



HOKKAIDO UNIVERSITY

Title	The Roles of Farmers' Organizations in Modernizing the Fresh Vegetable Supply Chain in West Bandung District, West Java Province, Indonesia
Author(s)	Freddy; Yanagimura, Shunsuke
Citation	農経論叢, 72, 13-27
Issue Date	2018-03-31
Doc URL	https://hdl.handle.net/2115/71386
Type	departmental bulletin paper
File Information	72_13_28.pdf



The Roles of Farmers' Organizations in Modernizing the Fresh Vegetable Supply Chain in West Bandung District, West Java Province, Indonesia

Freddy and Shunsuke YANAGIMURA

Summary

This qualitative research investigates the roles of farmers' organizations in the fresh vegetable supply chain in West Bandung District, West Java Province, Indonesia. The ability of farmers' organizations in adapting to the new procurement mechanism that is set up by the modern market channel, focusing on the quantity, quality, continuity and payment method, is found to be the key factor in modernizing the supply chain management. We found that the cooperative is the best model for a farmers' organization in modernizing the supply chain. However, there are many farmers' organizations that have not optimized the roles yet. Therefore empowering the role of a farmers' organization is strongly needed to help farmers, who face dynamic changes in the supply chain.

1. Introduction

According to Dyck et al. (2012), there is growing concern relating to the topics of food safety and increasing farmers' incomes in the area of food consumption in Indonesia. Changing lifestyles and increasing purchasing power have transformed patterns of food purchasing behavior among consumers, who now prefer to purchase food at modern rather than traditional markets. Contrasting with conditions in traditional markets, which evoke images of sweat, dirt, and lack of hygiene, supermarkets simultaneously provide shopping convenience and leisure activities for consumers.

Reardon et al. (2015) highlighted the transformation of the food market from a traditional to a modern form. Notably, they predicted that supermarkets and fast-food chains would dominate Indonesian markets in the future.

It has been argued that the disparity between selling prices at the farm gate and consumers levels can be attributed to conditions associated with supply chains, especially those supplying fresh vegetables, which have the

characteristics of being perishable, bulky, and seasonal. The cause of this disparity is the extensive length of the supply chain and the large number of agents involved, which are primarily features associated with the traditional marketing channel (Sari et al., 2015; Zakaria et al., 2015).

A study conducted by the Ministry of Foreign Affairs in the Netherlands in 2016 revealed that within Europe, a majority of fresh fruits and vegetables (60-90%) are distributed through the supermarket channel. This condition has transformed agribusiness that is now directed at fulfilling supermarkets' procurement criteria, which focus on quality, quantity, and continuity. Producer organizations are key agents in the supply chain management (SCM) of fresh fruit and vegetables within European counties (Hart et al., 2007; Kayser et al., 2016).

In Indonesia, supermarkets now account for around 65% of sales of fruit, but their share of vegetables sales is still only 35% (Reardon et al., 2007; Tolani et al., 2013). Most vegetable farmers in Indonesia still do not have any reference for deciding on the types of commodities to pro-

duce, production schedules, and selling mechanisms. This situation affects selling price at the farmers' level, which reflect a lack of symmetry. Furthermore, such conditions prevail among independent farmers who are not members of farmers' organization (FOs) and who have not developed market partnerships. Consequently, they are compelled to sell their products through middlemen located within the traditional supply chain (Zakaria et al., 2015).

The changing market share of supermarkets in the future will depend on how farmers adapt to the introduction of the procurement mechanism, which focuses on criteria of quality, quantity, and consistency. At the same time, the new procurement system creates impediments for weak farmers, especially in the area of contracts.

Supermarket have a number of requirements that suppliers must fulfill to become their partners. Their legal status must be clear, they must provide food quality and safety certificates; their packaging must be of good quality; they must ensure continuous supplies; they must be willing to adapt to a long period of payment; and they must accept some extra costs, as decided by the supermarket (Bienabe et al, 2005).

In this paper, we explore organizational factors relating to the fresh vegetable SCM in Indonesia. We begin by outlining the background of the modernization of the vegetable food chain, focusing on the procurement mechanism. Next, we discuss the significant roles of FOs and government policy in SCM. We subsequently present our findings based on our investigation of the actual situation of FOs in West Bandung District of Indonesia, identifying areas of vulnerability of FOs in relation to their organizational traits. Last, we discuss these findings, with the aim of advancing understanding the roles of FOs in modernizing SCM.

West Bandung District is located at a dis-

tance of around 150 km, from Jakarta, Indonesia's capital. The journey by car from Jakarta takes more than two hours. This district, in which traditional and modern marketing channels coexist (Freddy et al., 2017), is famous for its fresh vegetable production. Given the high potential of vegetable production in the northern part of the district, the Indonesian Ministry of Agriculture established a vegetable research center and an agribusiness training center in this region.

2. Methodology

We chose to investigate the supply chain for fresh vegetables because this chain reflects a variety of conditions. We requested the assistance of government agents (the Directorate General [DG] of Horticulture in the Ministry of Agriculture and officials within agricultural departments in the province of West Java and West Bandung District) in recruiting samples of respondents for our study.

In October and November of 2016, we conducted a field-based study in Cisarua, Parungpong, and Lembang Subdistricts in the northern part of West Bandung District, which is in West Java Province of Indonesia. Based on the prominent characteristics of different types of FOs found in this region, we surveyed ten farmer groups (FGs), two farmer group unions (FGUs), and two cooperatives. We conducted interviews with key respondents, who included the leaders of the selected FOs and staff in supermarkets and supplier companies.

We selected respondents based on the characteristics of their product sales. Eleven FOs were able to supply a supermarket or fast-food company, whereas three FOs (the Giri Mukti and Sawi Barokah FGs and the Sinar Jaya FGU) supplied to traditional market.

