue</i>	23,762		32,170	
Irrigated Paddy Field				
Paddy	1,476	21	2,225	37
Agric. Revenue (A)	25,238		34,395	
Coastal sandy land				
Chilies				
Seed	622		523	
Fertilizer	1,604		2,303	
Pesticide	419		449	
Plastic	529		228	
Hired Labor	3,032		1,808	
Other	800		940	
<i>Chilies Expenditure</i>	7,006		6,251	
Watermelon				
Seed	565		765	
Fertilizer	796		928	
Pesticide	1,265		1,319	
Other	612		893	
<i>Water melon Expenditure</i>	3,238		3,905	
Others				
Seed	148		173	
Fertilizer	358		376	
Pesticide	180		151	
<i>Others Expenditure</i>	686		700	
Irrigated Paddy Field				
Paddy				
Seed	279		321	
Fertilizer	710		814	
Pesticide	273		266	
<i>Paddy Expenditure</i>	1,262		1,401	
Agric. Expenditure (B)	12,192		12,257	

Source: Field Survey, 2011

* 1 USD = 8,500 IDR (2011)

The chili harvesting period is crucial for chili farmers. Farmers need help from others to harvest the chilies in time and have to seek labor from family, neighbors, or hired help. Garongan farmers spend less on hired labor than Bugel farmers, because the custom help of exchange labor still remains in the Garongan FG. Most of the Bugel farmers are busy with off-farm jobs which means they cannot afford to work as a reciprocal laborer according to custom. In this situation, Bugel farmers need to hire labor to help them.

However, neither Garongan farmers nor Bugel farmers need labor for harvesting watermelon, because the system of watermelon marketing is different from chili marketing. The *tebasan* system has been implemented for selling watermelon, in which the trader bargains for the price of watermelon some time before the harvest. The traders, who are called *penebas*, will bring their own harvesting laborers, so the farmer does not need to prepare labor for harvesting. Because of *tebasan*, farmers in the Bugel and Garongan farmer groups do not have to worry about either paying the harvesting laborers or marketing the commodity.

Table 2.9 Agricultural income, non-agricultural income, and total income of Bugel and Garongan household farmers

Dimension	Bugel					Garongan				
	Max IDR (000)	Min IDR (000)	Average IDR (000)	HH	%	Max IDR (000)	Min IDR (000)	Average IDR (000)	HH	%
Agric Income (C)	50,494	897	13,046		16.58	64,850	4,378	22,138		35.52
Sandy land										
Chilies	45,996	150	10,902	60	84	59,750	797	17,540	60	79
Watermelon	2,200	100	262	60	2	6,600	106	2,345	60	11
Other	7,000	19.5	1,668	60	13	5,060	114	1,429	60	6
<i>Sandy land Income</i>			<i>12,832</i>		<i>98</i>			<i>21,314</i>		<i>96</i>
Irrigated Paddy Field										
Paddy	900	-300	214	21	2	2,100	100	824	37	4
Non-Agr Income (D)	104,000	40	65,638		83.42	18,250	280	40,191		64.48
1. Off-Farm Job			55,989	31				36,851	16	
a. Agric Labor	13,400	40	1,325	12		1,800	750	1,236	6	
b. Construction Labor	104,000	1,200	14,857	7		7,200	280	3,740	2	
c. Chilli Trader	6,000	0	6,000	1		14,400	5,475	9,825	3	
d. Non Chilli Trader	20,800	340	14,892	5		18,250	5,100	10,290	4	
e. Fisherman	5,480	4,600	5,040	2				-	0	
f. Govt Officer	24,000	7,500	13,875	4		11,760	0	11,760	1	
2. Remittance	24,000	750	9,649	17		6,000	600	3,340	6	
Total Income (C+D=E)	117,100	897	78,684			129,700	8,756	62,329		

Source: Field Survey, 2011

* 1 USD = 8,500 IDR (2011)

According to Table 2.9, the income from the sandy fields reached 98% in the Bugel FG, whereas in Garongan, it reached 96%. Chili contributed the highest percentage to agricultural income in both Bugel and Garongan. The production of chili by Garongan household farmers was higher than that by Bugel's. This is in line with the size of the sandy field plot, with Garongan being larger than Bugel. In addition, once the price of chili hits the lowest point, Bugel farmers seek the opportunity to extend the period of chili farming and neglect the period of watermelon farming. As a result, the watermelon only contributed 2% to agricultural income.

Table 2.9 also shows the variety of off-farm jobs and the amount of remittance for farmers in the Bugel and Garongan farmer groups. Agricultural labor in Bugel is one of off-farm job for some farmers, because other farmers will seek hired agricultural labor for weeding and harvesting, while in Garongan, there is a traditional custom of helping with labor called *sambatan* are existed. In

addition, the difference in educational backgrounds has influenced opportunities to obtain an off-farm job in construction labor or as a government officer. Some construction projects and government job vacancies would only employ a person with a high educational background, so some Bugel farmers obtain the opportunity to become construction laborers or government officers, while Garongan farmers do not. In the Garongan Village, farmers faced a lack of opportunity to work outside the village so they are working as traders of chili and other agriculture products. Even though collective marketing has been established, the Garongan FG board gave permission for sub-intermediate chili traders living in Garongan Village to collect some chilies from farmers, while Bugel farmers were not interested in becoming sub-intermediate chili traders because they have a variety of opportunities to work outside.

As mentioned above, the possession of irrigated paddy fields in the past allowed Bugel farmers to have a good education, which helped them earn more off-farm income than Garongan farmers. They used this income to send their children to high school. As a result, next generations of Bugel farmers possessed a high educational background, and they could seek jobs outside the village. Bugel farmer's children could send more remittances to their family.

2.4. Conclusions

The western region of Yogyakarta Special Region consists of three types of areas: highland, hilly, and lowland terrains. The lowland areas consist of wetland and coastal sandy land located in a coastline area of the Indian Ocean. The coastal area had been abandoned, but starting in 1985, some farmers utilized the sandy land for chili cultivation. A farmer invented the indigenous technology like well to manage the sandy land.

Those farmers who were interested in coastal sandy land chili farming united together to collectively set up the sandy land conditions. Chili cultivation was heard by a neighboring village, who also adopted the technology of setting up the coastal sandy land for chili farming in Bugel and Garongan were set up for collective activity on chili farming. They had developed as internal-initiator farmer groups.

There are four classes of farmer groups in Indonesia: beginner, pre-intermediate, intermediate, and advanced. In Java Island, the majority of farmer groups are categorized as beginner and pre-intermediate, which means they are only accessing input subsidies from the government, while most of them could not function properly. However, only 8% of farmer groups are classified as advanced, which not only can function properly as mentioned above but also maintain relations with third party such as an input provider, traders, and researchers.

The farmer groups in Bugel Village and Garongan Village are categorized as advanced farmer groups. The self-initiated farmer groups should be considered in developing and sustaining farmer groups in Indonesia, because they could perform better than government-initiated farmer groups. Even though the Bugel and Garongan farmer groups are categorized as advanced FG, they manage the farmer group differently. The differences are caused by the different social, economic, and historical backgrounds. The possession of wetlands by some Bugel villagers had influenced the educational level of the members. Meanwhile, Garongan villagers could not send their children to high school, because they were only able to live in subsistence conditions.

Majority of Bugel household members nowadays have finished senior high school, while the majority of Garongan farmers only finished junior high school. The history of possessing an irrigated paddy field created a difference in their patterns of life. Bugel farmers enjoy chili farming

along with off-farm jobs, whereas Garongan farmers are limited in finding off-farm jobs outside the village.

The activity of the Bugel FG was triggered by the innovation of chili cultivation on coastal sandy land. Farmers in the Bugel FG always attempt to find new technology to ease the hardest work on the coastal sandy land, which used to be marginal land. They were able to find technology for watering, which is a very important aspect of chili farming. Recently, they were able to utilize plastic mulch in order to control weed growth, which resulted in savings on labor. The innovation was diffused to the neighboring Garongan Village.

The Garongan FG initiated the land planning utilization for chili farming. They divided the function of the sandy land into four categories in consideration of the evenness of land division for current farmers, for late-comer farmers, community purposes, and reforestation. The planning for land utilization was also used to persuade the Garongan Village officer to make a tenancy contract. In addition, the categorization of the land arranged the area so that scattered plots became one larger plot for each farmer. Conducting the land arrangement was a difficult task to achieve, but shared norms among community members helped them to accomplish it. This activity diffused to the Bugel Village officer and Bugel FG, who adopted the legal documentation of plots and arranged the scattered plots. However, the land arrangement in the Bugel FG was motivated by economic merit in order to economize on the cost of watering chili plants.

With regard to collective action, the Garongan FG achieved the innovation of a profitable chili marketing system through a manifestation of shared norms of evenness. The collective marketing was a way to alleviate the poverty of the Garongan farmers, who had endured life below the poverty line for many years. The advantage of collective marketing diffused to the neighboring Bugel Village.

Considering the conditions in each village, Bugel Village features individual preference and time economization, and they succeeded in developing a pattern of technological innovation that is useful for their needs of efficiency. In contrast, Garongan Village features community relations, so they succeeded in developing a community-based activity of institutional innovation, which also brings economic benefits.

CHAPTER 3

A COMPARISON OF ORGANIZATIONAL STRUCTURE OF TWO FARMER GROUPS: AN APPROACH FROM THE SOCIAL NETWORK STRUCTURE

3.1. Introduction

In Indonesia, social groups function as a basis for farmer groups. Social groups are facilitated by friendship, kinship and customary working relationships, which can also be regarded as a social network. Social networks can serve as a form of social capital—an important intangible component of individuals' and communities' asset portfolios. Using the notion of social capital as a norm, the trust and bonds of social capital should be taken into consideration when mapping the community network.

To explore the function of community, it is necessary to understand how communication is developed among members. By considering the social capital, ties among actors in the network can be understood. How the members as actors are placed in the network structure and how the ties are connected among them can be described through the network.

Past researches clearly show the role that social networks play in the adoption of the farmer's community. For instance, in Indonesia, Case (1992) states that rice farmers' decisions to adopt the use of a sickle was dependent upon neighboring farmers' success with using the tool. It has also shown that among poor rice farmers the diffusion of technology starts in interpersonal network exchanges and social influences within the community as technology is passed on from one individual to another. Lesser (2000) shows that community networks can facilitate the access of information, strengthen the position of person in authority, and form community behavior. Gold, Malhotra and Segars (2001) argued that adoption of new knowledge could be leveraged by means

of organizational structure to facilitate the flow of information. Organizational structure deems as one of the forms of control which encourage members to behave towards goals of organization. The control is usually executed through rules, norms and values to regulate members' activities and behavior (Cardinal, 2001).

Paying attention to the function of social capital in the community network, the purpose of this chapter is to explore how differently social network structure in the Bugel FG and the Garongan FG which reflect the different organizational structure of FGs. It is observed from the point of view of whole structure and leaders' position in the network.

3.2. Literature Review

3.2.1. The Nature of Community

A community consists of individuals who conduct interactions and maintain relations with each other. In order to understand the function of relations among individuals in the community, the multilevel of the groups should be understood. Individuals are nested in groups but actually these groups are nested in larger social units such as organizations, communities etc.

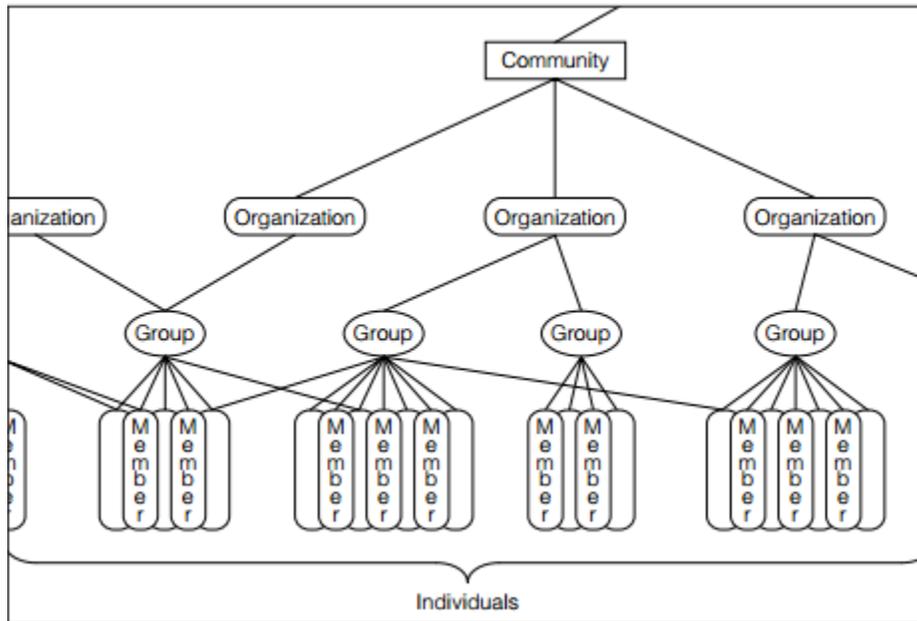


Figure 3.1 Multilevel systems of individuals on the community (Forsyth, 2006)

Figure 3.1 shows that each individual's action is shaped by a specific process but each individual is also shaped by the group to which he/she belongs. Meanwhile, these groups are formed by their individual members who also belong to larger groups such as a community. Understanding the interrelation as a multilevel system can help to observe the motivation of group members, which is part of the community.

Community is defined as a group of person with individual characteristics who are linked by social ties, share common perspectives and engage in joint actions in geographical locations or settings (MacQueen et al. 2001). Community is a group of interdependent inhabitants residing in the same region and interacting with each other through a particular relationship (North, 1990). According to Subejo (2009), the key features of community are shared beliefs or norms, direct or complex relationship among members and reciprocal actions.

Day (2006) defined community using three core elements: 1) organizing social relationships which observe how person relate to one another through cooperative interaction involving mutual trust, similarity and obligation 2) the quality of sociability, which means the ability to sustain networks through institutionalized relationships of mutual acquaintance and recognition; and 3) community as a collective agency, which is not only the capacity of a network for sustaining interaction but through actualizing the action. Somerville (2009) developed the term “eommunity” as a group of person who are meaningfully connected through forms of communication, recognition and/or shared identity.

3.2.2. Social Network

Members’ behavior is best predicted by the web of relationships in which they are embedded rather than their motivation, attitudes or demographic characteristics (Katz et al., 2004). According to Bourdieu and Wacquant (1992), members consider the creation of relations as an investment in the accumulation of social resources and they will reap returns on this investment in the form of opportunities. Marwell and Oliver (1993) observed that the web of relationship draws on the premise of mutual interest and the possibility of gaining benefits from coordinated action.

The relationship among members of the community can be analyzed by the social network. A social network consists of a set of actors (nodes) and the relations (ties) (Wasserman and Faust, 1994). According to de Nooy, Mrvar and Batagelj (2011) a *node* is the smallest unit in a network while a *line* is a link between two nodes in a network. If two nodes are directly connected by line, the nodes are adjacent. When every node reaches another node of the graph, it is considered to be connected. A *graph* consists of a set of nodes and direct lines between pairs of nodes. A network

consists of a graph and additional information on the nodes or the lines of the graph. To help visualize the network, a *sociogram* depicts the structure of ties within the group.

Social network analysis is detecting and interpreting patterns of social ties among members of a network (de Nooy et al., 2011). According to Monge and Contractor (2003), the network structure can be measured by four levels of analysis: individual level analysis, dyadic level analysis, triadic level analysis and global level of analysis.

First, using the individual level of analysis, networks can be observed through the size of the network and the input degree (in-degree), output degree (out-degree) and all degree. The in-degree is the number of direct lines to the node from other nodes; the out-degree is the number of direct lines from the node to other nodes and all-degree is the number of direct links with others actors. *Second*, the dyadic level of analysis detects the distance between nodes. Distance is the number of lines between two nodes which is denoted as d_{ij} , distance from one node (i) to another node (j). Nodes which are connected directly are defined as having a distance of one, but nodes which are connected to a third node are separated by a distance of two. *Third*, the triadic level of analysis observes the clique as a maximum number of nodes in the network that are all directly connected to one another. *Fourth*, the global network level of analysis monitors density, which is a concept of the completeness of the relations in the network. Network density is measured depending on the network size.

According to de Nooy et al. (2011), there are two perspectives of social network analysis: the socio-centered network and the ego-centered network. Socio-centered networks look for the pattern of ties that indicate cohesiveness of the social groups and asymmetric ties that may reflect social stratification. The ego-centered network focuses on the composition of local network structure. Ego-centered network considers the social circle of relations surrounding the individual

(ego). The ego-centered network presents where cohesiveness comes from and what ego and neighbors do. Positions in a network reveal who controls or inhibits the flow of information while network structure reveals how information flows around the whole environment (Haythornthwaite, 1996).

In organizations or groups there are two types of network: advice networks and friendship networks (Bartol and Zhang, 2007). Advice networks are interpersonal; members come to an advisor seeking important information. The friendship network is formed by mutual/reciprocal relations among the members. According to Nebus (2006), the advice network originates when an actor chooses certain person that he or she will contact for advice. In this sense, the relationship in an advice network tends to be asymmetric or non-reciprocating (Carley & Krackhardt, 1996). The transfer of knowledge is embedded in a social relationship of advice network while the outcome of a friendship network gives the appearance of a reciprocal relationship.

Hoppe and Reinelt (2010) also classified the type of organizational structure in the perspective of leadership network: peer leadership network and collective leadership network. Peer leadership network is a system of social ties around the leaders. Leaders in the network share information, provide advices and supports. The social ties will facilitate the improvement of trust among them. Collective leadership network is a system of social ties among people focusing on a shared goal or a desire to achieve specific goal. The network members in the small group grow the interaction in the larger network.

3.3. Materials and Methods

Field research was carried out in 2013 on two farmer groups in a coastal sandy land area in the Kulon Progo District of the Yogyakarta Special Region in Indonesia. The groups are Garongan FG and Bugel FG. Data were collected through whole-network and egocentric networks on membership ties among members of both groups through personal interviews with all 86 of Garongan FG's members and 94 of Bugel FG's members. Then, the data was analyzed based on socio-centered and ego-centered networks.

The roster method was used (Butts, 2008) to gather the membership network. Respondents were asked the question:

“To whom do you go for asking information among the members including leaders of the farmer group?”

- a. Information regarding farmer group services and rules
- b. Information regarding the technology on chili farming
- c. Information regarding price of chili

They were instructed to look at an alphabetical list and check the names of members. Respondents were free to choose the names of as many members as they wanted. The reported data were translated into graphs of social networks called *sociograms*, using Pajek version 3.15, a visualize software, from Batagelj and Mrvar (de Nooy et al., 2011). Data from the questionnaire was inputted on Pajek 3.15 to compute the size, degree, distance, density and clique.

The variables are as follows

- a. Size is n number of actors (nodes) in the network.
- b. All-degrees, $C_D = d(n_i)$

A higher degree of nodes produces a denser network, because nodes invite and receive more ties.

- c. Density is ratio of number of actual links to the number of possible lines in the network. Possible lines in the directed network are $n(n - 1)$.
- d. Distance represents the length of the shortest path between actor i and j . Nodes which are not connected directly, but which are connected to a common third actor, are separated by a distance of two, actors separated by two acquaintances have a distance of three, etc.
- e. A clique is a maximal complete reciprocal connection containing three nodes or more.

3.4. Results and Discussion

3.4.1. Management and Organization on the Village

Based on Government Regulation No. 72/2005, a village is under the governance which consists of a village council (BPD). The village government is led by a village head and administrators such as a secretary, administrative section head, economic and development section head, finance section head, and community welfare section head. The village council consists of representatives, such as RT (neighborhood association) heads, customary group heads, religious heads, and other leaders of social groups from the village. The village government officers and council members are entitled to receive a salary from the governmental budget. The village budget comes from Indonesia's state budget (APBN) and regional government budget (APBD). In addition to this salary, the village government officers are entitled to utilize land assets (*bengkok*). The law of utilizing *bengkok* was established by the Ministry of Home Affairs No. 4/2007.

Village government is entrusted to create a development planning that is aligned with the needs of existing social groups in the village, as arranged by the Ministry of Home Affairs. Based

on the Decree of Ministry of Home Affairs No 5/2007, social groups at the village level include LPMD (Village Group of Empowerment Activities), PKK (Village Group of Women Empowerment), *Karang Taruna* (Youth Group Activities), RT (Neighborhood Association) and customary groups. The relationship among these groups is consultative, coordinative and considered to be a partnership.

In this study, among several social groups that exist in the village, only RT, as a territory unit, will be considered. The RT has a role in organizing the villagers because its existence is based on the housing territory. Every RT consists of 20-35 households and is chaired by one leader who is assisted by a secretary and treasurer. The RT board changes every three years when an election is held. The election is conducted during an RT meeting and each household has one vote. Regular RT meetings are held monthly. The RT acts as a supporting agent for sharing information from and to villagers. The RT head records the villagers' administration documents and determines such information as the number of poor households and the number of households that should receive rice subsidies. The RT head mobilizes members whenever *gotong royong* (working together) for public purposes is needed. RT heads do not receive a salary as an incentive, but are entitled to the use of the village land assets.

In addition, in rural areas, farmer groups are also considered to be a social group, which is independent from the village social groups that are governed by the Ministry of Home Affairs. The farmer group is supervised by the Ministry of Agriculture, based on the decree of the Ministry of Agriculture, No. 273/Kpts/Ot.160/4/2007. The formation of the farmer groups is based on the necessity of farmers, even though the groups are primarily formed by external initiators to gain government subsidies.

Customary labor exchange is also social group. In this study, *sambatan*, a customary working group, is given attention. The typical activities of exchange labor in agriculture are usually conducted during the time of planting and harvesting. The *sambatan* consists of five to eight members who should reciprocally provide their labor. The *sambatan* is managed based on the RT territory.

3.4.1.1. The Bugel FG

Farmers in Bugel formed a farmer group to share information and knowledge about how to cultivate chili in coastal sandy land. The Bugel FG, known as *Gisik Pranaji*, which means “useful coastal sandy land”, was created in 1985. Figure 3.2 shows the structure of the Bugel FG board. The head of the organization is assisted by one secretary, one treasurer and three subordinate board members. The Bugel FG, as a social group, exists independently from other RTs in the Bugel village. There are four territories of RT in the Bugel FG. The RT activities are only coordinated with the village government.