Applying comparative descriptive analysis, we conducted case studies to explore the characteristics of each type of FO involved in mod-

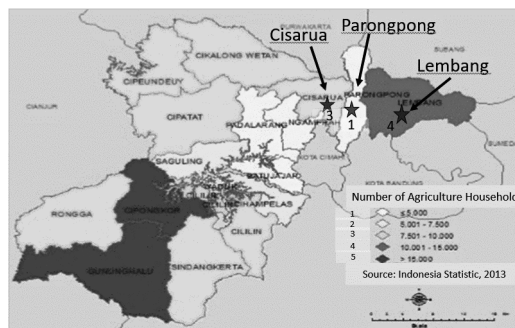


Fig. 1 Map of West Bandung District
Source: Indonesia Statistic, 2013

ernizing the supply chain. In this paper, we first discuss the modernization of the supply chain. Next, we identify the distinctive characteristics of FOs, and last, we examine dynamic changes of FOs.

3. Background of modernization of vegetable supply chain in Indonesia

1) Procurement from supermarkets and its suppliers

Market shares

The share of modern markets within overall food retailing in Indonesia is steadily growing and will replace the traditional market eventually (Wright et al., 2016). According to United States Department of Agriculture (USDA) the share of modern retailing in Indonesia rose from 5% in 1999 to 11% in 2009, with a corresponding decrease in the share of traditional retailing from 94% in 1999 to 88% in 2009 (Dyck et al., 2012).

In light of this trend, we aimed to understand how the existence of supermarkets could influence SCM. An examination of the current policies, of a leading supermarket chain, and especially their procurement system, could further understanding of why individual farmers experience difficulty accessing supermarkets.

Case of Transmart

Changes in the policies of supermarket and other buyers within the modern marketing

channel could affect farming conditions. For example, Carrefour Supermarket, is one of Indonesia's largest supermarket chains, with around 95 stores in the country, of which 45 are located in Jakarta. In 2014, an Indonesian businessman took over the supermarket chain and changed its name to Transmart. Following the change in its ownership, Transmart has prioritized the maintenance of its quality standards and the procurement of fresh vegetables from domestic channels to enable it to compete successfully with other supermarkets. Previously, its policy was one of selling price competition with its competitors, which resulted in little attention being paid to quality concerns.

The condition of the facilities owned by buyers within the modern channel affects the distribution management of suppliers. According to interviewed staff, Transmart has one distribution center, which supplies stores in the cities of Jakarta, Bogor, Depok, Tangerang, and Bekasi. In other regions, suppliers transport fresh vegetables directly to the stores. This indicates that the ability of suppliers to transport crops is essential requirement within the modern channel. The 11 FOs that partnered with buyers within this channel all had the ability to manage the process of distributing crops to their buyers.

Transmart requires that its supply partners have clear legal status. Because of its limited interactions with individual farmers, it engages in vertical co-ordination with supplier companies of FOs. The interviewed staff also reported that Transmart buys fresh vegetables from supplier companies and not from the wholesale market. This strategy enables the supermarket chain to ensure high product quality and traceability to the supplier companies.

Furthermore, buyers have developed rigid mechanism to maintain their relationships, within the modern channel. Thus Transmart implements what are known as a 'service level'

performance evaluations for its suppliers. For example, the performance of a supplier contracted to deliver 100 kg, who provides only 80 kg on more than two occasions, will be considered poor. Consequently, Transmart will consider replacing a supplier who performs poorly with another supplier.

Another characteristic of the supermarket channel is the burden of additional expenses that it imposes on its suppliers. For example, Transmart will deduct 1-2% of the suppliers's total payment to cover its promotional activities.

Like other supermarkets, Transmart pays its suppliers lump sums of cash for their products every two weeks. It also establishes flat rate contracts with suppliers for one week updated, daily supplies of a fixed volume, and a variety of commodities. These conditions make it very difficult for individual farmers to supply their products to supermarkets.

Cases of supplier companies

The largest companies that supply products to Transmart are Momenta Agrikultura and Bimandiri. Both of these supplier companies have the capacity to organize producers into FOs. Momenta Agrikultura, whose vendor name is Amazing Farm, started out as a producer and is now widely recognized as Indonesia's largest supplier company. The second company, Bimandiri, focuses solely on the supply business. Both of these companies are located in Lembang Subdistrict.

A supplier company's business activities include crop collection, operations relating to packaging and cold storage, and vehicular transportation of crops to stores. Respondents from these companies reported that they required sufficient cash flow to run their business. Moreover, supplier companies rely on FGs for easy access to a large number of producers.

Bimandiri conducts thorough sorting of products at its packaging facility, because those

products that are rejected by Transmart are returned to Bimandiri. However, Bimandiri does not return the rejected crops to its suppliers, who are farmers or FOs. These practices illustrate the responsibility and risk of incurring losses that suppliers face within the modern marketing channel.

Supermarket's procurement mechanisms differ completely from those applied in the traditional market. However, some small farmers and supplier companies do benefit from their participation in the traditional market.

Thus, SCM focuses on capacities to supply products to many alternative markets or buyers. An efficient way to accomplish this is to organize farmers into FOs that can handle the transactions. Therefore, in the next section, we will attempt to elucidate the roles of FOs in relation to existing conditions of farm business management. This discussion can shed light on the roles of FOs in the modernization of farm business management and the associated advantages for farmers according to differences among the various types of FOs.

2) Role of FO and government policy

The purpose of Farmer Organizations

The establishment of FOs facilitates small farmers in accessing closed markets, such as supermarkets and exporting companies. Bienabe et al. (2005) emphasized that the role of FOs in helping farmers to adapt to innovations, could contribute to sustained market access for small-scale farmers. Blandon (2006) found that in Honduras, the participation of small farmers within an organization, or in collective action, proved advantageous for them in meeting transaction costs and gaining access to the supermarket channel. Similarly, Hellin et al. (2007) argued that formally instituted FOs create benefits for their member farmers by managing high transaction costs, especially within the vegetable sector.

Hobbs (1996) categorized the expenses gen-

erated through interaction among agents or actors within the supply chain. These relate to searching for information about products, prices, inputs and buyers or sellers; negotiating; and monitoring. Therefore, the merits of establishing FOs include the reduction of these expenses and acceleration of the process of modernization of SCM.

Government policy and regulations

The government of Indonesia, through the Ministry of Agriculture, has acknowledged the important role of FOs. Moreover, the DG of Horticulture provides support that is available solely through FOs relating to facilities for production and post-harvest produce handling and marketing facilitation (Secretariat General of the Ministry of Agriculture, 2016; DG of Horticulture, 2016).

There are some existing regulations that provide guidelines pertaining to the types of FOs. The first is Regulation Number 10.Per/M.KUKM/IX/2015 issued by The Ministry of Cooperative and Small and Medium Enterprises (SMEs) that relates to the institutionalization of cooperatives. The second is Regulation Number 67/Permentan/SM.050/12/2016 on the development of farmers's institutions, issued by the Ministry of Agriculture.

The regulation of the Ministry of Cooperative and Small Medium Enterprises clarifies that a cooperative is a formal business entity comprising a certain number of members, and that its operation should be based on the agreement of all members. Moreover, the deed of incorporation, comprising the articles of association, should be legalized through a notarial deed.

According to the regulation issued by the Ministry of Agriculture, a FG can consist of 20-30 farmers, with the number of members depending on the context. The core activity of FGs, such as the provision of production inputs and services relating to production, post-harvest

handling, marketing, and processing are to be decided on based on member's agreement.

It is recommended that an FGU comprising more than three FGs should have specific roles as a unit of processing, marketing, micro finance, source of information, or other type of supportive functional unit. The establishment of both FGs and FGUs should be reported to the nearest extension office; however, legalization by notarial office is not required.

Based on those regulations, we found that the cooperatives are being designed and established as business entities, whereas FGs and FGUs are being designed and established as informal associations of farmers that can pursue a collective action strategy to develop effective agribusiness management. However, we also found a pathway entailing the formation of a cooperative that was originally founded as an FG.

The two cooperatives in our study had notarial deeds: 180/BH/518-KOP/IV/1999 in the case of Mitra Suka Maju Cooperative and 132/BH/XIII.26/518-KOP/V/2012 in the case of Gerbang Emas Cooperative. Notarial deed registration provided them with credibility among supermarkets, exporters, hotels, and fast-food companies, which considered them trustworthy organizations for developing business partnerships. By contrast, the FGs and FGUs found it difficult to develop business contracts directly with these buyers. Consequently, they had to indirectly obtain access to them through suppliers or exporter companies.

4. Outlook for FOs in the study area and in Indonesia

The general situation regarding FOs

Farmers' organizations (e.g. FGs and FGUs) in Indonesia are formed informally and not as legal entities (e.g. cooperatives). There are more than 300,000 FGs and 37,000 FGUs operating in Indonesia. Within West Java Province, there are

around 26,000 FGs and 4,231 FGUs (Center for Agricultural Data and Information System of the Ministry of Agriculture, 2013). In addition, there were 139,321 cooperatives established in Indonesia in 2012 (Indonesia Statistics, 2016).

According to data from the agriculture census of 2013, 75% of the surveyed horticulture farmers were not organized into FOs. In general, the incomes of member farmers of FOs were higher than those of non-member farmers (Zakaria et al., 2015). This finding indicates that building up and empowering FOs constitutes one of the main challenges in the development of horticulture in Indonesia.

Outlook for FOs in West Bandung District

Three types of FOs were identified in this study: cooperatives, FGUs and FGs. These organizational forms reflected both contrasting as

well as similar features, as shown in table 1.

The average age of the FOs in this study was 11 years. The oldest of them, which has specialized in pepper production, was established by the Dewa Family in Cisarua, Subdistrict. The leader of the FG was previously a founding member of Mitra Suka Maju FG, which was upgraded to a cooperative in 1999. The newest FO is the Sinar Jaya FGU formed in 2014. This FGU was created by its members because they learned of the availability of governmental support distributed through FGUs in other areas. At the time of the study, they were still hoping to obtain such support.

FOs differ in the strength of their roles. The roles of the two cooperatives are more influential compared with those of the other types of FOs. They were formed to develop partner-

Table 1 A Profile of Farmers' Organizations (FOs)

No	Respondents	Location	Establishment	Members	Aids Received	Role of FO
Cooperative						
1	Mitra Suka Maju	Cisarua	1999	25	production trainings	1). create a partnership with supermarket, 2). make production schedule by distributing the seed, 3). observe the production condition and collecting the harvest
2	Gerbang Emas	Lembang	2012	9	investment from fast-food company and production trainings	1). make partnership with Pizza Hut (PH) Company under Corporate Social Responsibility (CSR) program (PH invests some green houses and asked to get lower selling price than at market for pepper), 2). make production schedule by distributing the seed, 3). observe the production condition and collecting the harvest
Farmers` Group Union						
3	Wargi Panggupay	Lembang	2009	85	full package of post-harvest facilities and cultivation techniques trainings	Share information
4	Sinar Jaya	Parongpong	2014	6	not yet	
Farmers` Group						
5	Baby french FG	Lembang	2005	26	production trainings	1). organize some farmers, 2). introduce new market channel, 3). propose supports from government and other organizations
6	Family Farm	Lembang	2012	3	production trainings	
7	Budi Rahayu	Lembang	1999	7		
8	Grand Yasai	Lembang	2012	5		
9	Suka Rasa Tani	Lembang	2010	5	not yet	Share information
10	Mulus Rahayu	Parongpong	2000	7	production trainings	
11	Dewa Family	Cisarua	1997	3	full package of post-harvest facilities and cultivation techniques trainings	1). provide production inputs, marketing, technical guidance, production calendar and 2). propose supports
12	Mizan	Cisarua	2012	6	packing house, business meeting facilitation	
13	Giri Mukti	Parongpong	2013	7	not yet	Share information
14	Sawi Barokah	Parongpong	2013	6		