The Bugel FG board was selected by members of Bugel Village. The person who invented the technology of chili farming and initiated the Bugel FG establishment was selected as the FG leader. The treasurer, secretary and subordinate board members were selected, representing RT 1, RT 2, RT 3 and RT 4. In the initial period, there were eight persons of board members but now there are only six persons remained because two persons were quit due to their business reason. RTs were no longer related with FG activities.

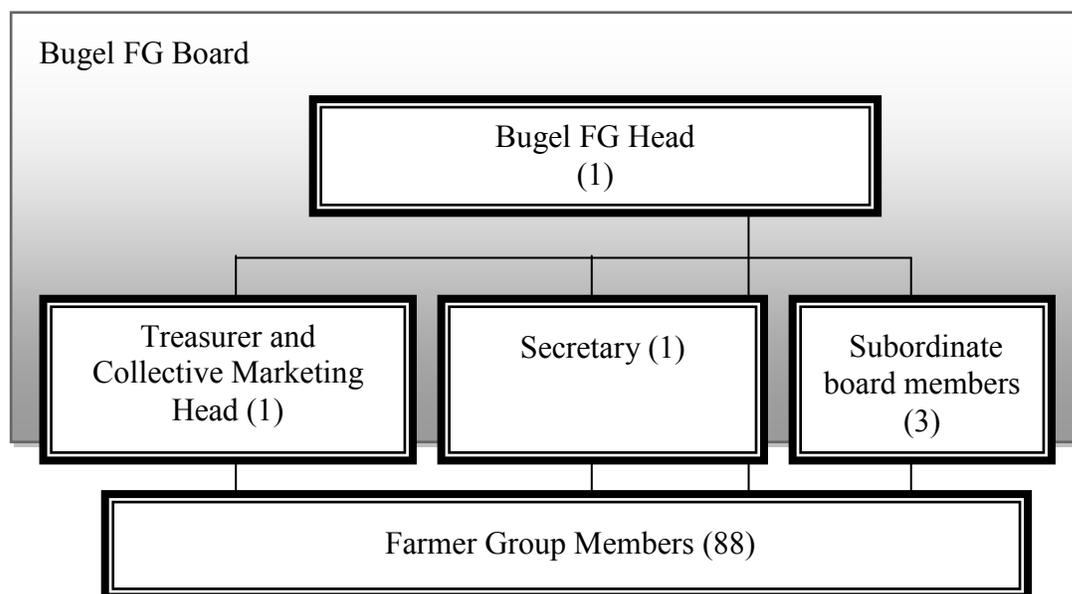


Figure 3.2 The Bugel FG board

Table 3.1 shows the demographic data of Bugel FG board in which all of them hold the land higher than average land. Their total incomes are also higher than average total income of 60 HHs.

Table 3.1 Demographic data of Bugel FG Board

Bugel FG Board	Age (year)	Edu (year)	Land Holding (ha)	Income IDR (000)			
				Agric. Income (Chili Income)	Off-farm	Remittance	Total
FG leaders (2)	58	13.5	1.33	46,031	6,590	-	52,621
Subordinate board members (2)	37.5	12	0.52	17,124	24,000	6,180	32,214
Average of 60 HHs	42.21	12	0.43	13,046	55,989*	9,649**	20,641

One of FG leaders and one of subordinate board members are not respondents of income calculation.

* only HHs who engaged in off-farm job

** only HHs who received remittance

Source: Field Survey, 2012

The head of the Bugel FG was appointed in 1985 with no term limit. Thus, as of 2014, the head has officiated for 29 years. The Bugel FG head, an inventor of chili farming in coastal sandy land area, began leading the farmer group when he was 25 years old. After graduating from high school, he studied in an agricultural vocational school to improve his farming knowledge.

The treasurer has officiated for 29 years, since the inception of the organization when he was 26 years old. He is a descendent of large, irrigated paddy field farmers, and, as a result, he was able to graduate from senior high school. After the collective marketing began, the treasurer has two positions as treasurer and collective marketing head. The secretarial position has changed several times since it was founded. The present secretary of Bugel FG is a farmer, who is also busy with an off-farm job as a construction laborer. Because of his experience in construction labor, he was able to innovate the use of water pumping machines on coastal sandy land areas. The three subordinate board members are laborers for collective marketing activities. Their tasks include scaling, packaging, and transporting the chili products, but they are not taking part in decision making.

The leaders of Bugel FG take a responsibility of handling the activities of the farmer group and the collective marketing. The treasurer assesses the chili sold from each member through collective marketing activities. The FG leaders check the quality and quantity of chili brought by each member before auction. The treasurer keeps a record of each member chili selling, the amount and the price of chili at a time he is sold. These records also identify how much each member is entitled to collective seed buying for the next season.

The residents who are willing to cultivate chili on coastal sandy land should become a member of Bugel FG. All of chili farmer households are member of Bugel FG. They are required to obey the group rules such as attending meeting, working together (*gotong royong*) for public work

and obeying the chili planting duration. On the other hand, Bugel FG attempts to facilitate members' need such as accessing subsidized fertilizer, seeking the way for solving the members' problem.

When first organized, the Bugel FG held an annual meeting in which members and leaders of farmer groups participated and decided on the initial period of chili cultivation. This was ended several years ago, and today members of the Bugel FG can start chili cultivation at will. For everyday communication, members can only access leaders at the time of collective marketing. During this period, every member comes to the chili collection point, and all important information is delivered at this time.

For working together for public purpose such as making a road from field to the main road, some farmers who are busy with off-farm job usually hired his neighbors to substitute them on collective working. The farmer who substitutes the busy farmer is regarded as a representative of the absent member; members of Bugel FG appreciate it as a form of participation.

The latest activity is collective chili marketing. The collective chili marketing activity begins in May or June and goes through October or November. During the period of collective marketing, every night the Bugel FG board is on standby to administer the chili collection from members and chili selling for the traders. The Bugel FG leaders and subordinate board members that are responsible for managing the collective marketing activities are paid by the members' contributions, as mentioned on Chapter 2.

3.4.1.2. The Garongan FG

The farmer group in Garongan is known as *Bangun Karyo*, which means “work hard”, and was founded in March 3, 1985. It includes the territory of the Garongan village and consists of four RTs. In the Garongan village, the main function of the RT is to support the village government tasks while an additional function involves supporting the farmer group tasks. The RT head is given an extended span of control from the Garongan FG leaders in order to disseminate the information and organize the members.

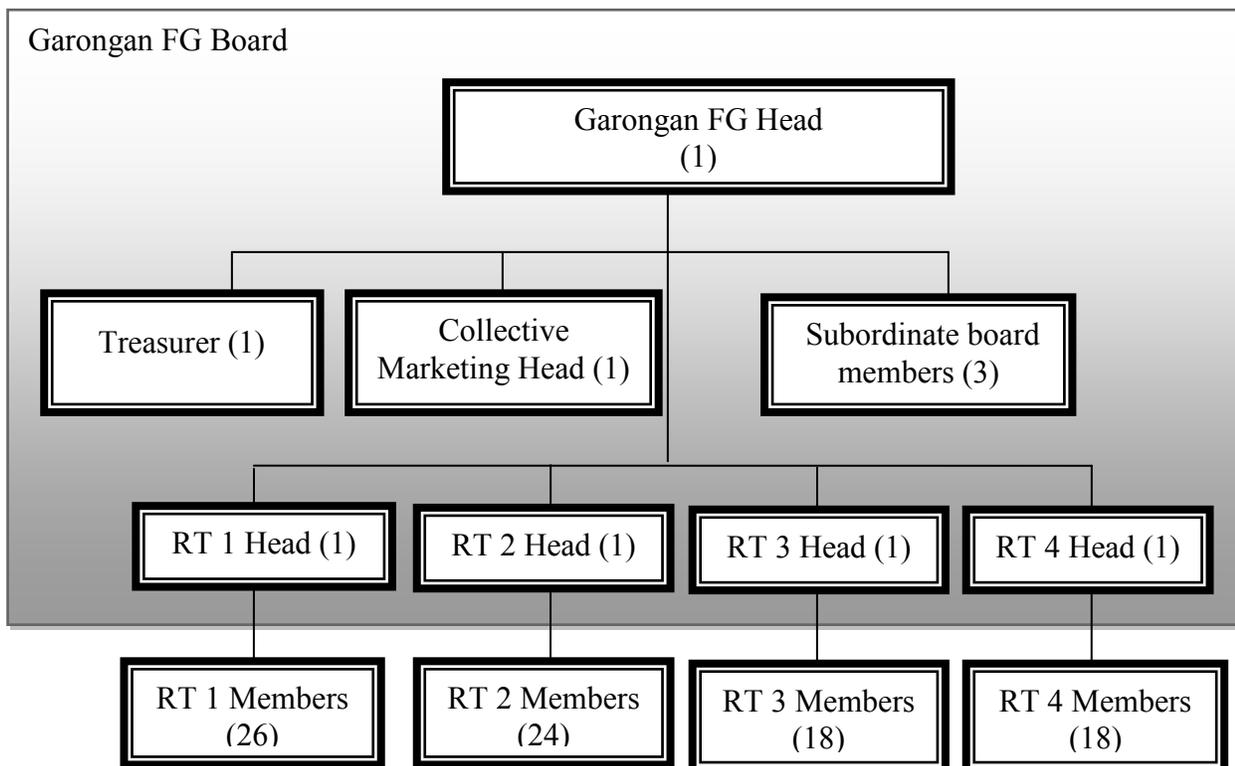


Figure 3.3 The Garongan FG Board

The first head of the Garongan FG led from 1985 to 1990. He was elected because he was an elder in the society, but in 1990, he declined the nomination, because he realized that an FG head

should be able to communicate with outsiders such as government officers so that the leader can develop the farmer group to achieve better economic conditions for its members. At that time, the member who had served as secretary from 1985 to 1990 was elected as the new FG head and in 2010 he was elected for his fifth term. Recently the Garongan FG recognizes that the head should be changed. In 2015, they are going to change the head for regeneration and sustainability purpose. The board of the Garongan FG consists of both old farmers, like the FG head, as well as young farmers. Currently the treasurer is 27 years old, and the collective marketing head is 34 years old. The demographic data of Garongan FG board can be seen on Table 3.2.

Table 3.2 Demographic data of Garongan FG Board

Garongan FG Board	Age (year)	Educ (year)	Land Holding (ha)	Income IDR (000)			Total
				Agric. Income (Chili Income)	Off-farm	Remittance	
FG leaders (3)	39	11	0.62	35,561	-	6,000	37,561
Subordinate board members (1)	38	11	0.49	23,695	1,800	-	23,245
RT Heads (4)	44.25	12	0.56	30,894	18,000	-	35,394
Average of 60 HHs	43.09	9	0.49	22,138	36,851*	3,340**	24,436

Two of subordinate board members are not respondent of income calculation

* only HHs who engaged in off-farm job

** only HHs who received remittance

Source: Field Survey, 2012

The present head of Garongan FG only graduated from junior high school, because his family did not possess an irrigated paddy field and they could not send him to high school. He leads Garongan FG, and is helped by one treasurer, one collective marketing head, three subordinate board members and four RT heads (RT 1, RT 2, RT 3 and RT 4). Subordinate board members are person in charge of collective marketing, and they coordinate with the other members as laborers

during the event. The subordinate board members are not in charge on the decision making, so only the FG head, treasurer, and CM head are considered as FG leaders.

Residents of Garongan Village who want to cultivate chili on coastal sandy land have to register at Garongan FG. He or she will be a member of sub-group on his/her RT territory and automatically become a member of Garongan FG. Each member are required to participate in collective activities such as working together for public purpose, attending the group meeting, obeying the rules of chili planting duration, selling the chili product at least 80% of total product and working at collective marketing events. Social punishment such as ostracism will be endured by a farmer who is absent from collective actions. The farmer who breaks the rules of chili planting duration will get sanction from the group. On the other hand, Garongan FG should facilitate all members equally.

Communication takes place among Garongan FG leaders and members at routine meetings every 35 days. Furthermore, in order to disseminate information quickly, Garongan FG leaders delegate RT heads to circulate news to all members. Each RT head has the responsibility of delivering information from the farmer group to the RT members through meetings and interpersonal communication.

Collective marketing is led by the collective marketing head. However, all members are scheduled on shifts and expected to contribute to the activities, which consist of scaling, packaging and placing the chilies on the truck. On the event of collective marketing, approximately 30 members will take turns in working in the collective marketing activities. These persons are paid some amount of money as a fee. The fee depends on the amount of collected chili products from members, which was previously mentioned in Chapter 2.

3.4.2. Social Network Structure

Social network structure quantifies the pattern of interaction and relationship among individuals in a social group or community. Network structure and the individual's position in this system have an important effect on social dynamics and group function.

The discussion of social network structure begins with the socio-centered network organization. Through this socio-centered network, the way in which individuals engage with each other is apparent. The social network structure can also be observed through identifying the position of members toward the focal person in the network, which is known as an ego-centered network. In this study, ego-centered network is observed by considering the key person in RTs and FG.

3.4.2.1. Socio-centered network in the Bugel FG

The socio-centered network of the Bugel FG is depicted in Figure 3.4, which portrays the relationship among members.

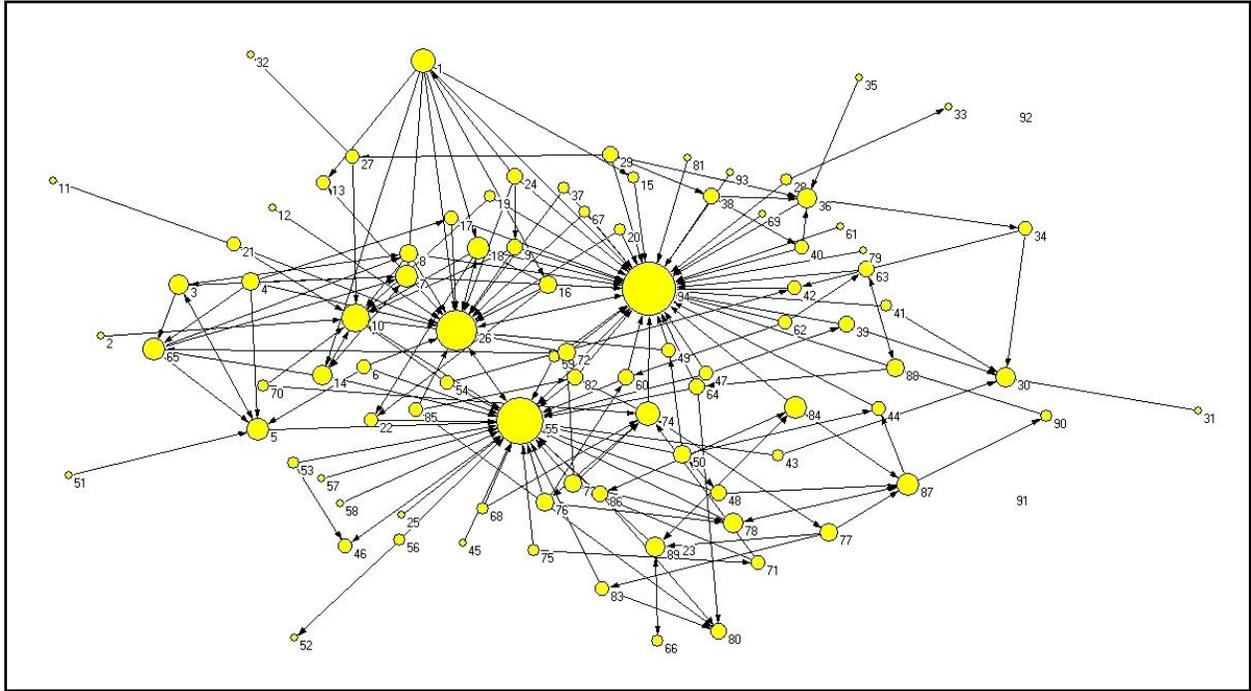


Figure 3.4 Sociogram of Bugel FG's activities
Source: Field Survey, 2013

Figure 3.4 illustrates the relationship among the 94 members in the Bugel FG. In this sociogram, nodes are represented by circles so each member is represented by a circle. Lines connect two circles with the arc (direct line) in the sociogram. Sending an arc represents an outgoing arc (out-degree) or activity asking for help, and receiving an arc indicates an input arc (in-degree) or activity requested from other members. Figure 3.4 shows that all nodes in the sociogram are not completely connected with each other. Some nodes are only connected with the particular nodes such as node number 26, 55 and 94. The larger circles represent the higher all-degree of the

node. There are three nodes which do not have the sign of circle, because they do not send or receive any arc from other nodes in the network. These three nodes are called –isolated nodes.”

Table 3.3 Characteristics of the Socio-centered network in the Bugel FG

Description	Bugel FG
Size (number of nodes)	94
Number of ties	205
Number of non-reciprocal ties	165
Number of reciprocal ties	40
Number of cliques	1
Network density	0.02
Average in-degree	2.13
Average out-degree	2.19
Average all-degree	4.32

Source: Field Survey, 2013

Table 3.3 shows that 94 nodes produced only 205 lines, out of a possible maximum of 8,742 lines. Among the 205 lines which are tied in the network, only 40 ties are reciprocally connected. Only one clique appears in the Bugel FG’s network, making it obvious that asymmetric (non-reciprocal) ties are dominant. The density of the Bugel FG network is 2% which can be categorized as a low density.

The higher degree produces a denser network because nodes yield more ties. The average in-degree of the Bugel network population is low, only 2.13, while the average out-degree is only 2.19. This means, on average, that every member in the Bugel FG connects with two members among all the members in the network.

Table 3.4 Degree and the frequency of nodes in the Bugel FG's Socio-centered Network

Rank No.	All-Degree	Frequency of Node	Average In-degree	Average Out-degree
1	43	1	41	2
2	34	1	31	3
3	25	1	20	5
4	9	2	3	6
5	8	3	4.33	3.67
6	7	3	3.67	3.33
7	6	8	3	3
8	5	8	1.5	3.5
9	4	13	1.46	2.54
10	3	17	0.94	2.06
11	2	16	0.19	1.81
12	1	18	0.22	0.78
13	0	3	0	0

Source: Field Survey, 2013

Table 3.4 shows the distribution of all-degree and the frequency of nodes that reveal the allocation of nodes. Three nodes have an exceptionally high in-degree (41, 31 and 20). These three nodes can be regarded as leaders in Bugel FG socio-centered network, because the in-coming arc (in-degree) is much higher than the out-going arc (out-degree).

In the case of rank numbers five and six, the in-degree is higher than the out-degree, but these are exceptional cases. Observing the distribution of the nodes that belong to rank number five, there is one node that received five in-degrees, and it is probably because he is a tractor contractor for land preparation. There is one node which belongs to rank number six, which also received five in-degrees. We cannot find any particular reason why he received many in-degrees; but it can be regarded as an exceptional node. In term of ranks five and six, excluding such exceptional cases, the in-degree is the same or lower rather than the out-degree, similar to the cases of rank numbers seven

and below. The nodes, which are positioned in the rank numbers 4 to 12, can be categorized as followers because their in-degree is smaller than the out-degree.

In order to understand the distribution equality of all-degrees on entire network, the Gini coefficient is calculated. The Gini index of all-degree frequencies of distribution is 0.54, which means that the distribution of all-degree has a high inequality unlike the Garongan FG (0.27), as will be discussed later. The Lorenz Curve of Bugel FG’s all-degree can be seen in Figure 3.5.

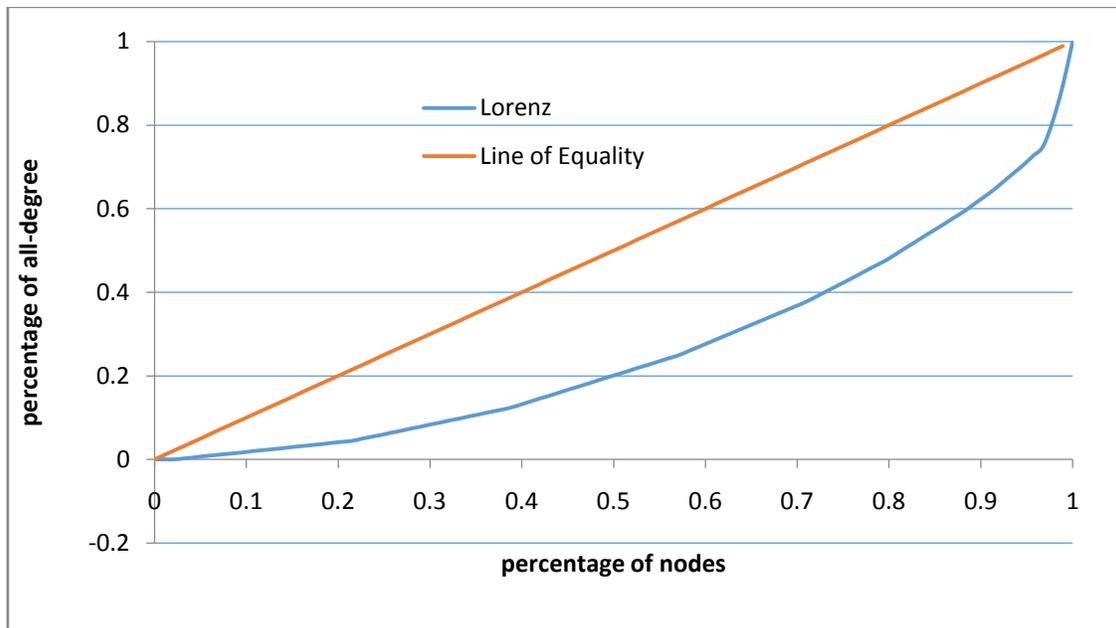


Figure 3.5. Lorenz curve of Bugel FG’s all-degree
Source: Field Survey, 2013

As mentioned previously, rank numbers one, two, and three can be regarded as leaders. It seems that the followers of Bugel FG socio-centered network are sending the arc (out-degree) to them. The pattern of their activities of sending the arc, which are centralized only into three nodes, affects the formation of ties. As shown in Table 3.3 only 40 out of 205 ties are reciprocal. It seems that non-reciprocal ties are mostly formed between leaders and followers.