Source: Field survey, 2016

ship with a supermarket and fast-food company, respectively. Based on their agreements with their buyers, they have been able to establish production calendars for the types of the products produced by their members. By contrast, the roles of some of the FOs, which served as information-sharing groups, were not clear.

The government allocates support based on FOs' performance. As shown in table 1, two organizations, namely Wargi Panggupay FGU and the Dewa Family FG received complete governmental support packages relating to post-harvest facilities valued at Rp 600 million along with the provision of a refrigerated vehicle in 2012 and 2010, respectively. They also received production-focused training, whereas other FOs mostly received some kind of production training aimed at capacity building.

All of the FGUs in the study were founded as information-sharing groups seeking some kind of support from the government or other agencies. This happened because all of the FG leaders who had become members of the FGU were also running their own businesses. Thus, the organization at the FGU level was not strong.

Only four of the FOs in the study had not yet received any support. Three of them were trapped within the traditional channel. The other FOs had received certain kinds of support in the past. Farmers in the study area were aware of these conditions. Therefore, their main objective in forming an FO was to obtain support, such as production inputs, training in production techniques, access to advanced technology, such as post-harvest facilities, and also facilitation of partnership development.

One of the strategies of the government has been to encourage individual and weak farmers to organize collectively through changes instilled in their mindsets and behavior. Farmers who are organized have advantages over those who are not.

5. Types and functions of FOs

1) Types of FOs based on type of marketing channels

There are two types of marketing channels in the study area. The first is the traditional channel, wherein crops are sold within traditional wholesale and local markets. The second is the modern marketing channel represented by supermarkets, fast-food companies, hotels, and export companies, as shown in Fig. 2.

Respondents from three of the FOs (Numbered 4, 13 and 14 in table 1) reported that their FOs were still selling their products through the traditional channel. FOs that were able to adjust their production to fulfill the orders of buyers within the modern channel demonstrated adaptation to the procurement mechanism applied within this channel.

Some FOs were able to sell fresh vegetables through both the modern and traditional channels. This demonstrates the ability of sup-



Notes :

□ = Agents in Modern Channel

□ = Agents in Traditional Channel

↕ = Interaction between marketing agents in the modern channel and in the traditional channel

→ = Flow of supply among agents

Fig. 2 Fresh vegetable supply chains

pliers to provide their products to other buyers beyond their initial orders in some cases. Conversely, however, the products of suppliers could fall short of the requirements at times. Therefore, interactions between a supplier and a collector would become inevitable. The key difference between traditional and modern supply chains hinges on the existence of suppliers and collectors. Whereas some FOs play a role as suppliers, others play a role as collectors.

Suppliers in the study area have the capability of conducting post-harvest handling practices, such as sorting, cleaning, and packaging. However, collectors did not engage post-harvest handling practices. The fulfillment of the procurement criteria of supermarkets, exporters, and fast-food companies hinges on the conduct of post-harvest handling practices. By contrast, these requirements do not apply to traditional markets because their consumers are concerned more about price than quality.

Farmers' organizations therefore require specialized workers to engage in post-harvest handling of produce. This facilitates the management of labor costs and facilities when deal-

ing with large volumes that cannot be managed easily by individual farmers.

Another distinctive difference between modern and traditional channels relates to farmers' incomes. During the field survey, we collected information about production costs and selling prices at the respective levels of farmers and FOs from respondents. As shown in Table 2, there were differences in the incomes of farmers and of FOs.

The selling prices of farmers who engaged in post-harvest handling practices, such as sorting produce, were higher than those who did not engage in these practices. FOs categorize products by assigning grades to them: A for premium quality, B for medium quality, and C for below average quality. Grade A products are reserved mainly for export and for the supermarket channel, whereas grade B products are sold to fast-food companies and hotels. Hotels and fast-food companies will buy grade B products because they directly process fresh vegetables. Grade C products are sold in the traditional market outlets.

The quality grades assigned to products af-

Table 2 Selling price margins

Respondents	Buyer	Commodity	Production Cost (Rp/kg)	Farm Gate Selling Price (Rp/kg)	Farmers' Income (Rp/kg)	Increment (%)	FO Selling Price (Rp/kg)	FO's Income (Rp/kg)	Increment (%)
			a	b	c = b-a	(c/a) x 100	d	e = d-b	(e/b) x 100
1	Supermarket	Red Pepper A	11,000	26,500	15,500	140.91	28,000	1,500	5.66
2	Fast-food company, supplier company	Red pepper	11,000	19,000	9,000	81.82	22,000	3,000	15.79
3	Exporter company	Kenya Beans	3,000	13,000	10,000	333.33	16,000	3,000	23.08
4	Trader of traditional market	Tomato	1,000	3,000	2,000	200.00	4,000	1,000	33.33
5	Exporter company	Kenya Beans	6,000	13,000	7,000	116.67	16,000	3,000	23.08
6	Supplier company	Spinach	6,000	9,000	3,000	50.00	12,000	3,000	33.33
7	Fast-food company, supplier company	Tomato	3,000	13,000	10,000	333.33	16,000	3,000	23.08
8	Fast-food company, supplier company	Romain Lettuce	3,000	8,000	5,000	166.67	10,000	2,000	25.00
9	Supplier company	Chili	5,000	8,000	3,000	60.00	10,000	2,000	25.00
10	Exporter company	Leek	2,000	9,000	7,000	350.00	15,500	6,500	72.22
11	Fast-food company	Red Pepper B	11,000	17,000	6,000	54.55	20,000	3,000	17.65
12	Exporter company	Baby Beans	5,000	10,000	5,000	100.00	14,000	4,000	40.00
13	Collector	Tomato	1,000	3,000	2,000	200.00	4,000	1,000	33.33
14	Collector	Lettuce	1,000	3,000	2,000	200.00	5,000	2,000	66.67

Source: Field survey, 2016

fect their selling price. Thus, the selling price of grade A peppers for farmers within Mitra Suka Maju Cooperative, which supplies a supermarket, is Rp 26,500/kg. In the case of produce sold by the Dewa Family FG, which supplies a fast-food company, the farm gate price for grade B produce is Rp17,000/kg, whereas the price for grade C produce sold in the local traditional market is Rp 6,000/kg (see table 2).

In line with the findings of Natawidjaja et al. (2007) and Hernandez et al. (2015), the results of our study showed that farmers' incomes within 11 FOs that supplied buyers in the modern channel were higher than those who sold their produce at traditional market outlets through collectors (Table 2). Thus, the incomes of respondents in the FOs numbered 4, 13, and 14 in Table 2, who were farmers selling their produce at traditional outlets, were the lowest.

Table 2 further shows that the highest recorded income was that of a farmer member of Mitra Suka Maju Cooperative (respondent No. 1). The cooperative's margin was lower than that of other organizations. The sales margins of Mitra Suka Maju and Gerbang Emas Cooperatives were 5.66% and 15.79%, respectively. These funds were managed by the board with the agreement of all members. In all other cases, FO margins were owned by the leaders.

The incomes of farmers and those of FOs were very similar in the case of FOs that sold produce through collectors within the traditional marketing channel (respondents in FO numbered 4, 13, and 14 in Table 2). This finding indicates that the leaders' profits were almost the same as members' incomes. The leaders acted as big collectors in the FO numbered 4 and as small collectors in the FOs numbered 13 and 14 in Table 2. In other cases, farmers' incomes exceeded the FOs' net incomes. These differences reflect distinctive features of FOs.

2) The functions of FOs

Other factors that influence the moderniza-

tion of SCM relate to decisions taken on selling price at the farmers' level, the types of commodities produced, supply volumes, and payment periods, as shown in Table 3. The 11 FOs that sold their produce within the modern marketing channel were able to develop agreements with buyers, for example on selling prices within a flat rate contract covering a certain period of time. In the case of Gerbang Emas Cooperative, a flat selling rate had been established with the Pizza Hut Company for each three-month period, with products being supplied on a daily basis. This agreement provided its members with security associated with a clear and stable selling price. The buyer's order was guaranteed for a certain period of time, so the FO leader was able to manage the production plan and adjust it according to the order.

Another example is that of the leaders of the Wargi Panggupay FGU and the Baby French FG, who were asked by an exporter company to supply 500 kg of Kenya beans daily. The leader developed a schedule with reference 7 of up 10 kg of seeds, per week, because 1 kg of seeds could produce a harvest of 500-800 kg within a production cycle of 45 days. Thus, the leader set up the FO's planting schedule for the FO by distributing 3 kg of seeds for every 20 planting days, aimed at achieving a harvest of 70 kg/1 kg of seeds. Accordingly, every FO member's planting calendar was managed by the FO leader.

Table 3 Characteristic of traditional and modern channels

Factor	Traditional	Modern
Selling price decision	On the spot / after sales	Before sending
Post-harvest handling	No	Yes
Specialty	No	Yes
Volume of supply	No reference	Based on order
Period of Payment	1 day	> 1 week

Source: Field survey, 2016

Conversely, the Giri Mukti and Sawi Barokah FGs and Sinar Jaya FGU, which sell produce within the traditional channel, have not developed planting calendars for their members. Consequently, their members are free to decide on their own production schedules and on the volumes and types of vegetables that they plant. This situation, which is associated with an on-the-spot mechanism for deciding selling price, is akin to a gambling situation. The FO's roles are indeterminate, with members merely selling the products through the organizations' leaders.

Another reason for farmers reluctance to supply buyers in the modern channel is the timing of the payment schedule, which can exceed one week. By contrast, within the traditional channel, payments are received just one day after the transaction is completed at the wholesale or local markets. However, all of the respondents reported that FOs were willing to provide cash to members who desired faster payment or other types of support.

Establishing direct contract with the buyer enables a seller to avoid profit sharing with additional agents within the supply chain. Respondents from Mitra Suka Maju and Gerbang Emas Cooperatives explained that they formed these cooperatives because they wanted to establish business contracts directly with supermarkets or other buyers. However, respondents from FGs and FGUs stated that their main objective in creating these organizations was to obtain support from the government or other agencies. Surprisingly, three FOs that sell through the traditional channel and one that sells through the modern channel had not received any support from the government, or from any other agencies, at the time

of the study.

3) Structure of FOs

The different types of FOs evidenced distinctive organizational structures. The structure of cooperatives, which are engaged in a comprehensive agribusiness, is more supportive than that of FGs and FGUs. The cooperative structure is similar to that of a supplier company comprising specific divisions relating to production and harvesting, post-harvesting, marketing, and partnership building (see Fig. 3). Each division is managed by individuals and employees who are not farmer members.