Judging from the fact that Bugel FG's network consists of non-reciprocal ties and that follower nodes are going only into three nodes, the network can be categorized as an advice network. Relationships in advice networks tend to be asymmetric in which members are likely to seek advice from knowledgeable persons. As a matter of fact, the nodes of higher ranks are FG leaders (FG head, treasurer and secretary). The position of these three focal persons will be explained in the ego-centered network in the next section of this chapter.

The ties of all nodes occur on non-reciprocal ties, which have been triggered by some conditions, such as off-farm activities, absence of regular meetings and absence of customary groups of labor exchange (*sambatan*). First, with regard to off-farm activities, the members of Bugel FG not only work inside the village but also on the outside (in Yogyakarta city); therefore, they commute approximately 35 km by motorcycle. The opportunity to get closer among them is limited. However, they need to get important information of Bugel FG's activity so they prefer to connect directly to the knowledgeable person. Second, the absence of customary groups of exchange labor has created a scarcity of reciprocal ties, because they are not interdependent in farming. They conduct chili farming individually, hiring labor to help them in activities. Third, the absence of routine meetings has pushed members to maintain an individual relationship with only selected person. In the Bugel FG socio-centered network, the majority of nodes seem connected with three focal persons (FG leaders). The one event that could make them connected is collective chili marketing at which members handover their product while FG board members standby to record members' chili production. At that time, the members can get important information from FG leaders.

Members of Bugel FG seem not to be connected on another for working collectively but instead of that they build a mechanism to solve problem of their absence. They agree to pay some

contribution that can be used for community purpose. They also show their respect to the subordinate board members who work as laborers on collective marketing events by donating 50 IDR/kg chili in which they sell on collective marketing. Even though the relationship among members is not strong but an advice network is functioning to deliver information to the members. All members know adequate person from whom they can seek reliable information.

3.4.2.2. Socio-centered Network in the Garongan FG

The structure of Garongan FG socio-centered network is displayed in sociogram (Figure 3.6) in which a dense network appears. Fully connected or semi-connected lines between nodes can be observed on the sociogram.

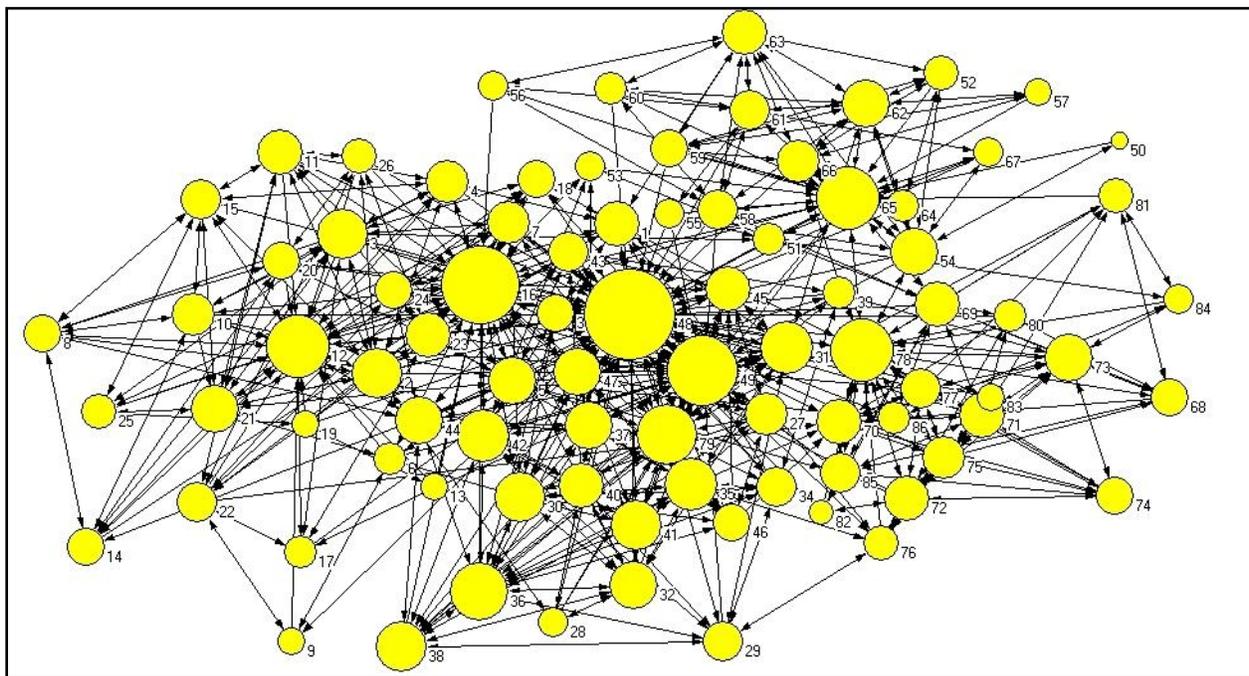


Figure 3.6 Sociogram of Garongan FG's activities
Source: Field Survey, 2013

The socio-centered network of Garongan FG is formed by 86 members or nodes. The connected lines are larger than connected lines of Bugel FG's. In addition, the sociogram of Bugel FG is centralized only on three bigger circles of nodes, which symbolizes the higher all-degree while in the sociogram of Garongan FG there are some large circles which are placed throughout the entire network. This means that the relationships among members are not centralized only to certain members.

Table 3.5 shows that Garongan FG consists of 818 connected lines of 7,310 maximum lines while the connected lines of Bugel FG are 205 lines of 8,742 maximum lines (Table 3.1). The network density of Bugel FG is only 2%, whereas the network density of Garongan FG is 11%. Garongan FG members are connected with more members (9-10 nodes of out-degree and in-degree) than Bugel FG members (2 nodes for out-degree and in-degree). Generally, the higher the degree means the more cohesive the network; the Garongan FG socio-centered network is more cohesive than Bugel FGs.

In addition, in the Garongan FG the reciprocal ties are dominant; 81.17% from a total of 818 ties, while in the Bugel FG the reciprocal ties are only 19.51% of a total of 205 ties. Moreover, the relations of Garongan FG members produce 329 cliques (complete connected lines) while in the Bugel FG socio-centered network only one clique is produced. Considering the reciprocal ties and number of cliques, the network pattern of Garongan FG socio-centered network tends to be interlocking.

Table 3.5 Characteristics of the socio-centered network in the Garongan FG

Description	Garongan FG
Size (number of nodes)	86
Number of ties	818
Number of non-reciprocal ties	154
Number of reciprocal ties	664
Number of Clique	329
Density	0.11
Average in-degree	9.48
Average out-degree	9.51
Average all-degree	18.99

Source: Field Survey, 2013

The in-degree, out-degree and all-degree of each node in the Garongan FG network are displayed in Table 3.4. Of 86 nodes, there are 28 varieties of all-degree; the highest all-degree is 82 to which one node belongs, and the lowest all-degree is 3 to which one node belongs. The Gini coefficient of all-degree distribution is 0.27 which means that inequality of distribution is lower than in the case of the Bugel FG. This can also be observed by the Lorenz Curve of all-degree distribution (Figure 3.7).

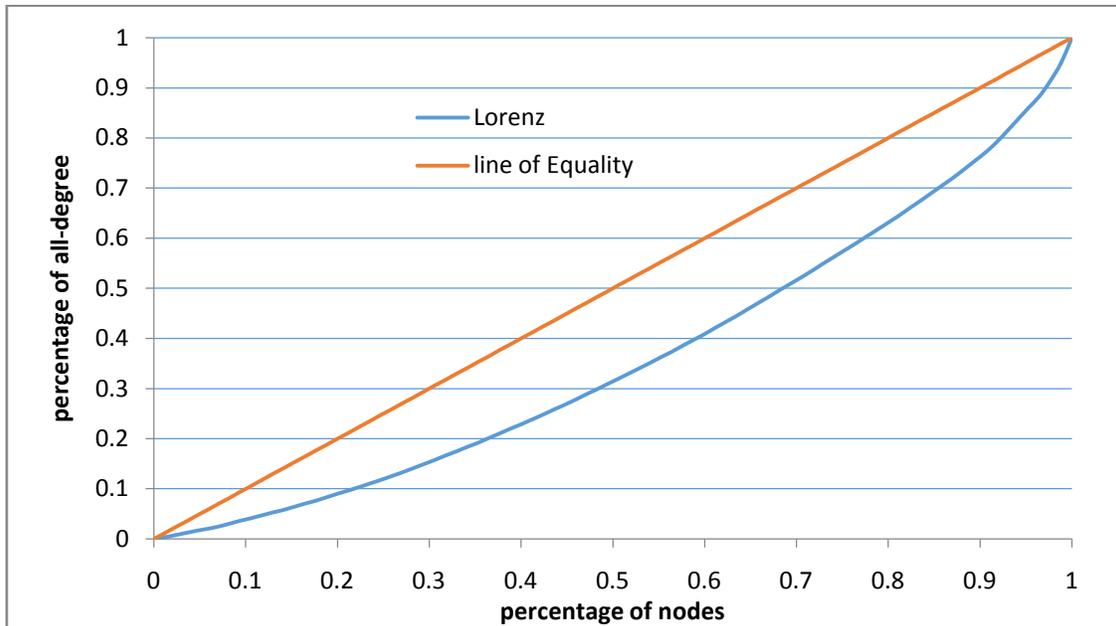


Figure 3.7 Lorenz curve of the Garongan FG's all-degree
 Source: Field Survey, 2013

Observing the data in Table 3.6, in the case of rank numbers one through five, in which seven nodes belong, the total in-degree is higher rather than the out-degree. On the contrary, in the case of rank numbers 6 to 28, the out-degree is higher rather than the in-degree. It seems that the seven highest all-degrees are leaders' node while the remaining 79 nodes are followers of the Garongan FG socio-centered network. As a matter of fact, the seven nodes coincide with the FG leaders, the FG Head, CM Head, treasurer, and four RT Heads in the Garongan FG.

Table 3.6 Degree and the frequency of nodes in the Garongan FG's Socio-centered Network

Rank No	All-Degree	Frequency of Nodes	Average In-degree	Average Out-degree
1	82	1	66	16
2	59	1	38	21
3	49	1	34	15
4	38	3	24.67	13.33
5	36	1	22	14
6	33	1	16	17
7	28	1	13	15
8	27	2	12.50	14.50
9	25	3	11	13
10	24	2	11.50	12.50
11	23	2	11	12
12	22	7	10	12
13	21	5	10.20	10.80
14	20	4	9	11
15	19	3	8.33	10.67
16	18	4	8	10
17	17	6	7.83	9.17
18	16	3	7	9
19	15	5	7	8
20	14	5	6.20	7.80
21	13	3	5.67	7.33
22	2	2	5	7
23	11	5	4.80	6.20
24	10	3	4.33	5.67
25	9	6	3.67	5.33
26	7	5	2.40	4.60
27	6	1	2	4
28	3	1	1	2

Source: Field Survey, 2013

Considering the structure of in-degree and out-degree of actors in Garongan FG socio-centered network, it seems that similar structures appear with the Bugel FG; the higher rank has higher in-degree than out-degree, while the lower rank has higher out-degree than in-degree. Unlike the case of Bugel FG in which the higher the rank, the lower the out-degree, in the Garongan FG,

the higher the rank, the higher the out-degree. This implies that even the leaders who are in the higher ranks receive incoming ties from leaders and followers, they are also sending outgoing ties for reciprocity.

In the Garongan FG, the mutual action among members has been triggered by the existence of RT meetings, FG meetings and *sambatan*. RT meetings are held on the basis of the RT territory. Every RT has its own meeting, which is usually held every 35 days. The existence of RT meetings provides an opportunity for RT members to become connected with each other. Furthermore, in the case of the FG meeting, which is also held every 35 days, it provides an opportunity for all Garongan FG members to become connected with the FG board. Meanwhile, the labor exchange produces the reciprocal ties among members, because every member should provide the reciprocal exchange of harvesting labor.

3.4.2.3 Ego-centered Network in the Bugel FG

3.4.2.3.1. Ego-centered Network of RT Heads in the Bugel FG

The ego-centered network is a local network that is concerned about the position of one particular person (node) as an ego in the network. The neighbors of the ego are the nodes that are placed one step from the ego, or usually referred to as a distance of one. The ego-centered network consists of a focal person (ego), the neighbors, other members who have distance of 2 or more with the ego and the ties among them. In order to know the position of ego, the distance between the ego and members should be considered.

To determine the importance of the roles of the RT head, the calculation of distance between the RT heads and both RT members and FG members is conducted.

Table 3.7 Distance between members and RT Heads in the Bugel FG

Distance	RT 1 Head		RT 2 Head		RT 3 Head		RT 4 Head	
	FG	RT 1	FG	RT 2	FG	RT 3	FG	RT 4
Ego (D=0)	1	1	1	1	1	1	1	1
Distance of 1	5	3	5	5	2	2	8	8
Distance of 2	51	17	5	2	29	9	46	19
Distance of 3	31	3	58	4	52	3	31	5
Distance of 4	3	0	20	1	7	0	5	0
Distance of 5	0	0	2	1	0	0	0	0
Unreachable	3	2	3	3	3	1	3	2
Total Members	94	26	94	17	94	16	94	35

Source: Field Survey, 2013

Observing the distance to RT heads in Bugel FG, members tend to be closer to their own RT heads. Table 3.7 shows that most of the members, who have a distance of one with the RT head either at the RT or FG level, are the RT members. However, the numbers of members who are neighbors (distance of one) of RT heads are a few. Table 3.5 shows that neighbors of RT 1 head is only 5 of 94 in the FG level while 3 of 26 in the RT level. The situations of RT 2 head, RT 3 head and RT 4 head are similar with RT 1 head.

It can be concluded that RT heads do not have a particular role in the Bugel FG activities, because members of each RT are unlikely to go to their RT head when they are seeking information regarding farmer groups. The function of RT heads in the Bugel community is independent from the role of the farmer group.

3.4.2.3.2. Ego-centered Network of Bugel FG Leaders

The Bugel FG board consists of an FG head, secretary, treasurer, collective marketing head, and three subordinate members. As mentioned previously, subordinate members are laborers in

collective marketing activities, so they do not take part in decision making. Only three main persons on the FG board (FG head, secretary and treasurer) are regarded as FG leaders.

Table 3.8 shows that as the individual leader, the Bugel FG head has 41 neighbors, the treasurer has 31 neighbors, and the secretary has 20 neighbors. Although the FG head has a large number of neighbors, it is actually only 44% (41 of 94) of the total members. However, in the Bugel FG, the head does not execute the leader's task alone; there are two other persons (secretary and treasurer) that support his tasks in a supplemental function. In this sense, their role should be taken into consideration as far as leadership is concerned. The number of neighbors of at least one of the FG leaders is provided in the fourth column in Table 3.8.

They have 68 neighbors, which it means that 74.72% of the total members are directly connected to at least one FG leader. When individual members cannot be connected directly to the Bugel FG head, they will seek a way to be connected with the treasurer or secretary.

Table 3.8 Distance between members and leaders in the Bugel FG

Distance	FG Head (94)	Treasurer (55)	Secretary (26)	FG Leaders
Ego (leaders)	1	1	1	3
Distance of 1	41	31	20	68
Distance of 2	42	52	57	18
Distance of 3	7	7	12	2
Distance of 4	0	0	1	0
Unreachable	3	3	3	3
Total Members	94	94	94	94

Source: Field Survey, 2013

FG leaders' ego-centered network produced 151 ties while only 24 ties (16%) are reciprocal. The pattern of Bugel FG leaders' ego-centered network is radial. These radial patterns appear when the asymmetric ties are dominant. The nodes have relations with one or two particular nodes, which are usually knowledgeable person.

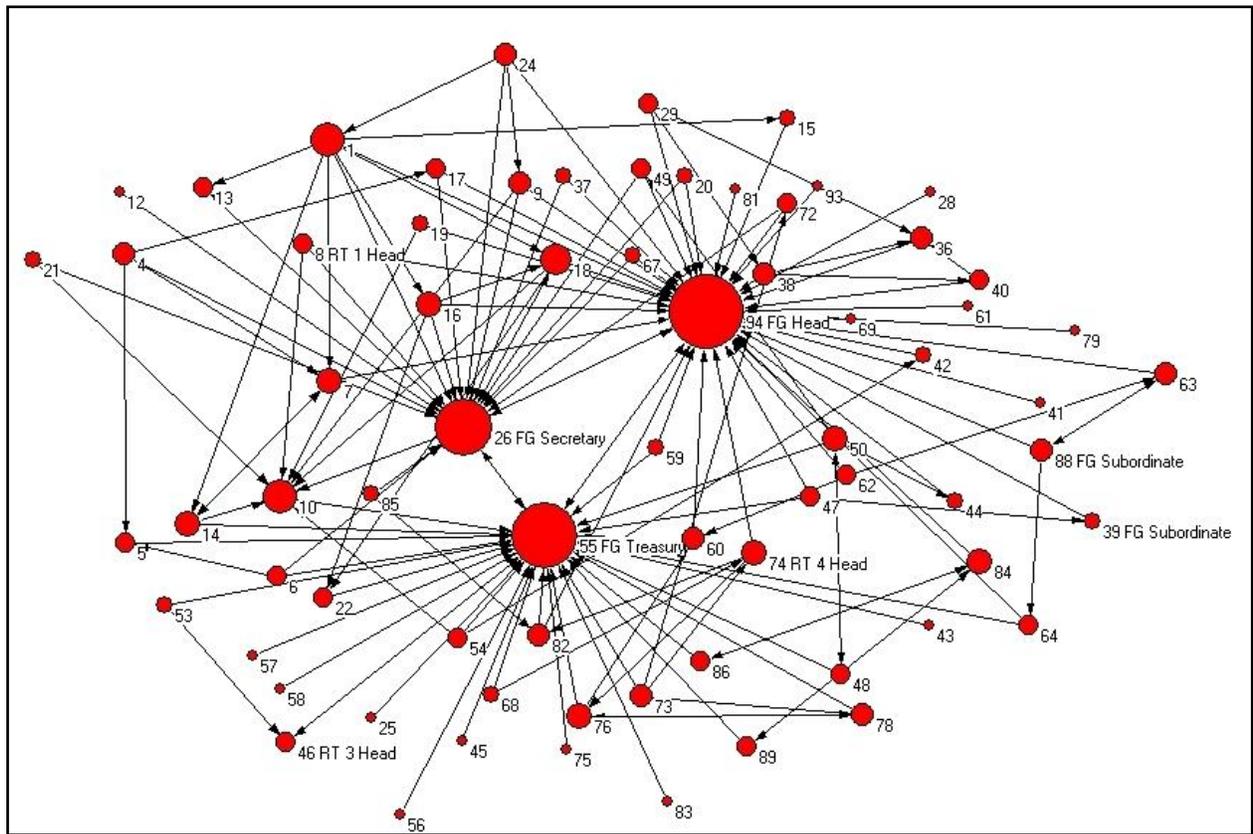


Figure 3.8 Sociogram of Bugel FG Leaders ego-centered network
Source: Field Survey, 2013

Figure 3.8 reveals that a genuine clique is only formed by the reciprocal ties of FG leaders (nodes 26, 55 and 94). It can be concluded that FG leaders have an intensive communication among themselves. They always coordinate so that the information passed on from any of them is equally reliable. Non-reciprocal ties between FG leaders and members are dominant, but as mentioned before, 75% of members can access directly at least with one of the FG leaders. In this way, FG

leaders can share the same information and neighbors of the FG leaders can receive important information equally.

3.4.2.4. Ego-centered Network in the Garongan FG

3.4.2.4.1. Ego-centered Network of RT Heads in the Garongan FG

In the Garongan FG, RT heads are included on the FG board. Table 3.9 provides numbers of nodes which have a distance of one, two, or three from each RT Head. Unlike the Bugel FG ego-centered network case, nodes which have a distance of four or more does not exist in the Garongan FG ego-centered network.

Table 3.9 Distance between members and RT Heads in the Garongan FG

Distance	RT 1 Head		RT 2 Head		RT 3 Head		RT 4 Head	
	FG	RT	FG	RT	FG	RT	FG	RT
Ego (RT Head)	1	1	1	1	1	1	1	1
Distance of 1	28	24	23	19	23	16	24	17
Distance of 2	54	1	61	4	62	1	60	0
Distance of 3	3	0	1	0	0	0	1	0
Total members	86	26	86	24	86	18	86	18

Source: Field Survey, 2013

Table 3.9 shows that most RT members are neighbors of the RT heads. It can be concluded that RT heads are focal person in the RT territory. However, the RT head functions only in his territory; the functioning of FG leaders will be mentioned later.

Furthermore, in the RT heads ego-centered network, as far as the ties between RT heads and distance of 1 are concerned, the reciprocal ties are dominant. The percentages of reciprocal ties among the ties with each RT members are as follows: RT 1, 82%; RT 2, 80%; RT 3, 92%; and RT

4,82%. It means, the cliques are developed in each RT territory. The number of cliques on each RT head ego-centered network is as follows, RT 1 head, 47; RT 2 head, 49; RT 3 head, 45 and RT 4 head, 50. It shows that the cliques are developed in each RT territory.

Network can be regarded as friendship network when it is dominated by reciprocal ties and contains many cliques. Members are not only concerned about seeking the information of FG activities from the important nodes (RT heads), but also conducting reciprocal activities on chili farming together with members of RT.

The reciprocal ties are formed by some activities in the RT territory, such as RT meetings and *sambatan*. The RT head has the task of delivering and controlling the flow of the Garongan FG's information. The RT's routine meetings are a place where the RT head can connect with the RT members. Additionally, the activity of *sambatan* which is managed under the RT territory, establishes reciprocal ties among RT members.

3.4.2.4.2. Ego-centered Network of the Garongan FG Leaders

The Garongan FG board consists of the FG head, treasurer, collective marketing (CM) head and three subordinate members. As mentioned before, subordinate board members are not in charge on the decision making so only FG head, treasurer and CM head are considered as FG leaders.

Table 3.10 reveals the distance between members and the FG head, treasurer, and CM head. Figures in the fourth column (FG leaders) are counted by the same process as Table 3.8.

Table 3.10 Distance between members and leaders in the Garongan FG

Distance	FG Head (48)	Treasurer (49)	CM Head (16)	FG Leaders
Ego	1	1	1	3
Distance of 1	66	37	38	76
Distance of 2	19	48	47	7
Total Members	86	86	86	86

Source: Field Survey, 2013

Table 3.10 shows that 76 members are neighbors of at least one FG leader. If one person cannot reach the FG head, he will try to connect directly to the other leaders. As a result, 91.56% of members are neighbors of FG leaders. In the RT level, members tend to seek information on the RT heads as a nearest reliable person, whereas at the FG level, they can easily connect with the FG leaders. Members can also connect with FG leaders directly in the periodic FG meetings. In addition, each FG leader is also a member of a certain RT so that the ties between the members and FG leaders tend to be smoothly established.

However, there are seven nodes which have a distance of two to the FG leaders, and they live in RT 1 (one node), RT 3 (one node) and RT 4 (five nodes). Three nodes from RT 4 are sub-intermediate traders in the Garongan village. Their activity of buying chilies from other members creates a social and psychological distance with the FG leaders. They feel inconvenienced to be close with FG leaders because of the rule of minimum percentage of selling (80% of total chili production), as this restricts their business. The other four nodes consist of those who sold less than 80% of their chilies to the collective marketing. Actually, they are relative of the sub-intermediate traders. It seems that the latter four nodes also keep a distance from the FG leaders regarding their attitude of selling. Each of these nodes is neighbors of a certain RT heads. They seek information about farmer group activity not from the FG leaders but from their RT heads.

After removing the nodes with distance of two from the ego, the display of the sociogram of the Garongan FG leaders' ego-centered network, is shown in Figure 3.9.

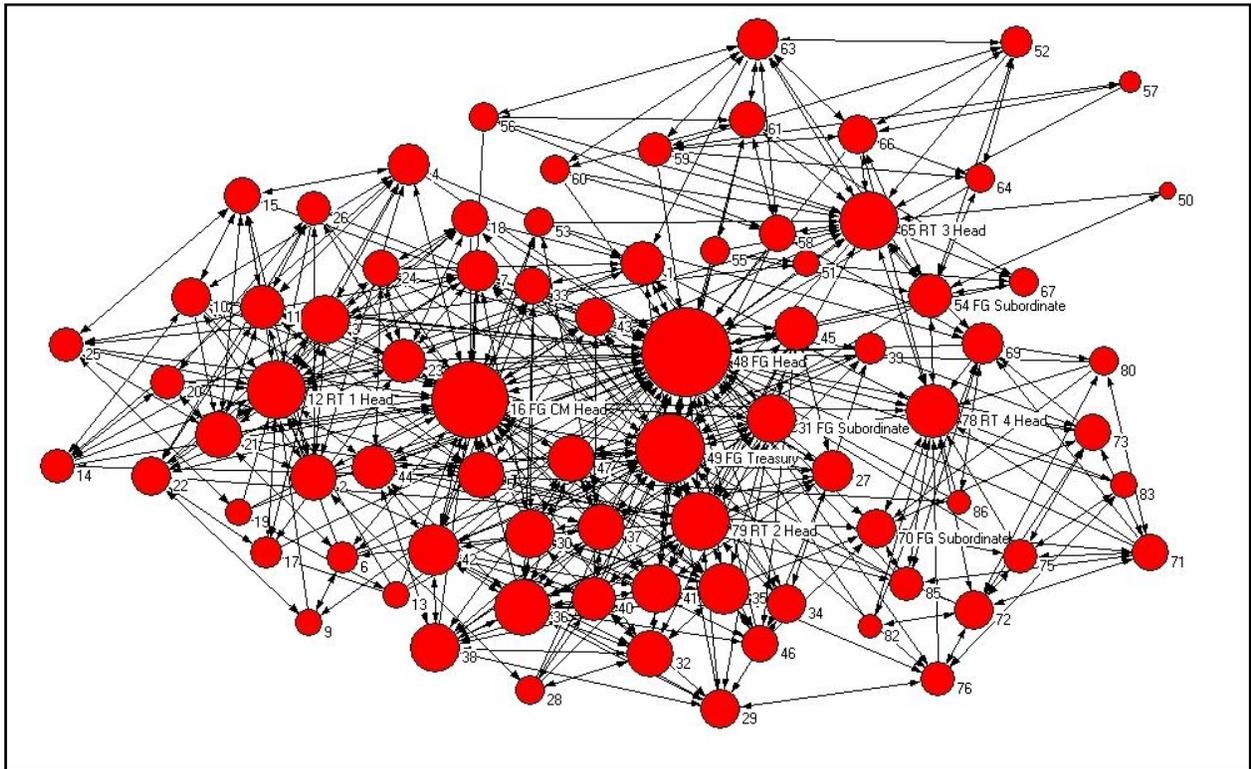


Figure 3.9 Sociogram of Garongan FG Leaders ego-centered network
Source: Field Survey, 2013

Comparing Figure 3.9 with Figure 3.8, it is obvious that the relationship between Garongan leaders and members are bound by an interlocking pattern. Considering the boundaries of the Garongan FG leaders' ego-centered network, the Garongan FG leaders cannot manage the FG without considering the enforceability of consensus.

3.5. Conclusions

The Bugel and the Garongan FGs have been built based on internal-initiated needs. Both of them have been developed on the basis of community. The different patterns among members differentiate the basic approach of each farmer group in order to develop their own farmer groups. The socio-centered network of the Bugel FG is formed by a radial network. Three focal nodes emerge from the Bugel FG socio-centered network. The positions of the three nodes are clarified on the ego-centered network. These persons are the Bugel FG leaders consisting of the FG head, secretary, treasurer, and CM head. These important persons are the key actors who drive the activities of the Bugel FG so that majority of members who seek information are likely to go to these persons. The members utilize the individual relationship with the focal person in order to gain new and important information of Bugel FG activities. On the other hand, the focal person will not reciprocally maintain a relation to the members. The individual relationship between members and leaders can be upheld through the events of collective marketing.

The relationship between the Bugel FG leaders and members is an advice network. This kind of relationship is triggered by the activities of off-farm jobs, which make them busy. Consequently, in the Bugel FG the periodic meeting of farmer group could not exist, and the customary exchange labor (*sambatan*) could not be preserved. The FG leaders are knowledgeable person on farmer group activities. It seems that FG leaders have never exploited their members or taken advantage of their power for their own benefit, so the members can trust them. Bugel FG leaders have been able to promote the group's activities and make the group successful.

Unlike the Bugel FG case, the Garongan FG pattern of networks is interlocked, which is marked by the existence of reciprocal ties and cliques in the network. In the interlocking network,

every member shares norms and information while the activities of the Garongan FG are based on a consensus. The interlocking network allows them to conduct coordinated action.

In the case of Garongan FG, coordination with smaller social groups (RTs) generates a positive impact. RT territory is a baseline for each activity on the Garongan FG and RT heads are also focal person. The ties among RT members have been developed by RTs based activities: RT meetings and customary groups of exchange labors (*sambatan*). Through routine meetings, they can meet periodically while the ties among them can also be established. In addition, Garongan FG leaders are also RT members so that through participation in the RT based activities, they contribute to the higher possibility of becoming connected with FG members at the RT level. In addition, the activity of *sambatan*, which requires the reciprocity of each *sambatan* member, they establish the reciprocal ties among RT members. As a result, RT activities affect the pattern of networks and an interlocking friendship network emerges.

Peer leadership network, which consist of leaders and members with the distance of 1 reflects the organizational structure of Bugel FG and at the same time the pattern of Bugel FG network is advice network. The flow of information is only centralized on the leaders. Even though, the information is centralized only on the leaders and FG do not conduct periodical meeting but Bugel FG can be regarded as organization because they have a board, identified and regular members, and collective activities i.e. collective marketing. On the other hand, the collective leadership network reflects organizational structure of Garongan FG and the pattern of network is friendship network. The interaction of members in the organization is maintained by the existence of periodical meeting, rules and norms.

CHAPTER 4

FACTORS INFLUENCING INDIVIDUAL PERFORMANCE OF CHILI FARMING AND CHILI COLLECTIVE MARKETING OF TWO FARMER GROUPS

4.1. Introduction

In Indonesia, there are more than 300,000 farmer groups (FGs) located in 70,000 villages while the Yogyakarta Special Region had approximately 5,000 FGs as of 2012 (Agriculture Research Center, 2012). FGs were initiated in 1968 to strengthen the bargaining position of farmers. These groups collectively bargained for such facilities as subsidized fertilizer, capital aid from the government, information to share among members, and the receipt of information from extension agents. Since 1997, the government (through Agriculture Minister Decree 273/Kpts/OT.160/4/2007) has broadened the function of the FG as an economic unit to increase their marketing ability. Recently, a few FGs began collective marketing to create marketing chains and develop bargaining power in selling their products.

Since 1985, the farmers surrounded by coastal areas in the Yogyakarta Special Region have been cultivating chilies, initiated by the two villages of Bugel and Garongan. Marginal land, extreme climates, and the need for information forced each of them to create a FG. Through the FG's activities, they could adopt new technology and their chili farming was developed. Thus collective marketing, an invention of the Garongan FG, was implemented for the past ten years and has provided a good price and profit for the members. By utilizing new technology and institutional collective marketing, they created better economic conditions for the poor farmers through high productivity and the high price of chili product.

The FGs were built based on the communities in which they were formed; as a result, social norms and rules are the bases for regulating the attitude and behavior of the members to achieve group goals. All members, as individuals, perform based on the calculated costs and benefits, which include the area's economy and social and psychological concerns. The members adjust their behavior when the group cannot utilize the social network and facilitate economic exchange to provide satisfactory conditions. Farmers can decide to work collectively or individually, based on their own preferences and values, to maximize their economic and social benefits. Social ostracism and sanctions enforce compliance with the social rules; in contrast, the individual members who have power lead the group with authority. As a result, the characteristics of collective action by the FGs differ, depending upon who leads the particular group.

This study investigated two pioneering FGs that successfully collectively marketed. These groups are located in coastal sandy land regions in villages near each other, are increasing chili productivity by using new technology like seed, plastic mulch, and fertilizer, and are developing the collective marketing of chilies by utilizing an auction system. Approximately 90% of Bugel's and 95% of Garongan's total chili product was sold via collective marketing in 2011. Similar percentages of collective marketing are obtained by each group, but the performances for carrying out the collective marketing differ.

The aim of this chapter is to examine the performances of chili farming and chili collective marketing and the relationship between the two. The individual members' background, like household farmer condition and positions of the farmers in the organization, might reflect the performance of chili farming and chili collective marketing and therefore must be considered.

4.2. Literature Review

In Indonesia, chilies are a priority crop, produced mostly by smallholder farmers as an important cash crop. The chilies are sold primarily in domestic markets to wholesalers, retail fresh markets, food processors, and supermarkets; traditional market channels (wholesaler and retailer) dominate approximately 95% of chili marketing in Indonesia (White, Morey, Natawidjaja, and Morgan, 2007). The wholesale trader sets chili prices based on daily demand and chili supply in central markets, and the farmers cannot do anything to affect the absolute chili price when there is an oversupply. Ironically, the price for the intermediate trader will be much lower (Fafchamps & Vargas-Hill, 2005); therefore, developing a good relationship with the wholesale traders provides a good opportunity for the farmers, because they can receive correct price information, price transparency, and a good price/quality ratio (Sahara, Gyau, Stringer, and Umberger, 2013).

Today, market access plays an important role in eradicating poverty in rural areas. When rural producers are able to organize themselves, gain access to up-to-date market information, and travel better rural roads that help reduce transaction costs, the market becomes a powerful ally in the effort to end poverty (IFAD, 2001). Producer groups can ease long marketing chains by connecting smallholder farmers directly with markets, bypassing all types of market intermediaries (Markelova and Meinzen-Dick, 2009). By establishing a network with the wholesale traders, a FG in Indonesia can help shorten the chili marketing chain and strengthen the position of the group.

According to Wahyuni (2003), most of the FGs in Indonesia help members determine and supply the inputs for producing their products, channeling capital loans, and processing the output. The farmers who are not part of a FG face difficulty in gaining input subsidies or capital funds. Fox

(1979) emphasized that a group of farmers whose work involves marketing activities improves the economic conditions.

FGs are a social institution that influences people and helps determine the social consensus and values imposed upon it by society (Gordon, 1980). Individual members are under consensus forces to conform and behave by the institutional norms; thus groups shape the patterns of human interaction and the results that individuals achieve (Pradhan, 1999). In contrast, Popkin (1980) determined that norms are malleable, renegotiated, and influenced by power and strategic interactions among individuals. In the cases of inconsistencies or conflicts among the norms, farmers tend to choose their own private interests or welfare. The farmers consider contributing to the group by calculating the costs and benefits. Popkin (1980) argued that individual farmers are not only concerned with material and financial income, but also with the rationale for evaluating the possible outcomes associated with their preferences and values.

A farmer can be regarded as an individual who takes part in the FG in order to enhance the performance of the group. As an individual member, the farmer can also be regarded as human capital. However, considering the individual as a member of the FG, social capital can be useful by three mechanisms: sharing information among members, reducing opportunistic behavior, and facilitating collective decision making (Grootaert, 1997 and Collier, 1988).

The above-mentioned literature, and several previous articles, emphasize that there is a dichotomy of explanations for the collective behaviors of farmers, the moral economy, and rational farmer theories; however, this study should combine both theories to explain the individual factors and performance of collective actions that generate the different forms of collective marketing in the two neighboring FGs, the Bugel FG and the Garongan FG. Supriyanto et al. (2012) found that community capital, including physical, social, human, economic, and political capital, contributed

to the successful collective actions of the two neighboring FGs, but the authors disregarded the differences in the management of the collective marketing.

Some researchers have determined the factors that influence the activities of collective marketing. A study regarding participation in collective yam marketing in Nigeria found that participation in collective marketing was influenced by the distance to the nearest market, household size, farm size, yam sale revenue, access to the market, access to credit facilities, farm labor hiring, transportation costs, and the membership of the cooperatives (Cecillia, Victor, Blaise, Omobowahe, and Abayomi, 2009). Lapar, Holloway, and Ehui (2003) further indicated that education and alternative employment opportunities significantly affected collective marketing participation.

In addition, Markelova and Meinzen-Dick (2009) summarized three important factors for a FG to succeed in collective marketing: the characteristics of the product and market, with the characteristics of the agricultural product determining the different ways to market it; the characteristics of the group can be an enabling factor for the success of collective marketing, such as a group that has the same socioeconomic status, shared norms and values, and a knowledgeable leader trusted by the members; and group arrangements or rules are needed to develop accountability and enforcement mechanisms. There are three main categories of product: staples, perishables, and cash crops. Staples are relatively easy to store and transport, but there are no strong incentives to manage their collective marketing. Perishables are high-risk and require good storage and transportation, so the individual farmer will probably not be able to handle it alone due to a lack of capital and knowledge, thus providing an opportunity for collective marketing. Cash crops require further processing, so the individual farmer has no opportunity to sell the product directly to the market.

With the review of this literature in mind, this study addresses to what extent the following factors influence chili farming productivity and chili collective marketing: 1) characteristics of household such as age, educational level, and number of household members; 2) economic conditions such as land holding, off-farm jobs, and remittance; 3) the input of producer good factors, such as utilizing non-subsidized fertilizer, wage laborers, seed from the groups, and plastic mulch; 4) the role of leadership, specifically the distance to RT heads and distance to FG leaders; and 5) the position of the member in the organization: number of in-degree and number of out-degree,.

4.3. Material and Methods

The data were collected in 2011 and 2013. A field survey was conducted to obtain primary data from the Bugel and Garongan FGs in the Yogyakarta Special Region. Sixty heads of households, from a total of 94 members, were selected from the Bugel FG and 60 household farmers, from a total of 86 members, were selected from the Garongan FG for interviews. A total of 120 members were interviewed from the two FGs, chosen by stratifying the cultivated land area and random sampling. The interviews were conducted via questionnaire.

The member individual performance of chili farming was measured by the usage inputs on chili farming, like the plastic mulch (Y1), non-subsidized fertilizer (Y2), seed from the FG (Y3), and wage labor (Y4). The members' individual performances of collective marketing were measured by the proportion of chilies sold through collective marketing (Y5). There are ten independent variables: age (X1), education (X2), number of household members (X3), land holding

(X4), remittance received (X5), engagement in an off-farm job (X6), distance to the RT heads (X7), distance from the FG leaders (X8), number of in-degree (X9), and number of out-degree (X10).

To examine the influence of independent variables towards the individual's performance of chili farming, Probit regression was used because the dependent variables are binary dummy. To examine the influence of independent variables towards the individual performance of chili collective marketing, Tobit regression was used because the dependent variable is truncated at selling 100% of the chilies via collective marketing. To examine the relationship between the individual's performance of chili farming and the performance of chili collective marketing, the crosstabs analysis and Pearson chi-square test were conducted.

4.4. Results and Discussion

Table 4.1 Descriptive statistics of explanatory and dependent variable for the Bugel and Garongan FGs

Variable	N	Minimum		Maximum		Mean		Std. Deviation	
		Bugel	Garongan	Bugel	Garongan	Bugel	Garongan	Bugel	Garongan
Age	60	29	24	62	74	42.21	43.09	7.58	10.47
Education	60	6	0	17	12	10.68	9.27	2.47	2.76
No. of household members	60	1	1	7	9	3.44	3.78	1.50	1.73
Land holdings	60	0.03	0.05	1.54	1.49	0.46	0.49	0.33	0.35
Have an off-farm job*	60	0	0	1	1	0.34	0.25	0.48	0.44
Receiving remittance*	60	0	0	1	1	0.25	0.11	0.44	0.31
Using plastic mulch*	60	0	0	1	1	0.46	0.18	0.5	0.39
Using seed from the FG*	60	0	0	1	1	0.66	0.79	0.48	0.41
Using non-subsidized Fertilizer*	60	0	0	1	1	0.57	0.68	0.5	0.47
Using wage laborers*	60	1	0	1	1	1	0.50	1	0.50
Distance to RT heads	60	0	0	3	2	1.86	1.11	0.52	0.31
Distance to FG leaders	60	0	0	2	2	1.13	0.98	0.43	0.30
In-degree	60	0	2	41	66	2.61	11.12	6.72	10.38
Out-degree	60	1	4	4	21	2.69	10.45	1.01	3.64
Proportion of collective selling	60	0	67	100	100	90.38	95	17.71	8.95

*Dummy Variable

Source: Field Survey, 2012

4.4.1. Chili Farming and Chili Collective Marketing

As mentioned in Chapter 2, chili farming on coastal sandy land was started after the invention of compatible watering technology. The innovation spread quickly through the village and neighboring villages. The FG aids in transferring innovations; there are many activities conducted by FGs, as mentioned in the previous chapter, but here it is focused on the use of hybrid seed, preference toward non-subsidized fertilizer, adoption of plastic mulch, and preference for hired labor. Furthermore, this chapter also considers the influence of organizational structure and the role of leadership as institutional factors affecting the performance of individual members of a chili farming FG and toward selling a portion of their chilies via collective marketing.

As shown in Chapter 3, organizational structure and the social network structure of the Bugel and Garongan FGs differ from each other. In the case of organizational structure, in the Garongan FG, not only are FG boards responsible for information flow to members but also to the RT heads. The RT territory becomes a sub-group of the Garongan FG to allow efficient information transfer, whereas the organizational structure of the Bugel FG is independent from the RT.

For chili farming, before 2002, the farmers in Bugel and Garongan used local, disease-susceptible varieties of chilies; in 2002, the farmers changed to a hybrid seed made available by a seed factory. To help the members find cheaper seed, both FGs established partnerships with the seed factory distributor through collective buying, which forced prices down, but the distributors could not meet the FGs' demand for seed.

In the Bugel FG, the collectively-bought seed is distributed by a first-come, first-served policy. Available seed is shared first with those farmers who have savings in the FG funds

account from the chili collective-selling revenue. Therefore, the farmers who do not sell large quantities of chilies through collective marketing do not have much opportunity to obtain sufficient seed. The Garongan FG set up a different consensus for seed distribution: the group determined that each farmer should have an equal opportunity to obtain seed. The Garongan FG distributes an equal amount of seed, regardless of each member's land area, to all members. Only those members who need more seed will buy individually. Despite the equal distribution, which seems to be a disservice to the farmers of larger areas, the moral perspective of helping each other is motivational.

In Indonesia, there are two types of fertilizer: government subsidized and non-subsidized. Subsidized fertilizer is distributed differently in the Garongan FG than in the Bugel FG. In Bugel, the authorized subsidized-fertilizer agent is located inside the village, allowing the members to freely buy their own subsidized fertilizer without going through a FG. In contrast, Garongan's authorized subsidized agent cannot make subsidized fertilizer available individually whenever it is needed; approximately ten farmers must reserve it in advance, and only then will the agent provide the subsidized fertilizer. The Garongan farmers realized that the more fertilizer the members reserved, the quicker it would be obtained. This problem caused the Garongan FG head to begin collective buying of the subsidized fertilizer. The FG lists the farmer who wants to buy it, and then the farmer must immediately pay the price in advance. The Garongan FG buys the subsidized fertilizer from the authorized agent and distributes it to the group members. In the case of non-subsidized fertilizer, the farmers of both the Garongan and Bugel FGs are able to buy it freely.

Harvesting is the busiest period of chili farming- chilies can be harvested 15–20 times in one season. During the peak of harvesting season, the farmers in Bugel and Garongan look for

hired harvesting labor. The cost of harvesting labor can be as high as 25,000–30,000 IDR per person for eight hours a day. In the Bugel FG, most farmers look for hired laborers because the farmers are so busy. In the Garongan FG, some Garongan farmers can arrange *sambatan* among their neighbors or relatives. This reduces costs, because *sambatan* is a mutual assistance system in which every member exchanges labor among a small group of members without paying for the work; however, some Garongan farmers look for additional hired labor for other reasons.

Applying plastic mulch, which covers the surface of the soil, replaces the need for weeding labor. Although using plastic mulch reduces labor costs, the plastic mulch must be purchased before the initial planting period, resulting in additional expenditures. In 2011, only 17% of Garongan farmers applied plastic mulch, whereas 46% of the Bugel farmers did. Using plastic mulch is very helpful for the Bugel farmers, because they are not only busy with chili farming but also with off-farm jobs. In addition, applying plastic mulch makes the farmers more independent because they do not need labor assistance for weeding.