In the case of Mitra Suka Maju Cooperative, the employees were responsible for distributing the production inputs. They also monitored members' production conditions and ensured that the supply conditions matched the terms reached in the agreement with the buyer.

Leaders or dominant farmer members were recruited within the cooperative's management board. They received a salary of Rp 3 million/month/person, and their roles in business management were endorsed by the members. Their working hours were from 09.00-16.00, six days a week. To cover its operating costs, the cooperative retained a portion of the profit from every transaction (e.g., 10%).

Within the cooperative, a division of observers, comprising several independent persons has been established. These individuals provide members of the management board

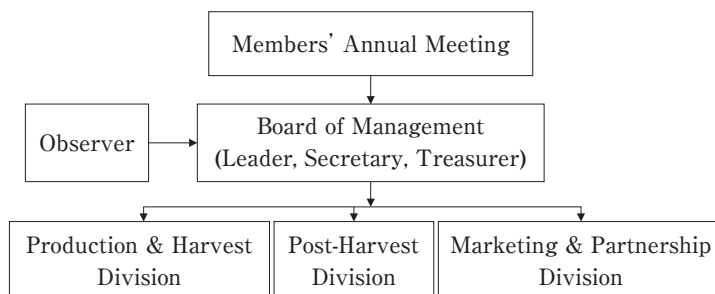


Fig. 3 The organizational structure of a cooperative
Source: structure of two cooperative respondents

with advisory and evaluation inputs.

As Figs. 4 and 5 show, the structures of FGUs and FGs are more modest. Unlike those of cooperatives, they do not entail specific divisions.

Generally, the positions of secretary and treasurer are occupied by family members of the leaders. This situation can be attributed to the fact that the organization's business is owned by the leader who consequently assigns managerial positions to his or her trusted relatives. Within this type of structure, the leader makes all decisions and retains all of the profits of the organization resulting from sales of fresh vegetables. Thus, leaders of these organizations are fully empowered to determine selling price at the farmers' level and their own profits resulting from their roles as middlemen.

An FGU is established based on the collective agreement of members of several FGs. However, the decision-making power of a FGU leader is weaker than that of the FG leaders. This can be attributed to the marketing role of FG leaders, resulting in the inclination of FG member farmers to follow their own leaders

rather than the FGU leader.

Unlike cooperatives, FGUs and FGs do not engage in permanent collective activities relating to production and marketing. Each member farmer is free to join the leader's program. Therefore, FGUs and FGs are formed primarily to organize farmers for the benefit of their leaders rather than to operate a collective business unit for farmers. This indicates the organization's vulnerability to change.

6. Dynamics of FOs and vulnerability

Another key characteristic of a FO that could influence the SCM is the organization's membership. In particular, the selection process and the benefits gained by members are critical factors.

Various patterns of change in the number of members within an organization may be evident over a certain duration of time. Thus, there was a case of a merger in which some farmers from different FOs agreed to build a new FO. Conversely, there were also some cases entailing a reduction in the numbers of FO members because of a separation.

The participation of several farmers within a FO creates an opportunity to access closed markets, such as supermarkets and fast-food outlets. This strategy also excludes free riders attempting to access the modern marketing channel without becoming members of the organization. From another perspective, the position within the supply chain of members who withdraw from a FO could be weakened.

A Case of Gerbang Emas Cooperative

Gerbang Emas Cooperative, was formed by nine farmer members belonging to four FGs. Each member agreed to contributed Rp 1 million as basic savings for initially establishing the organization's treasury. Subsequently, each member was obliged to contribute Rp 25,000 as monthly savings. These basic and monthly savings constitute the investment share of owner-

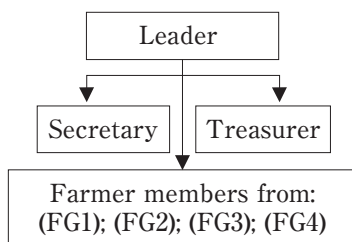


Fig. 4 The organizational structure of an FGU
Source: structure of two FGU respondents

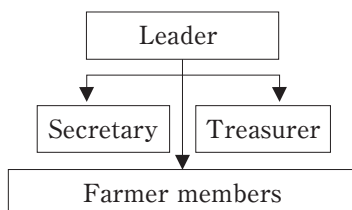


Fig. 5 The organizational structure of an FG
Source: structure of ten FG respondents

ship of the organization by each member and can be returned if the member farmers discontinue their membership. Out of every transaction, Rp 1,200/kg is retained by the cooperative to cover its operational costs.

In 2012, some of the FG leaders agreed to form a horizontally integrated cooperative. Subsequently, they developed a partnership with Pizza Hut in 2013. Within the cooperative, members were selected to supply mainly peppers but also beans, tomatoes, head lettuce, and romain lettuce to the company.

The leaders of the Grand Yasai and Budi Rahayu FGs, who were responsible for initiating the cooperative, were selected by other farmers as the cooperative's management board members. Thus, the merger that led to the formation of the cooperative enabled the creation of a direct partnership with Pizza Hut.

The fast-food company also benefited from the establishment of the cooperative, which enabled it to develop vertical co-ordination (Hobbs, 1995). The company could ensure steady supplies of required ingredients and safe food of guaranteed quality and freshness, enabling it to maintain its prestige associated with its brand products at lower prices. For Farmers, the presence of the cooperative was associated with opportunities for long-term in-

vestments and access to a closed market.

A Case study of Mitra Suka Maju Cooperative

Similar to Gerbang Emas Cooperative, each member of Mitra Suka Maju Cooperative is required to contribute basic and mandatory monthly savings, which in the case are Rp 50,000 and Rp 20,000, respectively. Farmers who wish to discontinue their membership are given back their savings.