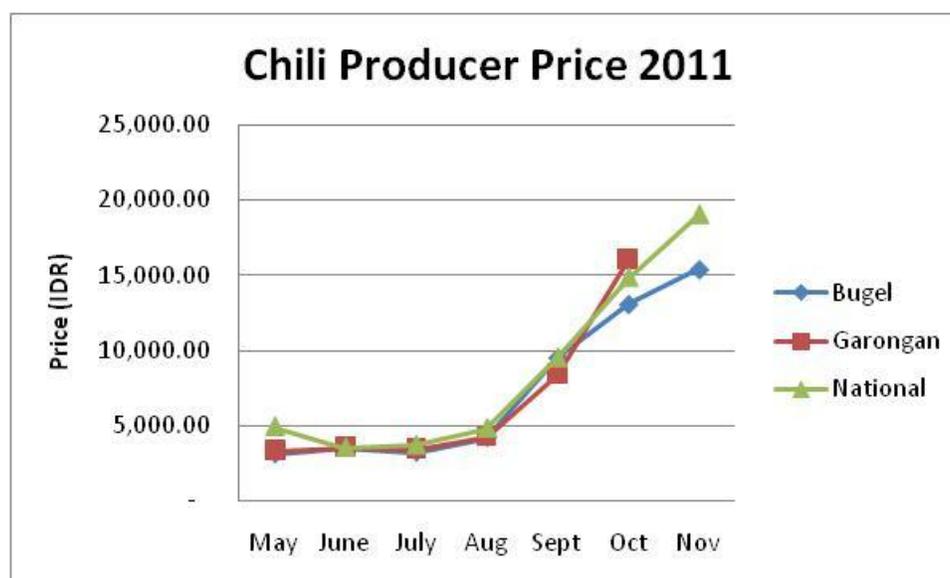


Figure 4.1 Producer price comparison between FGs and the national level in 2011
 Source: *Bugel and Garongan Farmer Group Report, 2011* and *Indonesia Economic Observation 2011–2012*, Indonesia Ministry for Economy Affairs

Collective marketing has strengthened the bargaining power of the farmers to sell their chili products. In the past, farmers sold chilies individually to intermediate traders or sub-intermediate traders; after collective marketing was conducted by the FGs, the traders who wanted to buy chili products from the farmers of that village had to buy them through the FG. Later, auctions were chosen as a system of selling the collected chili product to traders. The traders who joined as bidders were assembler traders who were not only from the surrounding area but also from other cities in Central Java. The price at auction was influenced by the national wholesale price in Jakarta, the capital city; figure 4.1 shows that producer prices at the group level coincided with the national producer price. According to the traders, the prices in the production areas are much lower, around three-fourths of the chili price at the wholesaler, but in those villages, the price of the chili product differed only slightly from the producer price at the national level. The ability to maintain high chili prices during each harvesting season motivates the farmers to continue selling through collective marketing.

One disadvantage of selling chilies through collective marketing for both groups is the delayed payment, which is delayed by three or more days. The trader who wins the auction requests a deferment of payment until the product is assembled at the wholesaler in the capital city, which takes a minimum of three days after transporting the chilies. In terms of collective marketing, both FGs succeeded in stabilizing chili prices among the farmers, but the payment system for the chili product is still held by the traders, which means farmers and FGs encounters delayed payment problems.

4.4.1.1. Factors Influencing an Individual's Performance of Chili Farming

In order to understand the influencing factors on an individual's performance of chili farming, the Probit regression of input of producer goods was conducted. The results of the Probit regression can be seen in Tables 4.2 and 4.3.

Table 4.2 Probit regression of input of producer goods on chili farming in Bugel FG

Variable	Plastic			Non-subsidized fertilizer			Seed from FG			Wage Labor		
	Coeff	Rob.SE	Sig	Coeff	Rob.SE	Sig	Coeff	Rob.SE	Sig	Coeff	Rob.SE	Sig
Characteristics of households												
Age	0.001	0.027	0.967	0.015	0.027	0.590	0.028	0.028	0.320			
Education	0.029	0.073	0.693	0.103	0.082	0.205	0.014	0.076	0.851			
Number of household member	0.089	0.119	0.454	-0.135	0.112	0.230	-0.059	0.101	0.557			
Land holding	0.000	0.000	0.320	0.000	0.000	0.424	0.000	0.000	0.135			
Remittance	0.371	0.446	0.405	0.465	0.441	0.291	-0.303	0.412	0.461			
Off-farm	0.115	0.408	0.778	0.012	0.383	0.974	-0.196	0.380	0.606			
Characteristics of organization												
Distance to Leaders												
Distance to RT heads	-0.239	0.434	0.583	-0.411	0.413	0.320	0.044	0.373	0.905			
Distance to FG leaders	-0.824	0.412	0.045**	-0.276	0.396	0.486	-0.767	0.409	0.061*			
Position of member in FG												
In-degree	0.014	0.028	0.622	-0.001	0.023	0.953	0.021	0.025	0.410			
Out-degree	-0.640	0.194	0.001***	-0.118	0.183	0.519	0.210	0.173	0.226			
Constanta	1.861	1.696	0.272	0.018	1.724	0.992	0.001	1.771	1.000			
Number of Observation	60			60			60			Outcome does not vary		
Prob > Chi ²	0.03			0.44			0.420			all households use wage labor		
Wald Chi ²	19.92			10.05			10.250					
Log Pseudolikelihood	-33.55			-37.07			-35.39					
Pseudo R ²	0.19			0.09			0.14					

Note: *** significance level of 1%, ** significance level of 5%, significance level of 10%

Source: Field Survey, 2012

Table 4.3 Probit regression of input of producer goods on chili farming in Garongan FG

Variable	Plastic			Non-subsidized fertilizer			Seed from FG			Wage Labor		
	Coeff	Rob.SE	Sig	Coeff	Rob.SE	Sig	Coeff	Rob.SE	Sig	Coeff	Rob.SE	Sig
Characteristics of households												
Age	-0.009	0.025	0.727	0.004	0.024	0.88	0.036	0.032	0.260	-0.031	0.024	0.190
Education	0.131	0.081	0.104	0.092	0.077	0.236	0.129	0.102	0.205	-0.038	0.080	0.636
Number of household member	-0.046	0.130	0.725	-0.453	0.122	0.000***	-0.222	0.148	0.134	0.108	0.116	0.354
Land holding	0.000	0.000	0.351	0.000	0.000	0.706	-0.0003	0.00007	0.000***	0.0002	0.000	0.011**
Remittance	0.395	0.769	0.607	-0.276	0.608	0.650	0.000	(omitted)		0.412	0.613	0.501
Off-farm	0.256	0.595	0.667	0.243	0.540	0.653	0.796	0.707	0.260	-0.198	0.514	0.700
Characteristics of organization												
Distance to Leaders												
Distance to RT heads	-0.386	0.414	0.352	-0.368	0.543	0.498	-0.783	0.671	0.243	-0.674	0.496	0.174
Distance to FG leaders	-0.469	0.612	0.443	-1.073	0.808	0.184	1.311	1.250	0.294	-0.282	0.621	0.650
Position of member in FG												
In-degree	0.027	0.023	0.248	0.003	0.024	0.890	0.006	0.036	0.871	0.001	0.021	0.976
Out-degree	-0.034	0.072	0.633	-0.018	0.060	0.768	-0.036	0.094	0.703	-0.017	0.065	0.797
Constanta	-1.269	2.044	0.535	2.615	2.197	0.234	0.389	2.541	0.878	1.800	2.065	0.383
Number of Observation	60			60			54 *remittance dropped 6 obs not used			60		
Prob > Chi ²	0.2			0.06			0.003			0.29		
Wald Chi ²	13.42			17.55			24.57			11.83		
Log Pseudolikelihood	-22.89			-29.20			-35.39			-35.77		
Pseudo R ²	0.15			0.26			0.42			0.14		

Note: *** significance level of 1%, ** significance level of 5%, significance level of 10%

Source: Field Survey, 2012

a. Using plastic mulch

Applying plastic mulch to cover the soil surface has been adopted as an innovation for coastal sandy land farmers to reduce the costs for weeding labor and time and increase the yield. Bugel farmers adopted plastic mulch earlier than Garongan farmers, and 46% and 17% among respondents of each group adopted it, respectively. In the Bugel FG, using plastic mulch is influenced negatively by the distance from FG leaders and number of out-degree, respectively (Table 4.2). The members who have fewer out-degree can be regarded as the leaders; farmers who are closer with the FG leaders, including the leaders themselves, can take more advantage of new technology regardless of the area of their land holdings as an economic condition. The members who are close to the leaders can adopt plastic. In the Bugel FG, economic condition does not prevent plastic adoption, because plastic mulch-adopting farmers can buy it via debt

from input providers. The mechanism seems to be convenient for Bugel farmers because they can return the debt by selling some portion of their chili product to the input providers, who also conduct chili trading.

In the Garongan FG, using plastic mulch is not influenced by any explanatory variables. Unlike the case of Bugel, where the plastic mulch was adopted earlier, Garongan is still in the trial stage of plastic mulch introduction. The leaders are expected to play a role as pioneers, but only some of them will adopt the new technology and some of the farmers who have larger areas of land holding could adopt it. The input providers do not give any debt for input buying, so only the farmers who can afford plastic mulch by themselves could introduce it.

b. Non-subsidized Fertilizer

Conducting chili farming in marginal land, farmers should be concerned about the fertility of the land to stabilize and increase the productivity and yield. In order to increase the productivity and maintain high-quality chili product, some farmers use non-subsidized fertilizer, which is priced three times higher than subsidized fertilizer.

In the Garongan FG, the use of non-subsidized fertilizer is influenced negatively by the number of household members. The household farmers who are burdened by non-productive-age members tend to not use non-subsidized fertilizer. The fertilizer providers in Garongan Village do not possess economic power (capital) to provide a debt mechanism for any Garongan farmers. In this situation, Garongan farmers prepare cash whenever they want to buy non-subsidized fertilizer from fertilizer providers. In Bugel, the use of non-subsidized fertilizer is not significantly influenced by any explanatory variables because any farmers can buy non-subsidized fertilizer by the debt mechanism of Bugel input providers.

c. Using seed from FG

In the Bugel FG, using seed from the FG is influenced negatively by distance from FG leaders. As mentioned before, the seed distribution policy in the Bugel FG is first-come, first served. The farmers who are able to get information from FG leaders more easily can buy seed earlier than others.

In the Garongan FG, using seed from FG is influenced negatively by land holding, meaning that the larger land-area farmers not only use seed from the Garongan FG but also from outside providers. Basically, the Garongan FG determined that all members should have the same amount of seed from the FG. Because of the evenness policy of seed distribution, Garongan farmers who have more land need additional seed from outside input providers.

d. Using wage laborers

In the Bugel FG, all farmers hired wage laborers because they are not only busy with chili farming but also off-farm jobs. Due to time economy, while they should consider on picking chili on time, hiring wage laborers is reasonable for their condition.

Unlike the case of the Bugel FG, Garongan farmers still maintain the custom of *sambatan*. As far as customary help labor is concerned, because they should harvest chili timely, the members of the customary help team should finish the rotation within a proper period. To control the quality of the chilies, the larger land-area farmers cannot depend only on customary help labor and need additional hired labor; this implies that only larger land-area farmers can afford to pay an immediate wage for hired labor, meanwhile small-plot farmers cannot prepare immediate cash because of the delayed payment problem of chili collective marketing.

4.4.1.2. Factors Influencing Individual Performance of Chili Collective Marketing

Individual performance in collective marketing is measured by the proportion of chilies sold collectively out of the total production. The Bugel FG does not arrange for a minimum chili product collection, but the Garongan FG has determined that at least 80% of the total production should be sold via collective marketing. Both groups reach high average proportions of collective marketing, but the individual means of product collection are different. In the Garongan FG, the farmers collect 100% at a maximum and 67% at a minimum, but the Bugel farmers collect 100% at a maximum and 0% at a minimum. In both groups, only a few farmers sold exceptionally small proportions through collective marketing. In the case of the Garongan FG, there is an exceptional case of four farmers who sold 67%, 67%, 71%, and 75% of their chilies through collective marketing. Among those four farmers, three are former sub-intermediate traders and the fourth is the brother-in-law of a sub-intermediate trader. Their chili trading activity is under the management of intermediate traders, who determine the amount to buy from them. After collective marketing began, the sub-intermediate traders found it difficult to fill the buying quotas given by the intermediate traders, because they are not bidders and should cover the shortage of chili product by using chilies which are personally cultivated. In the Bugel FG, there are four exceptional farmers who sold 0%, 33%, 43%, and 43% of their chilies through collective marketing. These are farmers who possessed off-farm jobs, such as construction laborer or government officer, and they do not work hard at chili farming due to their off-farm jobs.

Table 4.4 Tobit regression of proportion of chilies sold by collective marketing

Variable	Collective Marketing: Bugel			Collective Marketing: Garongan		
	Coeff	Rob.SE	Sig	Coeff	Rob.SE	Sig
Characteristics of households						
Age	0.083	0.254	0.744	0.283	0.167	0.096*
Education	1.277	0.899	0.162	0.573	0.542	0.295
Number of household member	-1.052	1.477	0.479	-0.638	0.889	0.476
Land holding	0.000	0.001	0.911	0.001	0.001	0.041**
Remittance	-5.783	5.281	0.279	-2.158	3.966	0.589
Off-farm	-13.880	5.231	0.011**	-3.079	4.271	0.474
Characteristics of organization						
Distance to Leaders						
Distance to RT heads	-1.977	4.541	0.665	6.586	3.381	0.057*
Distance to FG leaders	-22.756	6.421	0.001**	-12.185	5.804	0.041**
Position of member in FG						
In-degree	-0.226	0.234	0.340	0.358	0.402	0.377
Out-degree	9.629	2.571	0.000***	-0.044	0.493	0.929
Constanta	95.523	15.624	0.000***	80.110	11.373	0.000***
/sigma	14.583	2.423		9.877	1.028	
Number of Observation	60			60		
Prob > F	0.009			0.018		
F (10, 50)	2.72			2.45		
Log Pseudolikelihood	-180.51			-151.92		
Pseudo R ²	0.12			0.08		

RT Heads consists of 4 RT heads, and FG Leaders consists of 3 leaders.

Note: *** significance level of 1%, ** significance level of 5%, significance level of 10%

Source: Field Survey, 2012

A Tobit regression of the Bugel FG data indicates that the proportion of selling through collective marketing is significantly positive, influenced by the number of out-degree, while two variables have significantly negative influences: off-farm jobs and distance to the FG leaders. However, in the Garongan FG, the proportion of selling through collective marketing is influenced positively by age, land holding, and the distance to RT heads, while it is influenced negatively by the distance to FG leaders.

Among the Bugel farmers, 34% are engaged in an off-farm job, such as construction laborer, agricultural laborer, fisherman, trader, or government worker. Unlike full-time farmers, the farmers with off-farm jobs are also busy working outside of the farm, which increases the

probability of being misinformed about group services, such as collective seed buying. In this case, the farmers with off-farm jobs must seek alternative ways to fulfill their chili farming needs so that they can maintain their relationship with the traders. In addition, the farmers with off-farm jobs have more opportunities to commute outside their village than the full-time farmers, so they have more occasions to find traders to cooperate and negotiate with. The Garongan FG shares the accessible information through regular meetings, so those farmers with off-farm jobs were not required to seek information from third parties.

In Chapter 3, it was mentioned that the RT heads are not involved with the Bugel FG board, while the Garongan FG involves the RT heads in disseminating FG information. Furthermore, the pattern of the Bugel FG network is radial, which means the relationships are limited to only two or three persons, while the pattern of the Garongan FG network is interlocking, which means the members have many mutual ties with other members. In the radial pattern, becoming closer to a focal person (one step from the Bugel FG leaders in an ego-centered network) is crucial for the members. As Table 4.4 shows, the distance to the FG leaders negatively influences the Bugel farmers' performance in chili collective marketing. The farmers must be proactive to build individual relationships with the Bugel FG leaders. Farmers who are reluctant to maintain an individual relationship with the FG leaders may be misinformed about the policies of the Bugel FG. Furthermore, the distance to the RT heads does not affect the individual farmer performance of chili collective marketing. In the Bugel FG, the position of the RT heads is not as important as the FG leaders. The members of the Bugel FG will not maintain a close relationship with the RT heads, because it does not provide any advantage for them.

In the Garongan FG, the position of the RT heads is as important as the FG leaders for the Garongan FG activities. Most of members have a distance of 1 with FG leaders and their own RT

heads. The distance to RT heads influences the individual performance of chili collective marketing positively, while the distance to FG leaders influences it negatively. The positive influence of the distance of RT heads should be explained by the activity of RT 4's members, some of whom are working as sub-intermediate chili traders. They should fulfill the quota of chilies ordered by intermediate traders so they should collect chilies from neighbors and sell their own chili product to fill the quota. This situation was concerning to FG leaders, so they changed the collective marketing quota from 100% to more than 80%. The RT 4 head himself shows his support to those sub-intermediate traders by selling some portion of his product to them. Those sub-intermediate traders have a distance of 1 with their RT heads. As a result, the statistical result shows that the closer to RT heads an individual is, the fewer chilies sold by collective marketing.

In the case of distance to Garongan FG leaders, most farmers have a distance of 1 from FG leaders, while a few of them have a distance of 2 from the FG leaders. Some of the farmers who have distance of 2 from the FG leaders are the members who work as sub-intermediate traders in RT 4. Their activity of selling fewer chilies by collective marketing generates a feeling of dissimilarity, because the management of the Garongan FG is concerned with evenness, conformity, and equality.

In the Garongan FG, older farmers tend to sell a greater proportion of chilies to collective marketing. The Garongan FG is managed and strongly supported by the community network. The elders are expected to follow the organization's rules, based on the expectation among community members; at the same time, elders respect and preserve the rules to keep the community organized. On the contrary, in the Bugel FG, age does not influence the individual

performance of selling chilies through collective marketing, because the FG is a functional organization and the relationship with the community is rare.

In the Garongan FG, holding more land can be regarded as an economic condition. The farmers who have more land are better able to cultivate side crops, like bitter melon and eggplant, in the edge area of chili farming. By cultivating side crops, they can earn cash money to ease their needs for immediate cash like daily needs, paying tuition fees, medical treatment, and especially for agriculture laborer wages. Thus, they can sell a higher percentage of their chili product through collective marketing despite the delayed payment problem. In the Bugel FG, the delayed payment problem is solved by the existence of the debt mechanism of input providers, eliminating land holding as an influential factor.

In order to know the relationship between the proportion of chilies that were sold via collective marketing and the input of producer goods, crosstabs and the Pearson chi-square test were conducted. In this analysis, the share of collective marketing became a dummy variable by differentiating the share less than 100% as zero and 100% as one.

Table 4.5 Pearson chi-square test between collective marketing and input of producer goods

Variable			Collective Marketing		Sig of Pearson chi-square
			< 100	100	
Non-subsidized Fertilizer	Bugel	Not Use	16	10	0.211
		Use	26	8	
	Garongan	Not Use	19	3	0.003**
		Use	18	20	
Plastic	Bugel	Not Use	16	16	0.000***
		Use	26	2	
	Garongan	Not Use	32	18	0.406
		Use	5	5	
Seed from FG	Bugel	Not Use	21	2	0.005**
		Use	21	16	
	Garongan	Not Use	6	6	0.353
		Use	31	17	
Wage Labor	Bugel	Not Use	0	0	cannot be conducted
		Use	42	18	
	Garongan	Not Use	20	10	0.426
		Use	17	13	

Note: *** significance level of 1%, ** significance level of 5%, significance level of 10%

Source: Field Survey, 2012

Table 4.5 shows the input of producer goods associated with the performance of collective marketing. In the Bugel FG, collective marketing is associated with both seed from the FG and use of plastic mulch. The farmers who use seed from the FG tend to sell 100% of their chilies via collective marketing. The Bugel FG has not actually determined a rule about the proportion of chilies to be sold through collective marketing; however, Bugel farmers raise funds in proportion of the chili product sold by collective marketing. The more chilies sold on the previous year of collective marketing, the more seed they are entitled to receive from the FG. Farmers who sell less chili get less seed from the FG, so they must depend on third parties. Once they bought seed, with a debt, from the input providers, they would sell chilies to them because of their agreement. In the case of using plastic mulch, the farmers who use plastic tend to sell

less than 100% of their chilies to collective marketing. The farmers who introduce plastic mulch have to sell some chilies to input providers because they are indebted to them. It seems the association between adopting plastic mulch and selling chilies via collective marketing is due to the relations between farmers and input providers.

In the Garongan FG, the use of non-subsidized fertilizer is associated with selling 100% of chili product by collective marketing; however, chili quality is classified only in the Garongan FG, and larger chili fruit can be sold for a higher price. Farmers who use more fertilizer, including non-subsidized fertilizer, have more motivation to sell high-quality chilies through collective marketing. In the Bugel FG, they do not have any institutional obligation like that of the Garongan FG. The association between collective marketing and using non-subsidized fertilizer cannot be observed because farmers usually buy either subsidized fertilizer or non-subsidized fertilizer by the debt mechanism.

4.5. Conclusions

The purpose of this study is to compare the individual performance of farmers in the Bugel and Garongan FGs, looking at the relationship between the characteristics of households and organizations and the performance of chili farming and chili collective marketing. The forms of individual farmer performance differ, based on the shape of the human interaction in the group in which they are nested. The farmers surrounded by tightly-bound relationships among themselves will behave by considering the group consensus; in contrast, the farmers who maintain relationships only with the important persons in the group will behave by considering their own individual benefit, being affected only by the important person.

In the Bugel FG, the individual member performance of chili farming is not only influenced by economic conditions but also by their position towards FG leaders and their position in the organization. The closer position of members to FG leaders brings them greater advantage in getting information regarding FG services, i.e. seed and new technology, like plastic mulch. In the Garongan FG, the performance of chili farming is influenced by the economic condition of farmers. Farmers who have strong economic conditions, i.e. larger land holdings or fewer household members, tend to be responsive to innovation. Those farmers can afford to adopt new technology earlier than other farmers. In addition, the farmers with a higher position in their organization have a feeling of responsibility to adopt them earlier.

In both the Bugel and Garongan FGs, economic condition, organizational structure, and the role of leadership influence the individual member performance of collective marketing. In the Bugel FG, the economic condition of farmers who have an off-farm job allows them to resolve the delayed payment problem in collective marketing, but their absence during working hours causes them to miss useful information regarding the Bugel FG, so they must get information by third parties. Because of the agreements between farmers and third parties, by which they should sell some portion of their chili product to the third parties, specific minimum proportions of chilies were sold through collective marketing. In the Garongan FG, farmers with larger land holdings have more opportunity to cultivate other commodities and side crops, like bitter melon and eggplant, to earn cash money. Holding cash money eases their cash flow so that they can sell a greater percentage of chili products through collective marketing, despite the delayed payment problem.

The role of leadership is different between the two FGs. In the Bugel FG, members who want to access group facilities and information are motivated to be closer to the FG leaders,

while equality and evenness for each farmer are the basis of the Garongan FG's management. Because of the enforceability of consensus, members can achieve good performances together. Each farmer can access group facilities and information equally, but members who are in different conditions, like being sub-intermediate chili traders, are distant to the FG leaders but keep a closer relationship with their own RT heads.

The difficulty of managing coastal sandy land forces farmers to be responsive to innovation. Farmers who can get information about new technology earlier will adopt the innovation. In the Bugel FG, technological adoption is not necessarily associated with prepared capital. Any farmers who are interested in new technology can adopt it easily. Technological adoption is interfered with by input providers who also deal with chili trading because they accept debt on buying inputs; eventually, the performance of collective marketing in the Bugel FG is lessened by those activities. In the Garongan FG, third parties who deal with the debt mechanism on input commodities and chili trading at the same time are not present, so a member's economic condition is an important factor regarding the adoption of new technology. Garongan FG leaders are expected to take risks, to conduct risky trials of new technology, and some of them actually do it.

CHAPTER 5

A COMPARISON OF THE ROLE OF LEADERSHIP IN TWO FARMER GROUPS: AN APPROACH OF THE FUNCTION OF LEADER-MEMBER EXCHANGE

5.1. Introduction

Since 1968, the Indonesian government has established FGs to encourage the development of farming among the farmers. Many programs have been established for enhancing FG performance to strengthen the bargaining position of the farmers by providing input subsidies and channeling capital.

The government effort has not resulted in an improved performance of the FGs for many reasons. Herman and Swastika (2011) demonstrated that most of the groups that were created by projects readily dissolved when the project was completed. Wahyuni (2003) noted that a group formed based on the will of the farmers in the community may still face problems, such as the FG's board of directors being unable to lead. However, an FG leader is needed to sustain the FG by providing adequate access to credit and cheap inputs, regulating group meetings, providing regular information about group activities, directly marketing products to resolve price discrimination (Ofuoku & Agbamu, 2013), and taking risks for the sake of the FG (Yunasaf, 2007). Moreover, a farmers' forum that was held in Rome, Italy in 2010 highlighted the importance of leadership roles in farmer organizations; the leaders are important for reaching the goals of reducing poverty in developing countries (IFAD, 2010).

Many studies on FGs have examined the power of leadership to enhance their performance. Most FG leaders drive the group only for outcome purposes (Ofuoku & Agbamu, 2013), without considering ways to spread the group's vision, values, norms, and motivations, although norms

and legitimate consensus are principles for further developing FGs (Agriculture Minister Decree 273/Kpts/Ot.160/4/2007).

Being distinct from transactional leadership, which only focuses on outcome, another paradigm of leadership, namely transformational leadership, should be introduced for the leaders of FGs. This process is particularly relevant in communities based on a collective society (Bass, 1997). Furthermore, the leader of the FG should instill the behaviors of transformational leadership when they communicate with the FG members. Leaders who embody the behaviors of transformational leadership can gather farmers into an environment of learning and cooperation to achieve goals as a group (e.g., producing and marketing). Furthermore, the function of transformational leadership can be catalyzed by the mechanism of exchange between the leader and members of the group – this process is called Leader-Member Exchange (LMX). In this study, the function of LMX is emphasized as an important aspect to analyze together with transformational leadership. Taking into account the characteristics of the rural Java situation, where strong mutual reciprocal relationships are still maintained (Subejo, 2009), the functions of LMX, which are based on mutual reciprocal influence (Howell & Hall-Merenda, 1999), would be proper predictors.

5. 2. Literature Review and Research Framework

Transformational leadership theory, developed by Burns (1979 and later enhanced by Bass (1985, 1997), has captured the interest of many researchers over the past three decades. The main rationale of transformational leadership theory is the leader's ability to motivate a follower to accomplish more than what the member had planned to accomplish (Krishnan, 2005). Furthermore, Burns postulated transformational leadership as a relationship in which the leader

and member motivate each other to higher levels, which results in a compatible value system between the leader and member (Krishnan, 2004).

The theory of transformational leadership states that a capable leader can motivate members (Wang, Law, Hackett & Chen, 2005), inspire members to contribute more through the internalization of values (Givens, 2008), and encourage members to work beyond their own interests (Bass, 1995).

Transformational leadership has four components: idealized influence (charisma), inspirational motivation, intellectual stimulation, and individualized consideration (Bass, 1985; Bass and Avolio, 1994 and Hater and Bass, 1988).

- a. Charismatic leadership: the extent to which leaders are a role model for members and the practices aimed at creating attractive visions of the future.
- b. Inspirational motivation: the extent to which leaders inspire enthusiasm and optimism.
- c. Intellectual stimulation: the extent of the leader's vision and those behaviors that increase the members' understanding of the problems they face.
- d. Individualized consideration: the extent to which leaders treat members as individuals and how much leaders provide their members with personal attention, coaching, personal advice, and opportunities to develop.

Burns explained the result of transformational leadership as a relationship of mutual stimulation and elevation that converts members into leaders and may convert leaders into moral agents (Burns, 1979).

In leadership theory, the partnership between a leader and the members is based on mutual reciprocal influence (Howell & Hall-Merenda, 1999), which is able to support the

function of transformational leadership. LMX theory focuses on the quality of leader-member exchange relationships. Such a relationship might bind the member to the group more tightly through loyalty, gratitude, and a sense of inclusion.

The role of LMX is to mediate the relationship between transformational leadership and the performance or organizational citizenship behavior (OCB). Wang *et al.* (2005) argue that transformational leadership builds and nourishes high-quality LMX, while Dvir *et al.* (2002) show that social bonding between a leader and follower is important, and interaction with the transformational leader may be essential for member development. According to Schyns and Day (2010), transformational leader can establish collective or relational identity of the group's members which is able to ultimately higher LMX. They also stated that LMX can emerge as LMX consensus if the members feel the need for positive relationship with the leaders and as a group has a collective need to share this positive relationship.

According to Buchanan (1974), *citing* Cook and Wall (1980), organizational commitment consists of two components: identification and conformity. Identification refers to pride in an organization and the internalization of the group's goals and values; conformity is a sense of commitment to a group and a sense of belonging.

Groups are important because they provide social support such as guiding performance, rewards, and resources (Delamater and Myerrs, 2007). It is an outgrowth of the quality management process, and when the group is used effectively, it can lead to increased production, morale, creativity, and innovation. Therefore, a group is an organized system of individual relationships, which have structure and patterns.

Group performance has included inputs (resources), processes (collective activity), and outcomes (Guzzo and Shea, 1992 *cited in* Dionne and Yammarino, 2004). Naturally, group

performance depends on individual performance; the better the group members are, the better the group performance will be. This implies that what makes individual members better will also make the group better (Schulz-Hardt and Brodbeck, 2012). Individual member performance is also considered a task performance, which is defined as a form of currency in the social exchange between leader and member, and a means of fulfilling obligations for reciprocity (Wang *et al.*, 2005).

Furthermore, group performance as a team has been defined opposite to that of task performance, which focuses on the teamwork process (Dionne & Yammarino, 2003). Parasuraman *et al.* (1988) developed the dimensions of service quality to measure group performance, which consists of five dimensions, as follows:

1. Tangibility: physical facilities and personal appearance.
2. Reliability: the ability to perform accurately.
3. Responsiveness: the willingness to help the group and its members.
4. Assurance: knowledge and the trust of group management.
5. Empathy: the relations or individual attentions of the group to the member.

Bateman and Organ (1983), *cited in* Nguni *et al.* (2006), defined organizational citizenship behavior (OCB) as work-related behaviors that can promote the effective functioning of the organization. Organ (1988), *cited in* Podsakoff *et al.* (1990), identified five types of citizenship behavior:

1. Altruism: behaviors that have the effect of helping another person.
2. Conscientiousness: the behaviors of a member that go beyond the minimum role requirements.

3. Sportsmanship: the willingness of a member to tolerate less than ideal circumstances without complaining.
4. Courtesy: the behavior of a member to prevent a problem from occurring.
5. Civic virtue: the behavior of a member indicating a willingness to participate and concern about the organization.

Previous research has shown that transformational leadership is directly linked to team performance (Balthazard *et al.*, 2000 *cited in* Dione, Yammarino, Atwater & Spangler, 2004), however, Dionne *et al.* (2004) found that the association between transformational leadership and team performance involves vision, commitment, environment, and conflict. In addition, Podsakoff, MacKenzie, Moorman & Fetter (1990) described trust and satisfaction as potential moderators between transformational leadership and OCB. Wang *et al.* (2005) modeled the relationship between transformational leadership and group performance as being mediated by LMX and OCB. Howell and Hall-Merenda (1999) found that LMX, but not transformational leadership, was a significant predictor of follower performance. Janssen and van Yperen (2004) demonstrated that LMX has a positive effect on job satisfaction, and Truckenbrodt (2000) found that the quality of LMX affects both a member's commitment and OCB. Moreover, LMX has a significant influence on commitment (Truckenbrodt, 2000) and satisfaction (Volmer, Niessen, Spurk, Linz & Abele, 2011), and both have been found to be potential moderators in the relationship between transformational leadership and group member behavior (Podsakoff *et al.*, 1990).

Farmers want to satisfy needs that they cannot easily satisfy other than by subscribing to an FG; e.g., the group provides facilities that are only accessed through being an FG member (Ofuoku & Agbamu, 2013). Satisfaction with the FG influences farmer participation, and

satisfaction can create strong social capital in the community and encourage members to help one another (Ngaruko & Lwezoula, 2013). Organ and Ryan (1995), *cited in* Fisher (2003) and Nguni, Slegers & Denesen (2006), found that satisfaction is strongly related to OCB. In addition, Givens (2008) concluded that several research groups have demonstrated that OCB has a positive effect on performance.

Based on findings from previous research, we postulate that transformational leadership, which involves a leader’s charisma, individualized consideration, ability to inspire, and ability to intellectual stimulate, likely influences satisfaction and commitment in two ways through LMX, directly and indirectly through LMX. LMX is considered an important intermediary between transformational leadership and group member behavior and group performance. In addition, inserting satisfaction and commitment into the model is expected to influence group member behavior and performance, as illustrated in Figure 5.1.

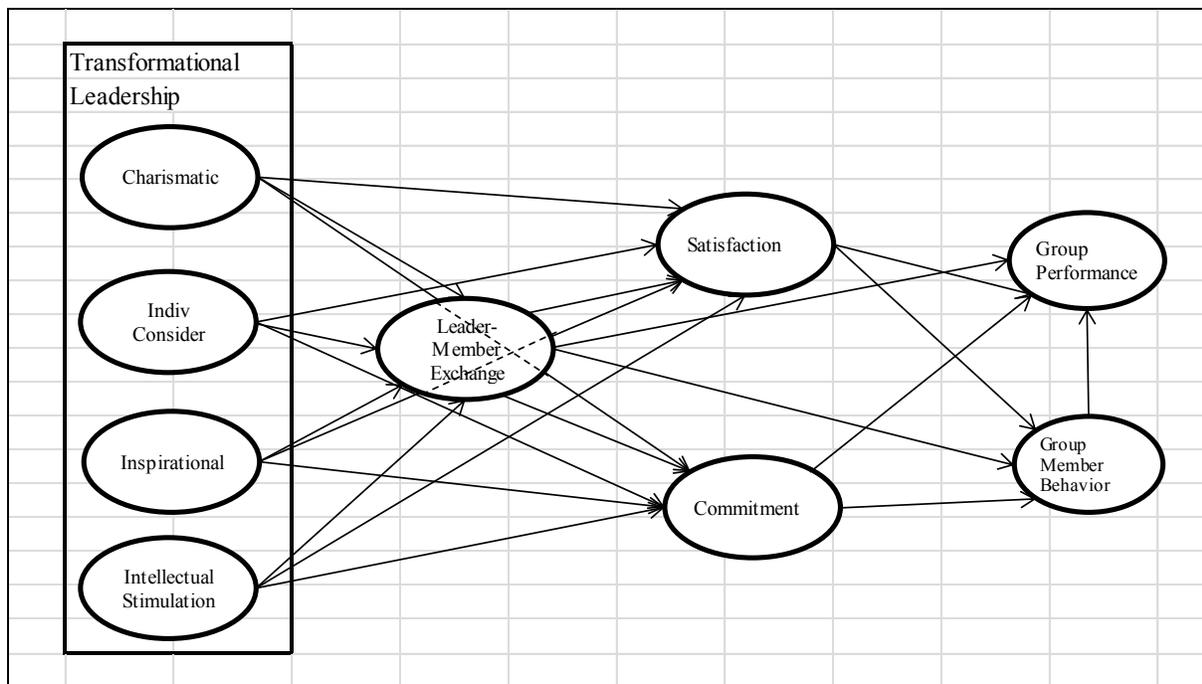


Figure 5.1 Research framework

This chapter looks at the differences in the characteristics of the two FGs as reflections of the different ways they implement. It is designed to compare several effects related to the two FGs such as the attribution dimension, the direct effects among the dimensions (the relationship between two dimensions on an arrow path) and the indirect effect among the other dimensions. The indirect effect is a relationship between two dimensions that is intermediated by one or two other dimensions in the path.

The direct effect pathways are as follows:

1. Transformational leadership → LMX
2. Transformational leadership → Satisfaction
3. Transformational leadership → Commitment
4. LMX → Satisfaction
5. LMX → Commitment
6. LMX → Group Member Behavior (GMB)
7. LMX → Group Performance (GP)
8. Satisfaction → GMB
9. Satisfaction → GP
10. Commitment → GMB
11. Commitment → GP

The indirect effect pathways are as follows:

1. Transformational Leadership → LMX → GP
2. Transformational Leadership → LMX → GMB → GP
3. Transformational Leadership → Satisfaction → GP
4. Transformational Leadership → Satisfaction → GMB → GP

5. Transformational Leadership → Commitment → GP
6. Transformational Leadership → Commitment → GMB → GP
7. Transformational Leadership → LMX → Satisfaction → GP
8. Transformational Leadership → LMX → Satisfaction → GMB → GP
9. Transformational Leadership → LMX → Commitment → GP
10. Transformational Leadership → LMX → Commitment → GMB → GP

5.3. Material and Methods

The field research was conducted in 2012. The survey method was used to obtain primary data regarding satisfaction, commitment, LMX, and transformational leadership from members of the Bugel and Garongan FGs. A total of 93 households in the Bugel FG and 85 households in Garongan FG were interviewed in person. During each interview, a closed-structured questionnaire was used to assess LMX, transformational leadership, commitment, satisfaction, group performance, and group member behavior using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

In this chapter, the variables of transformational leadership and LMX were designed to measure only for one leader, the FG head, without considering the functions of the secretary and treasurer. This was done to prevent misleading answers from the respondents, who might be confused in measuring their relations toward multiple leaders.

5.3.1. Measures

Transformational leadership: Transformational leadership is measured using four dimensions: charisma, intellectual stimulation, individual consideration, and inspiration or motivation. The

closed-structure questionnaire is developed by considering the definition of transformational leadership as stated by Bass & Avolio (1997).

Table 5.1 Indicator Items for the transformational leadership dimension

Indicators	Indicator Items	Code
Charismatic	I believe in the leader's ability to lead thisFG	CHA1
	I admire the leaderfor guiding this FG	CHA2
	I believe the leader's decisions are aimed at increasing member's welfare	CHA3
	I always imitate what the leader has done in order to succeed	CHA4
	The leader always respects the norms while making a decision	CHA5
	The leader is always willing to take a risk first to enhance the FG development	CHA6
	This FG needs a figure like the current FG head	CHA7
	The leader is able to unify the FG	CHA8
Inspirational	The leader gives suggestions for solving my farm problems	INSP1
	I am inspired by the leader to try new technology	INSP2
	I believe the leader is able to develop the group for the welfare of its members	INSP3
	The FG head emphasizes the importance of the FG in helping members succeed in chili farming	INSP4
	The leader stresses the importance of the FG to achieve success in chili farming	INSP5
	I have succeededin farming because of the farmer group	INSP6
	The leader stresses the importance of following the rules	INSP7
Intellectual Stimulation	The leader stresses the importance of the farmers' group discussions to solve problems	INTL1
	I have always been helped by the new things that the group informed me of	INTL2
	I am always encouraged to try new things to be successfulin chili farming	INTL3
	I have always been given the opportunity to put forward ideas in the FG	INTL4
	I'm lazy about coming to group meetings because my opinion is not heard	INTL5
	Advice from the FG leader influences my farming decisions	INTL6
Individual Consideration	Any problem I am facing is always listened to by the FG head	INDV1
	The leader of the FG has never considered my complaint	INDV2
	I can discuss all matters directly with the leader	INDV3
	I feel very close to the leader of the farmer group	INDV4
	The FG head always provides direction to me for conducting farming successfully	INDV5
	Only the person who have a close relationship with the FG leaders are noticed by him	INDV6

Leader-member exchange is constructed from 4 indicators: respect (RESP), affect (AFFECT), loyalty (LOY), and contribution (CONTR) (Liden and Maslyn, 1998; Schyns and Day, 2010).

Table 5.2 Items for the LMX dimension

Dimension	Items	Indicator Code
LMX	I respect the ability of the FG head to guide this FG	RESP1
	I respect the FG head's ideas to develop this FG	RESP2
	The kindness of the FG head is very useful for the FG	RESP3
	I like the FG head because he is a kind and friendly person	RESP4
	If I make a mistake and admit it, then the FG head will cover and protect me in the forum of the FG, so that I feel safe	AFFECT1
	If there are person who do not like me, then the FG head will defend me	AFFECT2
	The FG head facilitates members having good relationships among themselves	AFFECT3
	I will participate more actively in this FG	LOY1
	The FG needs my contribution and the FG head always emphasizes this	LOY2
	I prefer to work together in this FG rather than farming individually	LOY3
	I will play an active role in the FG, so that the FG can be better	CONTR1
	I do not mind working hard to help the FG head for the group's success	CONTR2

Satisfaction: Satisfaction is expressed as satisfaction regarding group activities. The indicators of satisfaction are developed by considering the definition of satisfaction, which was defined by Ofuko et al. (2008) for the FG condition.

Table 5.3 Items of the satisfaction dimension

Dimension	Items	Indicator Code
Satisfaction	Are you satisfied with the....	
	Implementation of the rules/group consensus	GSAT1
	Implementation of the auction market (collective marketing)	GSAT2
	Rules of buying and selling in an auction market	GSAT3
	The work of the FG board?	GSAT4
	Management of the collective marketing	GSAT5
	Cooperation with the seed distributors	GSAT6
	Provision of subsidized fertilizer	GSAT7
	Rules of simultaneous planting	GSAT8
	Inputs and collective marketing information?	GSAT9
Implementation of the group agreement	GSAT10	

Commitment: The dimension of commitment is developed from the definition of commitment as defined by Buchanan (1974). Commitment is constructed by two indicators: identification (IDEN) and conformity (CONF).

Table 5.4 Items of the commitment dimension

Dimension	Indicator Item	Indicator Code
Commitment	I am proud to be a member of this farmer group	IDEN1
	I feel a part of this farmer group	IDEN2
	Being an active member is something I am proud of	IDEN3
	I invite my close friends and relatives to come and join in the chili planting farmer group	IDEN4
	I help this FG to achieve the FG's goals	IDEN5
	I feel joining the FG is the best plan for me	CONF1
	I will do anything for this FG to achieve a more prosperous condition for all of the members	CONF2
	Although I do not always get the help of the group for seeds, I will always sell chili through the group	CONF3
	Even without seed from this FG, I won't sell a greater portion of my chili to the chili middlemen	CONF4
	Although selling chili to a merchant can get money faster, I prefer to sell through the group	CONF5
	I will follow the decisions of the farmer group	CONF6

Group performance: The dimension of group performance is developed from the definition of group performance as defined by Parasuraman *et al.* (1998). The dimension is constructed of five indicators: tangibility (TAN), reliability (RELIA), responsiveness (RESP), assurance (ASSUR), and empathy (EMPH).

Table 5.5 Items of the group performance dimension

Dimension	Indicator Item	Indicator Code
Group Performance	The FG facilitates the members receiving subsidized fertilizer	TAN1
	All members easily receive subsidized fertilizer	TAN2
	The collective purchase of chili seeds is well-regulated by the group	TAN3
	All members receive an equal amount of seed from the FG	TAN4
	The FG simplifies chili marketing	TAN5
	The delayed payment is not an important issue for the members	TAN6
	The FG creates a network with the seed distributors to provide seed for the members	RELIA1
	The FG services are very good on seed distribution	RELIA2
	The FG has not served well when distributing subsidized fertilizer	RELIA3
	The auction market is always reliable when the farmers want to sell their chili	RELIA4
	The chili traders/middlemen are more reliable at lending money	RELIA5
	The FG solves the problems faced by the members very slowly	RESP1
	The FG always provides assistance (help) to its members	RESP2
	The FG board has excellent knowledge	RESP3
	The FG is concerned with its members' satisfaction	RESP4
	The FG is responsive to the members' suggestions	RESP5
	The activity of collective marketing can be trusted	ASSUR1
	The FG board provides a transparent financial report	ASSUR2
	Buying seed from farmers' groups, the quality is guaranteed	ASSUR4
	The delayed payment makes members lose the profit	ASSUR5
	The board auction market/farmer group is always concerned with the members' wishes	EMPH1
	The FG board always communicates with the members	EMPH2
	The FG board tries to fulfill the members' needs	EMPH3
	The FG is always concerned about the members' welfare	EMPH4

Group member behavior: The dimension of group member behavior is developed by considering the theory of organizational citizenship behavior as defined by Organ (2006). The dimension is constructed of four indicators: altruism (ALT), conscientiousness (CONS), courtesy (COURT), and civic virtue (VIRTUE)

Table 5.6 Items of the group member behavior dimension

Dimension	Indicators	Code
Group Member Behavior	I will inform other FG members whenever I get new information about chili farming	ALT1
	If I have a new method for chili production, I am reluctant to inform the other FG members	ALT2
	I always help others when needed	ALT3
	I am reluctant to help other members who never help me in return	ALT4
	I am likely to help another member who has a field near my field	ALT5
	I only sell my chili product through collective marketing	CONS1
	I am ready to more actively participate in the collective marketing event	CONS2
	I am only active when the FG head asks for my participation	CONS3
	I usually persuade other members to sell chili through collective marketing	COURT1
	I don't care about the members who never participate in the FG	COURT2
	I criticize other members who sell a greater portion of chili to the traders	COURT3
	I am ready to become an FG board member	VIRT1
	I persuade others to more actively participate	VIRT2
	Without my participation, this FG is not able to reach its goals	VIRT3
	I am always ready to participate in the FG	VIRT4

5. 3.2. Data analysis

The data were analyzed by partial least squares (PLS) to determine which factors contributed the most to the variables and which factors reflected the variables. PLS can be used as a structural equation model based on the variance with small sample sizes (i.e., fewer than 100 samples) (Ghozali, 2011), and it does not require assumptions about the data distribution to estimate the model parameters (Faulk & Miller, 1992 *cited in* Howell & Hall-Merenda, 1999).