A formal meeting attended by all farmers is held once a year, with informal meeting of farmers to discuss production and other matters occurring on a daily basis. This type of meeting arrangement is not found in FGs and FGUs.

Mitra Suka Maju Cooperative has implemented more advanced procedure relating to the distribution of profits from transactions. For example, 50% of profits are returned proportionally to each member, 20% are used to pay staff salaries, 15% are used to cover operational costs, 5% are used for social activities, and 10% are reserved for the treasury. This type of financial organization is absent in FGUs and FGs. Therefore, a cooperative can be considered a type of FO that affords more advantages for farmers than do FGUs and FGs, especially in relation to ownership shares of members and their equal positions within the FO.

Nevertheless, as shown in Table 5, there have been changes in the number of members of Mitra Suka Maju Cooperative. One of the reasons for members wanting to separate from the cooperative was their desire to run their own business and create their own FGs.

Separation could provide a strong farmer with an opportunity to operate his or her own business and recruit members from other FGs (e.g., the Dewa Family and Mizan FGs). However, in the case of weaker farmers who lack the capability of operating a business, separation would cause them to be bound to middlemen, facing the complexity of the supply chain situa-

Table 4 The process of forming the Gerbang Emas Cooperative in Lembang Subdistrict

2013	The cooperative made partnership with Pizza Hut Company
2012	The leaders of FG of Budi Rahayu and Grand Yasai formed the Cooperative of Gerbang Emas and selected the members
2012	FG of Grand Yasai was established (2 from 10 members joined the cooperative)
2007	FG of Bina Rahayu was established (4 from 7 members joined the cooperative)
2002	FG of Sadaya Makmur was established (1 from 8 members joined the cooperative)
1999	FG of Budi Rahayu was established (2 from 10 members joined the cooperative)

Source: Field survey, 2016

tion, while also being denied access to the closed market.

Vulnerability of FOs

One of the biggest challenges for FOs, and a source of their vulnerability, relates to the maintenance of solidarity and unity among their members. Their leaders play critical roles in ensuring that they perform well.

Leader of the FOs that sell produce through the modern marketing channel are able to handle fluctuations in selling prices through flat rate contracts and the development of production schedules. Consequently, the leaders can guarantee the business of member farmers more effectively than can collectors, who provide them with on-the-spot business opportunities.

However, all of the leaders of FOs selling produce through the modern marketing channel reported that some member farmers within their organizations were not committed to abiding by their agreements and were consequently excluded. Maintaining commitment and trust among member farmers and among agents in the supply chain is critical for sustaining business. Dynamic changes in the membership of FGs and partnership development are influenced strongly by the degree of commitment and trust. As shown in Tables 4 and 5, member-

ship can change based on the extent of commitment and trust within the organization.

Family bonding is another factor that can contribute to the formation and maintenance of any FO. This is because managing kin is easier than managing those who do not share bonds of kinship.

7. Conclusion

The above discussion has shown that the development of a procurement mechanism focusing on quality, quotas, and continuity has influenced the process of modernizing the fresh vegetable SCM. This mechanism, which was initiated by supermarkets and other buyers within the modern marketing channel, has influenced farm business management as well. The share of the market captured by supermarkets has shown a steady increase since 1999.

Differing from the traditional market which is easy to access, the modern marketing channel can only be accessed by farmers who are collectively organized within a FO. However, the modern marketing channel offers farmers advantages of certainty and better incomes that are not available to those within the traditional channel.

Recognizing the importance of FOs, the government has promoted the organization of farmers into FG, FGUs and cooperatives. The presence of FOs results in the elimination of middlemen and boosts farm business management. Member farmers participating in the modern marketing channel demonstrate distinctive characteristics. They have become specialized in the exclusive production of specific vegetables, requiring the application of more advanced production technologies. Moreover, they are able to adjust their production plans based on agreements made with their buyers.

However, there is a big difference in the performance of every type of FO. Cooperatives are not only more trusted by supermarkets and

Table 5 Alteration process of Mitra Suka Maju Cooperative in Cisarua Subdistrict

2012	An ex-member of the cooperative formed FG of Mizan The cooperative made partnership with Lotte supermarket and Alamanda exporter company
2006	The number of member was decreased to 25 farmers
1999	The number of member was decreased to 90 farmers
1999	The FG was officially changed into cooperative
1997	One of the member was separated and formed FG of Dewa Family
1996	The number of member was increased to 100 farmers
1994	11 young people formed FG of Mitra Suka Maju

Source: Field survey, 2016

fast-food companies that choose to develop direct partnerships with them but they also provide their members with equal positions. Thus, member farmers collectively decide on the business plan and share responsibility for running the organization.

Contrasting with cooperatives, FGs and FGUs can be considered to represent an initial stage in the development of FOs, in which the aim is to change the mindsets of individualistic farmers to encourage them to become organized farmers. This shift enables them to improve their farm business management. Thus, empowerment of FOs' role and the provision of training to improve members' knowledge and managerial skills are important prerequisites for preparing farmers to engage with the dynamic characteristics of the supply chain in the context of the modern marketing channel and to avoid potential turmoil arising from the organizational disunity in the future.

Acknowledgement

The authors would like to thank Indonesia Endowment Fund for Education Agency (*Lembaga Pengelola Dana Pendidikan*) for fully supporting this study.