The path coefficients in PLS are standardized regression coefficients, while the loading of the indicators (items) into the constructs is the factor loading.

The outer model was tested by calculating the item reliability, internal consistency, and discriminant validity. Individual item reliability was examined using correlations between the items and constructs, as shown in the loading factors. A reliable loading factor for PLS should be greater than 0.50 (Ghozali, 2011). The loading factors of the indicators with values below 0.50 were excluded from the model, and the model was iterated to obtain all reliable loading factors. The construct validity can be seen from the scale of the average variance extracted (AVE), for which each dimension should be above 0.50. Reliability can also be examined through the construct's composite scale for reliability, which measures internal consistency reliability (ICR) and Cronbach's alpha. A construct is reliable when both the ICR and Cronbach's alpha coefficient are above 0.50 (Ghozali, 2011).

Table 5.7 Measurement properties of the validity and reliability of the model

Dimension	Bugel FG				Garongan FG			
	Valid Items	IRC	Cronbach Alpha	AVE	Valid Items	IRC	Cronbach Alpha	AVE
A. Charismatic	5	0.87	0.82	0.58	6	0.93	0.91	0.70
B. Inspirational	3	0.83	0.7	0.62	3	0.85	0.74	0.66
C. Intellectual Stimulation	3	0.85	0.76	0.58	3	0.88	0.8	0.72
D. Individual Consideration	4	0.85	0.76	0.58	4	0.8	0.67	0.52
E. Leader-Member Exchange	4	0.89	0.87	0.53	7	0.93	0.91	0.56
F. Satisfaction	4	0.88	0.86	0.52	6	0.89	0.86	0.7
G. Commitment	7	0.88	0.85	0.52	6	0.88	0.84	0.72
H. Group Member Behavior	5	0.78	0.67	0.51	6	0.82	0.74	0.54
I. Group Performance	8	0.93	0.92	0.67	8	0.95	0.95	0.70

Source: Field Survey, 2012

The structural equation model was then used to examine the direct and indirect effects of dimensions. A direct effect was generated by the correlation between two dimensions directly, the value of which could be examined from the coefficients along the path (Duncan, 1975). An indirect effect refers to the effect of two dimensions that pass through one or more other dimensions. To obtain the value of an indirect effect, the path coefficients from each path are multiplied, and then the products obtained for all linkages between the dimensions are summed to gain the total indirect effect (Duncan, 1975).

5.4. Results and Discussion

5.4.1 Attribution of Leadership and Group Dimensions

There are nine dimensions to this study, which are reflected by the indicator items. Most of the items are significant, although some are insignificant. Here, it focus on the insignificant items to compare the differences between the two FGs.

5.4.1.1. Transformational Leadership Dimension

Table 5.8 shows that on the transformational leadership dimension for the two FGs, five items appear to have significantly different results. These five items are taking personal risks for the sake of the FG, emphasizing the role of the FG, emphasizing following the rules of the FG, inspiring new technologies, and giving suggestions that resolve farming problems.

A difference in the willingness of the Bugel and Garongan leaders to take a personal risk on behalf of the group, as an aspect of charisma, is noted (Table 5.8-1d); this indicator reflects the charismatic dimension of the Garongan FG leader, but not that of the Bugel FG leader. With regard to risk-taking behavior on behalf of the group, the Garongan FG's leader is known as a negotiator who always seeks a solution for group development. In this sense, his effort to

negotiate is respected. He creates networks between the FG and the seed factory, authorized subsidized fertilizer shops, and chili traders. Since a relationship has been established with these institutions, the FG is able to collectively obtain reasonably priced seed and subsidized fertilizer, and enjoy collective marketing. Although the Bugel FG leader initiates the same activities as the Garongan FG leader does, the mechanism of participation is different. The Bugel leader does not suggest that members join collectively; their participation is based on their own willingness, and many members decide to be responsible for their own decisions, so the leader does not have to take a personal risk for them.

Table 5.8. Factor loadings of the transformational leadership items

Indicators	Factor Loading	
	Garongan	Bugel
1. Charismatic		
a. Ability of the leader	0.89	0.74
b. Admiration of the leader	0.87	0.68
c. Role of decision making	0.81	0.77
d. Taking personal risks for the sake of the group	0.73	ns
e. Personality of the leader	0.85	0.79
f. Unifier of the FG	0.84	0.79
2. Inspirational		
a. Inspiration to develop the FG	0.83	0.77
b. Emphasizes the role of the FG	0.72	ns
c. Emphasizes following the rules	0.87	ns
d. Inspires new technologies	ns	0.77
e. Gives suggestions regarding farming problems	ns	0.83
3. Intellectual Stimulation		
a. Importance of group discussion	0.84	0.52
b. Dissemination of new information	0.85	0.80
c. Encouraging new technologies	0.85	0.81
4. Individual Consideration		
a. Listening to members' problems	0.67	0.68
b. Personal communication	0.68	0.69
c. Feeling close to the leader	0.77	0.79
d. Personal suggestions	0.71	0.87

Note. ns: not significant. Significance: $p < 0.05$.

Source: Field Survey, 2012

Inspirational motivation is an indicator that motivates members by stressing important values in order to produce team spirit. It is grouped into two aspects, the group aspect and the individual aspect. The leader motivates members to consider the group aspect by emphasizing the role of the FG and the need to follow the rules, and the leader also motivates the individual aspect by inspiring the use of new technology and providing suggestions that resolve farming problems (Table 5.8-2).

Table 5.8-2b;2c shows that the leader of the Garongan FG tries to strengthen the group aspect by encouraging members to follow the group's rules and develop the role of the FG to improve chili production. In contrast in Table 5.8-2d;2e, the Bugel FG leader seek to emphasize the individual aspect to inspire each individual member to achieve good farm management by providing new technology and advising members when they faced a farming problem. The different of motivation inspired by two farmer group leaders into members reflect the different characteristic and position of leaders in the farmer group.

5.4.1.2. Leader-Member Exchange Dimension

The exchanges between the members and leader of the Garongan FG occur at routine meetings, whereas the exchange between members and leaders of the Bugel FG are individual relationships. These different methods of LMX bring a different perspective to the leaders and FG members.

In the Garongan FG, routine meetings produce a members' awareness to maintain good relationships among the members. As shown in Table 5.9-1g; 1e, the Garongan FG members prefer to work collectively on chili farming rather than individually and they believe that the FG will be developed by their own active contribution. In addition, the members recognize that

leader plays a positive role to facilitate members for the sake of farmer group development (Table 5.9-1f).

Table 5.9 Factor loadings of the LMX items

Items	Factor Loading	
	Garongan	Bugel
1. LMX		
a. I respect the leader's ability to guide this FG	0.76	0.70
b. I respect the leader's ideas to develop this FG	0.74	0.72
c. The leader's kindness affects the group	0.79	0.75
d. I will participate more actively in this FG	0.70	0.76
e. The FG emphasizes that my contribution is needed	0.72	ns
f. The leader facilitates members to maintain a relationship with the group	0.71	ns
g. I prefer to work together in this FG rather than farming individually	0.74	ns

Note. ns is not significant. Significance: $p < 0.05$.
Source: Field Survey, 2012

In contrast, the items relating with working together, individual contribution to the FG, and leader's facilitation are not significantly established in the LMX of the Bugel FG. For Bugel FG, LMX is established only through personal relations between the leader and members. As long as the leader has ability, knowledge, and kindness, the relationship between the leader and members can be developed.

5.4.1.3. Satisfaction dimension

Members tend to remain in a group when their needs are satisfied. The primary reason for joining an FG is to access subsidized fertilizer, because individual farmers cannot access it. In addition, an FG is also a place to assemble to solve farming problems and standardize collective activities such as the planting duration and collective marketing.

Table 5.10 Factor loadings of the satisfaction items

Dimension and Items	Factor Loading	
	Garongan	Bugel
1. Satisfaction		
a. Satisfied with the rules for planting duration	0.64	0.77
b. Satisfied with the rules to sell through collective marketing	0.66	ns
c. Satisfied with the FG's board work	0.73	0.65
d. Satisfied with the distribution of subsidized fertilizer	0.70	ns
e. Satisfied with inputs and collective market information	0.72	0.67
f. Satisfied with the distribution mechanism for collective seed buying	0.76	0.54

Note. ns: not significant. Significance: $p < 0.05$.
Source: Field Survey, 2012

Table 5.10 shows that the rule for selling through collective marketing does not significantly construct satisfaction in the Bugel FG. Antecedent activity and the distribution of collectively purchased seed, which would be expected to affect the collective marketing attitude, are not well regulated by the Bugel FG. Individual members can choose opportunistically to sell through collective marketing or to an individual trader. The satisfaction of the Bugel FG is not observed through a rule requiring collective selling; however, members can make use of both marketing channels opportunistically. In contrast, considering the activities of members who have been working as sub-intermediate traders of chili marketing, the Garongan FG decide the policy at most 20% of chili product could be sold to any trader other than collective marketing. As a result, they are satisfied with the rules for selling chili through collective marketing.

The government provides subsidized fertilizer, which can be accessed through an authorized subsidized fertilizer shop in the village. The method to redeem the subsidized fertilizer depends on the shop. A few years ago, the Garongan members experienced some difficulty if they redeemed the subsidized fertilizer individually, because the shop processed the

redemption of some members together. Thus, the Garongan FG effectively allows the farmers to purchase subsidized fertilizer as a group. This mechanism does not occur in the Bugel FG, because the authorized subsidized fertilizer shop in the Bugel village supports only individual buying. As shown in Table 5.10, providing subsidized fertilizer to Bugel farmers at the group level does not affect satisfaction, because the mechanism itself does not exist.

5.4.1.4. Commitment dimension

Farmers easily become engaged in an FG if every member receives the same opportunity to obtain the benefits provided by the group. The mechanism of seed distribution in the Bugel FG does not fulfill the needs of all members, whereas the Garongan FG attempts to distribute the seed evenly. Farmers are dependent on the trader or institution that provides the seed.

Interestingly, the members of the Bugel FG sell their chili products through collective marketing even when they do not receive their seed from the group (Table 5.10). The Bugel system allows the members to make individual decisions regarding their own chili farming and marketing. The members of the Bugel FG that have off-farm jobs can choose to procure seed from the group or from an outside trader, at will. They can also create and maintain a relationship with the trader to obtain seed easily. With respect to marketing, the high price the chili product obtains through collective marketing lures members to sell their chili through it.

Table 5.11 Factor loadings of the commitment items

Dimension	Factor Loading	
	Garongan	Bugel
1. Commitment		
a. Identification – I'm proud to be a member of this FG	0.70	0.63
b. Identification – Being an active participant is a source of pride for me	0.79	0.81
c. Identification – I feel a part of the FG	0.83	0.63
d. Identification – I help the group achieve its goals	0.84	0.65
e. Conformity – Becoming a member is the best plan	0.65	0.74
f. Conformity – I will do anything for this FG	0.63	0.67
g. Conformity – I will sell products through this FG, even when the FG does not supply seed	ns	0.77

Note. ns: not significant. Significance: $p < 0.05$

Source: Field survey, 2012

In contrast, the members of the Garongan FG are determined to remain in the group as long as the group provides common goods. Providing seed for the members and collecting the chili product are reciprocal activities that occur between the Garongan FG and its members. Collective seed buying is regarded as one of the Garongan FG's obligations to its members, while members regard it as their obligation to sell their chili product through collective marketing. If the system of collective seed buying disappears, the members of the Garongan FG no longer consider it as their obligation to sell chili collectively and sell them to local traders freely, without considering the rule for a minimum proportion of selling chili through the FG.

5.4.1.5. Group Member Behavior and the Group Performance Dimension

The indicators of group performance consist of tangibility, reliability (the consistency of the promised service), responsiveness, assurance, and empathy. Table 5.12 shows that only the empathy and tangibility indicators differed between the two FGs.

Table 5.12 Factor loadings of the group performance and group member behavior items

Dimension	Factor Loading	
	Garongan	Bugel
1. Group Member Behavior		
a. Ready to become a board member	0.62	0.62
b. Persuades other members to participate	0.74	0.67
c. Sells chili only through collective marketing	0.65	0.65
d. Ready to be a more active participant	0.57	0.67
e. Persuades others to sell only through the group	0.68	ns
f. I always help others when needed	0.67	0.59
2. Group Performance		
a. Assurance – Collective marketing can be trusted	0.68	0.59
b. Empathy – The FG board communicates with members	0.77	0.70
c. Empathy – The FG board tries to fulfill members' needs	ns	0.64
d. Reliability – Provided seed by networking with seed company	0.77	0.51
e. Reliability – Seed distribution	0.82	0.58
f. Responsiveness – Helps members	0.77	0.77
g. Responsiveness – Satisfies members	0.79	0.77
h. Tangibility – Facilitates obtaining subsidized fertilizer	0.60	ns
i. Tangibility – Creates a simplified chili market	0.75	0.52

Note. ns: not significant. Significance: $p < 0.05$

Source: Field Survey, 2012

Although the Garongan FG board works hard to fulfill the members' needs for seed, the limited quota of seed from the distributor leads to an insufficient quantity; the needs of all of the members cannot be met. In contrast, the Bugel FG does not require members to contribute collectively at the group level. The members make many of their own decisions and are

responsible for their own farming. The members of the Bugel FG are empathetic with the board, because it provides services without requiring a minimum percentage of the product to be sold collectively. Ironically according to Table 5.12-2c, the Garongan FG board does not receive empathy from its members, because the members are not satisfied with the amount of seed provided by the FG in light of their obligation to collective chili marketing at least 80% of their total chili product.

In terms of the tangible indicators of group performance, the Garongan FG distributes the subsidized fertilizer on behalf of the authorized subsidized fertilizer shop. As a result, the Garongan FG developed a mechanism for channeling the subsidized fertilizer. The Garongan FG members view the mechanism as a tangible support, allowing them to access to subsidized fertilizer (Table 5.12-2h). In contrast, the Bugel FG does not need to provide subsidized fertilizer to its members, because Bugel's authorized shop supplies the subsidized fertilizer to the members individually. The Bugel members also prefer to purchase the subsidized fertilizer directly to acquire other materials, such as chili seed. Providing subsidized fertilizer through the Bugel FG is not a tangible activity for its members.

Group member behavior is adopted from organizational membership behavior, which consists of the informal contributions that members make without considering rewards or sanctions. The different member behaviors between the two FGs can be compared by the situation of persuading its members to sell chili only through the collective marketing (Table 5.12-1e).

As discussed above, the members of both FGs understand that larger quantities of chili yield a higher price at auction through collective marketing. However, in Bugel FG, each member can sell chili based on his individual judgment so they hesitate to persuade other

members to sell chili only through collective marketing even if they hope it. Unlike the case of the Bugel FG, the members of the Garongan FG take it for granted to market collectively, because they respect the consensus.

5.4.2 Direct Effects among the Dimensions

LMX, satisfaction, and commitment are the potential intermediates from transformational leadership to group member behavior and group performance. An examination of the direct effect between the two dimensions identifies the different characteristics of the two FGs.

Table 5.13 Goodness of fit of structural model from transformational leadership

Dimension	Goodness of fit (R ²)	
	Bugel	Garongan
1 Leader-member exchange	0.696	0.739
2 Commitment	0.757	0.662
3 Satisfaction	0.339	0.472
4 Group Member Behavior	0.385	0.387
5 Group Performance	0.690	0.758

Source: Field Survey, 2012

The goodness of fit of this structural model can be measured by the value of R square. As shown at Figure 5.1 theoretically LMX is influenced by transformational leadership. The satisfaction and commitment is influenced by transformational leadership and LMX. The group member behavior is influenced by LMX, satisfaction and commitment. The group performance is influenced by LMX, satisfaction, commitment and group member behavior. Results of R square are shown on Table 5.13. The influence of those variables constructs group performance in Garongan FG (75.8%) higher than Bugel FG (69%).

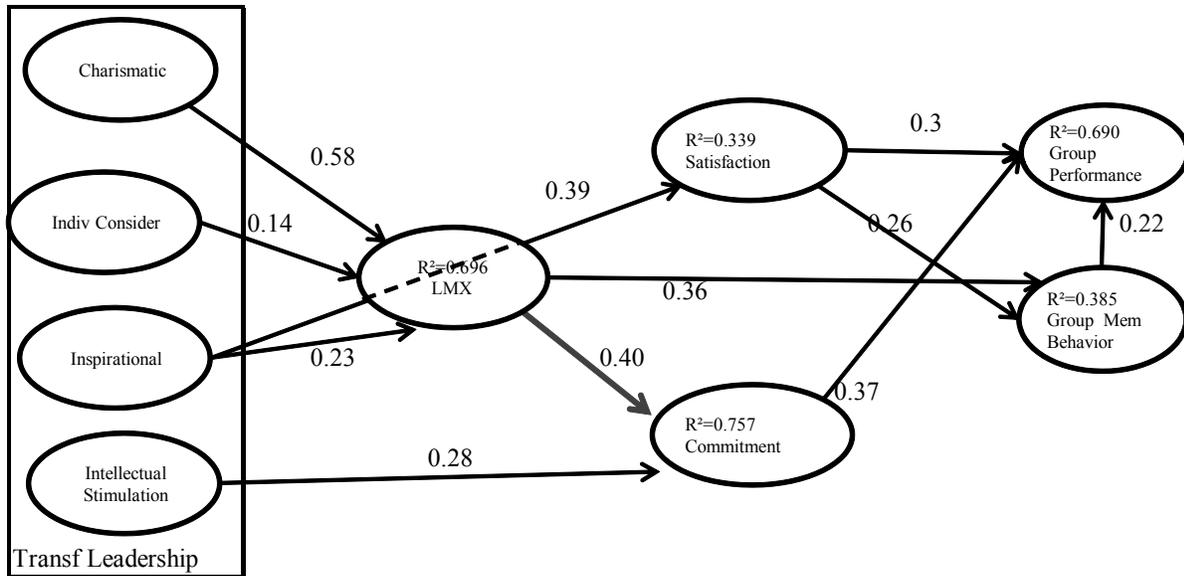


Figure 5.2 Direct effects among the dimensions in the Bugel FG
Source: Field Survey, 2012

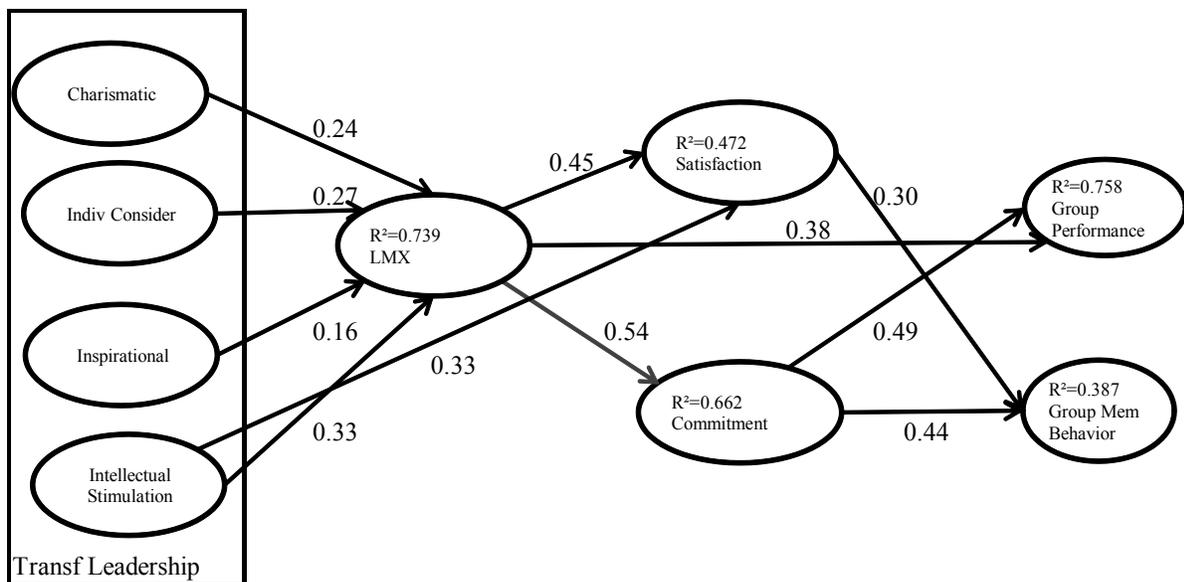


Figure 5.3 Direct effects among the dimensions in the Garongan FG
Source: Field Survey, 2012

As shown in Figure 5.3, for the Garongan FG, the four indicators for the transformational leader dimensions positively influence LMX, whereas for the Bugel FG, only three indicators—charismatic, individual consideration, and inspirational—show a positive association with LMX

(Figure 5.2). The means of exchange between the leader and members created by the two FGs are different. As discussed above, in the Garongan FG, regular, official meetings constitute the basis of the group's collective activity. The group meetings function as the mode of communication between the leader and members and legitimize the consensus at the group level. In Bugel, the FG does not have regular group meetings as a medium of exchange between the leader and members. Instead, the leader and members of the Bugel FG utilize the collective marketing event to communicate with each other regarding FG activity.

Moreover, the relationship between the leader and members can influence satisfaction and commitment. Looking at Figure 5.3, LMX in the Garongan FG influences both satisfaction and commitment, whereas Figure 5.2 shows that LMX in the Bugel FG only influences commitment. On the other hand, two transformational leadership indicators, inspirational and intellectual stimulation, for the Bugel FG influence satisfaction and commitment directly, whereas one transformational leadership indicator, intellectual stimulation, directly affects satisfaction in the Garongan FG. In this sense, the LMX function in the Garongan FG has a larger effect on satisfaction and commitment than does the direct influence of transformational leadership on either satisfaction or commitment. For the Bugel FG, the direct influence of transformational leadership has a larger effect on the relationship between the leader and members than does the LMX function. In the Garongan FG, LMX produces legitimate consensus, which makes members satisfied with the group as it is. In the Bugel FG, LMX does not influence satisfaction, because the individual approach by giving inspiration is more important for the members than the collective approach.

For the Garongan FG, LMX directly affects group performance, whereas for the Bugel FG, LMX directly affects group member behavior, as illustrated in Figures 5.2 and 5.3. The Garongan

FG implements periodical group meetings to discuss members' needs, enabling LMX functions. Thus, the members of the Garongan FG share a legitimate group consensus, so the performance of members is likely regulated by consensus. Members always act collectively to respect the consensus, thereby influencing group performance directly. In contrast, LMX influences group member behavior in the Bugel FG. Although LMX is not organized at the group level, members can make use of the opportunity to communicate with the leader and board members during the collective marketing event to receive information personally. Based on the information, members can decide for themselves whether or to what extent to join in the collective marketing or not.

In the Bugel FG, satisfaction affects both individual member behavior and group performance, whereas in the Garongan FG, satisfaction only affects group member behavior. It means that in the Bugel FG, the members are satisfied with some of the benefits provided through group activities, such as providing seed and information and chili collective marketing, positively affects group performance. At the same time, satisfied members activities affect group member behavior. Group performance in Bugel FG can be observed as an aggregation of individual member behavior. However, in the case of the Garongan FG, satisfaction is not sufficient to affect group performance, because group performance is strongly influenced by other factors (e.g., LMX) regardless the level of satisfaction of each member. Group member behavior is influenced by individual level of satisfaction, while Garongan FG members are strongly expect to behave regardless they are satisfied or not, so that group performance of Garongan FG is not reflected by its group member behavior.

In contrast to the results observed for satisfaction, the commitment of members in the Bugel FG affects only group performance. However, for the Garongan FG, member commitment affects both group performance and group member behavior. The members of the Garongan FG

who commit to the group have two motivations: a feeling of obligation and the individual advantages. Because of the latter motivation, the Garongan members attempt to persuade others to participate more actively, while the obligation factor influences group performance directly. In contrast, the Bugel farmers take for granted to enjoy the privilege as member so they are likely to maintain their member status.

5.4.3. Indirect effects among the dimensions

Applying a structural equation model revealed indirect effects that are useful for understanding the patterns of each dimension. The pattern of transformational leadership into group performance is most likely mediated by LMX, satisfaction, commitment, and group member behavior. Table 5.14 shows a significant indirect relationship between transformational leadership and group performance and between transformational leadership and group member behavior.

Table 5.14 Indirect effects to group performance

I. Path coefficient of indirect effect to group performance	Bugel	Garongan
A. Transformational Leadership → LMX → Group Performance	ns	0.39
A-1. Charismatic → LMX → Group Performance	ns	0.09
A-2. Individual Consideration → LMX → Group Performance	ns	0.1
A-3. Inspirational → LMX → Group Performance	ns	0.06
A-4. Intellectual → LMX → Group Performance	ns	0.13
B. Transformational Leadership → Satisfaction → Group Performance	0.12	ns
B-1. Charismatic → Satisfaction → Group Performance	ns	ns
B-2. Individual Consideration → Satisfaction → Group Performance	ns	ns
B-3. Inspirational → Satisfaction → Group Performance	0.12	ns
B-4. Intellectual → Satisfaction → Group Performance	ns	ns
C. Transformational Leadership → Commitment → Group Performance	0.10	ns
C-1. Charismatic → Commitment → Group Performance	ns	ns
C-2. Individual Consideration → Commitment → Group Performance	ns	ns
C-3. Inspirational → Commitment → Group Performance	ns	ns
C-4. Intellectual → Commitment → Group Performance	0.10	ns
D. Transformational Leadership → LMX → Commitment → Group Performance	0.13	0.24
D-1. Charismatic → LMX → Commitment → Group Performance	0.08	0.06
D-2. Individual Consideration → LMX → Commitment → Group Performance	0.02	0.06
D-3. Inspirational → LMX → Commitment → Group Performance	0.03	0.04
D-4. Intellectual → LMX → Commitment → Group Performance	ns	0.08
E. Transformational Leadership → LMX → Group Member Behavior → Group Performance	0.1	ns
E-1. Charismatic → LMX → Group Member Behavior → Group Performance	0.06	ns
E-2. Individ Consider → LMX → Group Member Behavior → Group Performance	0.02	ns
E-3. Inspirational → LMX → Group Member Behavior → Group Performance	0.02	ns
E-4. Intellectual → LMX → Group Member Behavior → Group Performance	ns	ns
F. Transformational Leadership → Satisfaction → Group Member Behavior → Group Performance	0.03	ns
F-1. Charismatic → Satisf → Group Member Behavior → Group Performance	ns	ns
F-2. Individ Consider → Satisf → Group Member Behavior → Group Performance	ns	ns
F-3. Inspirational → Satisf → Group Member Behavior → Group Performance	0.03	ns
F-4. Intellectual → Satisf → Group Member Behavior → Group Performance	ns	ns
Total Indirect Effect to Group Performance	0.48	0.63

Significance: $p < 0.05$.

Source: Field Survey, 2012

Table 5.14-A shows that charisma, individual consideration, inspiration, and intellectual stimulation affect group performance, which are mediated by LMX in the Garongan FG. The

leader of the Garongan FG has a functional LMX, which stresses the role of legitimate consensus for achieving group performance. In contrast, this pattern is not significant for the Bugel FG, which lacks regular group meetings and legitimate consensus, and therefore cannot encourage members to contribute to group performance. However, Table 5.14-E shows that for the Bugel FG, the existence of LMX, which is simultaneously influenced by the leader's charisma, individual consideration, and ability to inspire others, is sufficient to establish group member behavior and affect group performance. The leader of the Bugel FG realizes that his members are opportunistic, and so via LMX, the leader can help the members understand they will receive more benefits by participating as a group. As a result, the individual member incentives establish group behavior, and the Bugel individual member behavior brings advantages to the group, replacing the function of legitimized consensus.

Both FGs establish a pattern of transformational leadership to group performance that is intermediated by LMX and commitment (Table 5.14-D). In the Garongan FG, the pathway utilizing LMX shows that member participation is based on a shared norm of legitimate consensus, so the feelings of obligation or commitment influence group performance. In contrast, members of the Bugel FG internalize the leader's ideas. As long as individuals remain members, they can enjoy the advantages of group activities such as collective seed buying and chili marketing, which preserves their commitment as members. They understand the benefits of access to group activity. As a result, the pattern of transformational leadership, which is intermediated by LMX and commitment, influences group performance in the Bugel FG.

Table 5.15 Indirect effects to group member behavior

II. Path coefficient of indirect effect to group member behavior	Bugel	Garongan
A. Transformational Leadership → Satisfaction → Group Member Behavior	*	0.10
A-1. Charismatic → Satisfaction → Group Member Behavior	ns	ns
A-2. Individ Consider → Satisfaction → Group Member Behavior	ns	ns
A-3. Inspirational → Satisfaction → Group Member Behavior	*	ns
A-4. Intellectual → Satisfaction → Group Member Behavior	ns	0.10
B. Transformational Leadership → LMX → Commitment → Group Member Behavior	ns	0.19
B-1. Charismatic → LMX → Commitment → Group Member Behavior	ns	0.05
B-2. Individ Consider → LMX → Commitment → Group Member Behavior	ns	0.05
B-3. Inspirational → LMX → Commitment → Group Member Behavior	ns	0.03
B-4. Intellectual → LMX → Commitment → Group Member Behavior	ns	0.06
C. Transformational Leadership → LMX → Satisfaction → Group Member Behavior	ns	0.14
C-1. Charismatic → LMX → Satisfaction → Group Member Behavior	ns	0.03
C-2. Individ Consider → LMX → Satisfaction → Group Member Behavior	ns	0.04
C-3. Inspirational → LMX → Satisfaction → Group Member Behavior	ns	0.02
C-4. Intellectual → LMX → Satisfaction → Group Member Behavior	ns	0.05
Total Indirect Effect to Group Member Behavior	ns	0.43

Note. Significance: $p < 0.05$. * The path on Bugel FG is continued to Group Performance.
Source: Field Survey, 2012

In addition, another pattern intermediated through LMX and commitment affects group member behavior in the Garongan FG, because members are encouraged to make use of the advantages available from participating in the group, such as access to seeds and subsidized fertilizer, a high chili price due to collective marketing, and innovative technology. As a result, the patterns of LMX and commitment influence not only group performance, but also group member behavior (Table 5.15-B).

Interestingly, in the Garongan FG, the pattern of transformational leadership and LMX associated with satisfaction influences only group member behavior, but not group performance. In this FG, the members abide by the rules regardless of personal satisfaction. When members realize that they can obtain personal advantages by actively participating in the group, they are satisfied and try to pursue collective behavior as group member behavior. In addition,

inspirational communication between the leader and members of the Garongan FG in daily life creates satisfaction and influences group member behavior.

As seen in Table 5.14-B, members of the Bugel FG who are satisfied with the facility advantages provided by the FG are willing to participate in collective activities, which results in successful group performance. Transformational leadership in the Bugel FG that is intermediated by LMX does not influence group performance. However, the inspirational behavior of the leader and the leader's intellectual stimulation has an indirect effect on group performance via satisfaction and commitment (Table 5.14-B&C). In the Bugel FG, there are indirect effects in which LMX is not functioning, as shown in Table 5.14-B, C, &F. These patterns suggest that even if the ability of LMX to achieve a legitimate consensus is weak, individual relationships can replace that function.

In term of indirect effect from transformational leadership to group performance as shown in the total of Table 5.14, the Garongan FG has stronger group performance which is influenced by transformational leadership, LMX and commitment. Regardless satisfaction, all members will perform due to achieve group performance while only satisfied members in the Garongan FG will behave as group member behavior. Both group performance and group member behavior are developed in the Garongan FG but they are not directly related. In the case of Bugel FG, group member behavior is a result of leader and member relationship, member will behave properly in a group because they are receiving benefit from FG as an outcome of the relationship between leader and member. Aggregation of group member behavior can be seen as group performance.

5.5. Conclusions

This chapter has addressed an important consideration when comparing the function of LMX in two neighboring FGs. The findings of this study have several intriguing managerial implications. LMX plays an important role in the leadership of an FG to enhance group performance. Leaders and members that experience regular group meetings can find a group consensus and follow the rules of the FG, so the personality of the leader is not a critical point to manage FG. On the other hand, even if the group lacks group meeting activities, the leader and members can exchange information by keeping individual relationships, and this can also enhance group membership behavior and enable good group performance. In this type of FG, the personality and capability of leader become a crucial to enable group performance of farmer group. Basically if only considering capability of leader, it cannot enhance the group performance. Leaders have to show their transformational behavior and his insight clearly to members in order to accumulate members' understanding. By showing their behavior and emphasizing their insight, members will imitate leader's behavior and act according leader's insight. Then, it will become a behavior of members and accumulation of members' behavior can be regarded as group performance.

This finding suggests the way to resolve the problem of many FGs in Indonesia that are facing weak performance. First, the FG leader should behave in a way that is admired by the members, provides inspiration, promotes intellectual stimulation, and is considerate of members' situations. Farmer group should select the leader by considering his personality and capability. Second, the commitment of members can increase the performance of FGs. Members are able to perform well not only in groups with regular meetings, but also in groups that lack meetings. In this respect, the FG leader must pay more attention to making members conform to the nature of

the FG. Third, FG which has lack of group meeting should also consider member satisfaction because satisfied members will influence group performance. Fourth, FG which manages the group by enforceability of consensus should always consider with the needs of members because members who respect with consensus sacrifices their individual level of satisfaction.

CHAPTER 6

CONCLUSIONS

6.1. Conclusions

This study attempts to explore the present situation of advanced-class farmer groups (FGs) in the coastal sandy region of the Yogyakarta Special Region. The function of FGs is very important for strengthening farmers' bargaining power against the input providers, output buyers, lenders, and so forth. For the past three years, beginning in 2011, there has been an increasing number of FGs in Indonesia, but the increased number has not been followed by an increased number of *qualified* FGs. The majority of FGs are classified as beginner or pre-intermediate class, with only 10% of FGs classified as advanced class. In addition, most of the existing FGs have been built with external support to obtain government subsidies.

This study focused on two pioneering FGs based on chili commodities, which are located in the coastal sandy region of the Yogyakarta Special Region, the Bugel FG and the Garongan FG. These two groups are reputed to be advanced-class FGs by the Indonesia Ministry of Agriculture and have been successfully conducting collective activities for both chili farming and chili marketing. However, they are exceptional in comparison to other existing FGs in Indonesia, because they are self-initiated, driven by their own indigenous innovations. The Bugel FG is well-known for its indigenous technological innovation, which altered the marginal coastal sandy soil into land that is ready to be utilized for chili farming. In contrast, the Garongan FG can be characterized as that of developing indigenous institutional innovations. As far as the indigenous development is concerned, these two farmer groups are similar with each other. However, organizational structure and the role of leadership differ significantly on the performance of FGs.

A comparison of two FGs is conducted in this study. In order to focus on the organizational structure and the role of leadership, this study has explored the historical background of the different pathways of FGs, different social network structure, different factors that influenced member individual performance of chili farming and chili collective marketing, and the different function of leader-member exchange that enhanced group performance of two FGs.

In Chapter 2, the detailed historical process of chili farming and marketing are discussed, and for this study, the different historical backgrounds of the Bugel and Garongan FGs are provided. As already mentioned, both the Bugel and Garongan FGs are categorized as advanced-class FGs, but they are actually very different from each other. In the first stage, both the Bugel and Garongan farmers faced a poverty problem, because most of them cultivated only marginal lands of coastal sandy soil with low-value commodities. However, the area of wetlands is larger in Bugel (25%) than in Garongan (13%), so 50% of previous generation of Bugel farmers had opportunity to cultivate the wetlands alternately with paddy and chili. The income from the paddy and chili could be used to send their children to pursue a better education. As a result, the difference in the socioeconomic conditions between the two villages became larger. The next generation of Bugel farmers has a high educational background, which made it easier for them to find off-farm jobs. There were two impacts from having an off-farm job; first, they gained experience and knowledge other than farming, and secondly, they became busy with the off-farm jobs, which made it difficult to maintain close social relations. As a result, the customary group exchange of labor (*sambatan*) could no longer be preserved.

As pioneers of chili farming on coastal sandy land, the farmers in the Bugel FG always attempt to find new technology to ease the most difficult tasks of working on marginal land while also facing extremes of climate. Some technologies were innovated, such as those for

watering the chili plants and utilizing plastic mulch. Those innovations diffused to neighboring villages, including Garongan. Meanwhile, the Garongan FG initiated land utilization planning for the sustainability of chili farming. Conducting the land utilization planning was a difficult task to achieve, but shared norms among the community members helped them to accomplish it. The activity of land management diffused to the Bugel village officer and Bugel FG and they adopted it, being motivated by the economic benefits of economizing on the costs of watering the chili plants. Moreover, the methods for chili marketing was innovated the Garongan FG, away from individual selling into a collective marketing, through a manifestation of the shared norms of evenness, which encouraged them to conduct collective marketing. Thus, the Garongan FG becomes the pioneer of chili collective marketing in the coastal chili farming region. The collective marketing diffused to the neighboring village of Bugel and has been adopted by them.

Looking at the differences, the Bugel farmers have been concerned with individual preferences and time economization to counter their off-farm business, so they succeeded in developing a pattern of technological innovation. Conversely, the Garongan farmers have been concerned with community relations, so they developed a community-based activity, which eventually resulted in economic benefits.

In Chapter 3, we analyze the organizational structure of FGs by considering the pattern of communication among the members through social network analysis. Social networks can describe how the members, as actors, are placed in the network structure and how the ties are connected among them. Moreover, the position of the actors in the social network analysis can predict the flow of information on the group. There are two perspectives to understanding the network: first, analyzing the whole network (socio-centered network); and second, analyzing the position of the central actors in the network (ego-centered network). The purpose of chapter 3 is

to explore the different social network patterns in the Bugel and Garongan FGs. A radial pattern appeared for the Bugel FG, both for the socio-centered network and the ego-centered network, whereas an interlocking pattern appeared for the Garongan FG for both networks. In the case of the ego-centered network, only the FG leaders are considered as important persons in the Bugel FG, while in the Garongan FG, both the RT heads and FG leaders take a role in delivering information regarding FG activities. Radial patterns are observed in the connected ties from the Bugel FG leaders to members. With regard to their relationships, they usually meet at the collective marketing event instead of during routine meetings. They cannot nurture the holding of routine meetings, because they are too busy. In contrast, the connection among members in the Garongan FG is cohesive, which is triggered by the existence of the RT meetings, FG meetings, and customary group exchange of labor.

Even though the organizational structure of Bugel FG and the activities seem to be individual but the Bugel FG still can be regarded as organization because the Bugel FG has a board and identified members who work on (same activity) chili farming. The Bugel FG board has no term of limit and the regeneration of leaders might become a problem in the future. However, the FG leaders are accessible because proactive members are able to ask advice from them so FG can be organized by the functional leaders. On the other hand, the interaction of members in the Garongan FG is maintained by the existence of periodical meeting, the activity of custom help (*sambatan*), rules and norms.

In Chapter 4, we analyze the factors that influence the difference of individual performance of chili farming and chili collective marketing. In Bugel FG, as far as individual performance of chili farming is concerned, the performance of chili farming is not only influenced by economic condition but also with the position of members towards FG leaders and

their position in organization. The members who are closer with FG leaders will gain advantage of FG facility and information of new technology. In Garongan FG, the economic condition is an important point for discussing the performance of chili farming and chili collective marketing. Having strong economic condition trigger the farmers to able sell more percentage of chili on collective marketing even the delayed payment is existed. They are also can afford to adopt new technology earlier rather than others.

In Bugel FG, as mentioned above that position of members to leaders bring advantage to members so those who want to access group facility and information are motivated to be closer to the FG leaders. In Garongan FG, the equality and evenness for each farmer are a basis of FG management. Because of the enforceability of consensus, members can achieve good performance together. Moreover, the farmers who are regarded as leaders have a feeling of responsibility to adopt new technology earlier as a form of securing members from risky trial of new technology.

In Chapter 5, we postulate that transformational leadership likely influences satisfaction and commitment of the members in two ways, either directly or indirectly through leader-member exchange (LMX). In addition, LMX is considered as an important mediator from transformational leadership to group performance. The results of this study show that LMX plays an important role in the leadership of farmer groups to enhance group performance. Group performance can be seen from the tangibles of the group in providing resources that can be easily accessed by members, the means of communication from the FG board to the members, and providing members with feelings of security through their collective actions. Considering the function of LMX, leaders and members that experience regular group meetings, such as in the Garongan FG, can reach a group consensus. On the other hand, for groups that lack group

meetings, such as the Bugel FG, the leaders should take a role in organizing the farmer group by providing reliable information through individual relationships. So that, the leaders, should have charisma, inspire the members, and are knowledgeable, and it can affect the exchange between the leaders and members. The demerits of farmer group which has lack of group meeting, farmer group depends on the leaders. But, as long as leaders play a good role and members get benefit from the farmer group, satisfied members can enhance the group performance as a merits outcome of this process. Meanwhile, enforceability of consensus will develop a stable performance of farmer group even though sometimes members should sacrifice their individual satisfaction in order to respect the consensus.

The small different on historical background has a different on the two FGs. Because of the different historical background reflect the different of organizational structure of two FGs. Organizational structure contributes to pattern of communication and social network structure of community. In Garongan FG, the existence of sub-groups eases the flow of communication among members and intensive communication among members will strengthen the bond of relationship and emerge the consensus. In Bugel FG, the existing relationship is only between leaders and members which are probably hamper the farmer group development but it has been functioning to organize FG.

Although the starting situation for each FG is different, when the groups realize the characteristics of their community, they can find compatible strategy as a proper pathway to be a successful farmer group. But, farmer group which is organized only by the affection of powerful leader might be faced a sustainability problem because probably farmer group cannot find future leaders. The FG which is driven by the members' participation and enforceability of consensus

tend to have stable performance even though enforceability of consensus might sacrifice members' satisfaction.

6.2. Policy Implication

Even though the farmer group in Indonesia plays an important role, it has faced many problems that have prevented its development. An integrated framework that considers the character of the farmer group as a social group, which is closely related to the function of community capital, the historical background, and the social learning processes regarding innovative developments and other factors contributing to current performance, should be taken into consideration.

As a country with great diversity, Indonesia has different indigenous community cultures that will also influence the development of farmer groups. The policy for increasing a number of farmer groups is not enough to accommodate the needs of farmers. The farmer groups should function properly to enhance better economic conditions of their members. Meanwhile, judging the needs of a farmer by only providing a subsidy cannot assist in the development of farmer groups.

The existence of developed farmer groups is crucial for strengthening the position of farmers and creating better economic conditions for them. Promoted farmer groups become an advanced farmer group can arise by understanding the strength of the indigenous culture within the community. This implies that a "case by case approach" considering the condition of each farmer group is sufficient for farmer group development in Indonesia.

The leaders should take a role on strengthen the relationship between leaders and members and relationship among members. Strong leadership by means of centralized position

only on leaders cannot guarantee the sustainability of FG. The FG should facilitate members by creating the activity by which members are able to have intensive interactions.

To be responsive with new technology, farmer groups should take a role on the trial stage of new technology to secure members from the risk. To speed up the adoption of new technology, FG should also facilitate members to ease their limitation of economic condition. The FG can take a role as micro-finance institution by applying saving and borrowing system for members. This mechanism can hamper the disturbance of third parties who take advantages by the absence of micro-finance institution. Thus, micro-finance which is providing by farmer groups not only eases the introduction technology but also strengthen the member orientation for the farmer group activities.

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