References

- Bienabe, E. and Sautier, D. (2005) The Role of Small Scale Producers' Organizations to Address Market Access, CIRAD TERA, France.
- Blandon, J. (2006) Supermarket Supply Chain for Fruits And Vegetables: Opportunities and Challenges for Small Farmers, Dissertation, The Faculty of Graduate Studies, The University of Guelph.
- Center for Agricultural Data and Information System of the Ministry of Agriculture. (2013) Number of Farmers' Groups and Farmers' Groups Union in Indonesia, The Republic of Indonesia.
- Directorate General of Horticulture. (2016) Technical Guidance of Directorate General of Hortikultura 2016 (*Pedoman Teknis Direktorat Jenderal of Hortikultura* 2016), Ministry of Agriculture, The Republic of Indonesia.
- Dyck, J., Woolverton, A. E., and Rangkuti, F. Y. (2012) Indonesia's Modern Food Retail Sector: Interaction with Changing Food Consumption and Trade Patterns, EIB-97, U.S. Department of Agriculture, Economic Research Service.
- Freddy, Yanagimura, S., Kondo, T. and Mori, Y. (2017) The Coexistence of Traditional and Modern Fresh Vegetable Supply Chains in Indonesia, *Japanese Journal of Farm Management*, 55(3): 95-100.
- Hart, V., Kavallari, A., Schmitz, M. and Wronka, T.C. (2007) Supply Chain Analysis of Fresh Fruit and Vegetables in Germany, *Zentrum für internationale Entwicklungs- und Umweltforschung der Justus-Liebig-Universität Gießen*.
- Hellin, J., Lundy, M., Meijer, M. (2007) Farmer Organization, Collective Action and Market Access in Meso-America, CAPRI Working Paper (67).
- Hernandez, R., Reardon, T.A. and Shetty, S. (2015) Tomato Farmers and Modernizing Value Chains in Indonesia, *Bulletin of Indonesian Economic Studies*, 51(3): 425-444.
- Hobbs, J.E. (1996) A Transaction Cost Approach to Supply Chain Management, *An International Journal of Supply Chain Management* 1(2): 15-27.
- Indonesia Statistic. (2016) The Number of Active Cooperatives in Indonesia 2006-2016 (*Jumlah Koperasi Aktif di Indonesia 2006-2016*), Badan Statistik Indonesia.
- Indonesia Statistic. (2013) Agriculture Census 2013. Temporary Figures of Agribusiness and Number of cow-buffalo (*Hasil Sensus Pertanian 2013, Angka Sementara Usaha Pertanian dan Jumlah Sapi-Kerbau*), Badan Pusat Statistik Kabupaten Bandung Barat.
- Kayser, M., Schulte, M. and Theuvsen, L. (2016) Organizing Vegetable Supply Chains: Results of A Survey of Farmers, *Journal on Chain and Network Science*, 16(2): 135-146
- Ministry of Agriculture. (2016) The Ministerial Decree of Agriculture Number 67/Permentan/SM.050/12/2016 about Farmers Organization, The Republic of Indonesia.
- Ministry of Small and Medium Enterprises. (2015) The Ministerial Decree of Cooperative and Small and Medium Enterprises Number 10/Per/M.KUKM/IX/2015 about Cooperative Institution, The Republic of Indonesia.
- Natawidjaja, R. S., Rasmikayati, E., Kusnandar, Pur-

- wanto, D., Reardon, T. and Zhi, H. (2007) Restructuring of Agrifood Chains in Indonesia: The case of Potato Farmers in West Java, Padjajaran University, Bandung, Indonesia.
- Netherlands Ministry of Foreign Affairs. (2016) Market Channels and Segments, Fresh Fruit and Vegetables in Europe. CBI Centre for the Promotion of Imports from Developing Countries (*Centrum tot Bevordering van de Import uit ontwikkelingslanden*). The Netherlands.
- Reardon, T., Henson, S. and Berdegue, J. (2007) Proactive Fast-Tracking Diffusion of Supermarkets in Developing Countries: Implications for Market Institutions and Trade, *Journal of Economic Geography* 7: 399-431.
- Reardon, T. A., Stringer, R., Timmer, C. P., Minot, Nicholas, and Daryanto, A. (2015) Transformation of the Indonesian Agrifood System and The Future Beyond Rice: A special Issue, *Bulletin of Indonesian Economic Studies* 51(3): 369-373.
- Sari, R.Y., Manullang, N., Farliani, N., Oktarina, M., Rahman, F., Jaeroni, A., Nuryakin, C. and Bintara H. (2015) Strategic Analysis of Cluster Empowerment to Support Volatile Foods Supply (*Kajian Strategis Penguatan Klaster untuk mendukung pasokan komoditas Volatile Foods*), Working Paper (8), Bank Indonesia.
- Secretariat General of the Ministry of Agriculture. (2016) Strategic Plan of Ministry of Agriculture 2015-2019 (*Rencana Strategis Kementerian Pertanian 2015-2019*), Revision Edition (*Edisi Revisi*), The Republic of Indonesia.
- Tolani, V. C. and Hussain, H. (2013) Strategic Change in Model of Fruit and Vegetables Supply Chain, *Global Journal of Management and Business Studies*, 3(9): 965-970.
- Wright, T. and Rangkuti, F.Y. (2016) Foreign Agricultural Service Global Agricultural Information Network (Gain) Report, Indonesia Retail Foods, *GAIN Report* (ID1638), U.S. Department of Agriculture.
- Zakaria, W. A., Prasmatiwi, F.E., Abidin, Z., Murniati, K., Indriani, Y., Saleh, Y., Solimah, Marpaung, T.H., Buana, W.P. and Retno, D.P. (2015) Thematic Analysis 2013: Subsector Efficiency of Horticulture Production System (*Analisis Tematik ST 2013: Subsektor Efisiensi Sistem Produksi dan Tataniaga Hortikultura*), the 3rd Book (*Buku 3*), BPS.