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The Key Role of Producer Organizations and Intermediate Distributors in Thailand's Mango Distribution System

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Abstract This study aims to revisit the claim of the "supermarket revolution theory" that modern retail formats leverage commercial standards, such as Good Agricultural Practice (GAP), to govern the production and distribution of fresh produce in developing countries. Using mangoes for export in Thailand as a case study, an empirical analysis was conducted focusing on the actual situation of GAP certification in Thailand and the role of producer organizations in mango distribution. The results revealed that the GAP certification system has not been thoroughly implemented. Even small-scale farmers who are not GAP-certified avoid this problem by organizing, and producer organizations play an important role in intermediate distribution. Conversely, large retailers and exporters also rely on the intermediate distribution function of producer organizations to source mangoes. In other words, Thailand's mango production and distribution system, rather than being a "preferred-supplier system" led by large retailers, has a complementary relationship between the suppliers and retailers.

Key words Thailand, supermarket revolution theory, intermediate distributors, producer organizations, fresh agricultural produce

Introduction

Retail internationalization is increasing with economic globalization. Multinational and large retailers have acquired enormous buying power, coupled with increased bargaining power over their trading partners in both home and host countries. Various studies have argued that retailers' influence is not limited to the retail stage, which is downstream of the commodity supply chain, but extends to the midstream intermediate distribution stage and even upstream to the production stage. "Supermarket revolution theory" is a typical example of these studies.[1]

According to Reardon (2006), a leading advocate of supermarket revolution theory, as income levels rise, consumers attach more importance to quality than to the price of products and pay more attention to "food safety," especially for perishable products such as fruits and vegetables. Supermarkets establish private standards, including good agricultural practices (GAP), to gain customer support by differentiating themselves from their competitors. Essentially, farmers who want to conduct business with supermarkets must be certified according to their standards, and subsequently, are treated as "preferred suppliers," thereby distinguishing these farmers from non-certified farmers. When intermediate distributors are involved in the channel, "dedicated, specialized wholesalers" are selected by the supermarket to procure goods according to its preferences. As super-

markets expand into developing countries, the intermediate distribution system, with traditional wholesale markets at the core, will not adequately fulfill the supermarkets' commodity procurement requirements. This excludes not only smallholder farmers who cannot obtain commercial standards certification but also traditional intermediate distributors (e.g., small wholesalers as well as middlemen and brokers) from the supermarkets' procurement network. Thus, supermarkets reduce market risk by shifting their emphasis from the spot market channel, where both product quality and supply are unstable, to long-term business relationships. In other words, a "preferred-supplier system," in which supermarkets control the supply chain of fresh produce using private commercial standards as a lever, will be established. With the global expansion of supermarkets, supermarket revolution theory argues that their influence now extends to the production and distribution stages of agricultural products in developing countries. Furthermore, although Reardon et al. (2003, 2012) and Reardon and Hopkins (2006)'s analysis focuses on the impact on the domestic sector in developing countries, their analysis also ranges over the impact on the export sector, as discussed in Reardon et al. (2007).[2]

However, developing countries and regions have highly diverse production and distribution structures of agricultural products and related actors. It is also evident in the negative legacy of the colonial system, including the remaining large land ownership system and the nature of consumer markets, which encompasses consumer behavior. Endo (2021) reexamined supermarket revolution theory considering the concept of "embeddedness," as conceptualized by Hess (2004), and the critical debate among economic geographers regarding the theory.[3] The author highlighted three main issues. The first issue is how to view consumer markets in developing countries. Supermarket revolution theory categorizes consumer markets in developing countries into four groups according to their stage of development. Further, the theory contends that over time, consumer markets in all countries will eventually converge to become similar to those in developed countries. However, is this single-track historical view sufficiently supported, theoretically or empirically? The second issue concerns the governance structure of the supermarkets. The theory argues that multinational retailers are leading the creation of a preferred-supplier system, triggered by the introduction of commercial standards, and thus, govern the production and intermediate distribution stages of fresh agricultural produce in developing countries. However, how well does this system work? Notably, there is limited empirical research at the production and intermediate distribution stages. The third issue relates to the proactive behavior and organization of small-scale farmers. The theory assumes that farmers in developing countries will be polarized into two groups: many small farmers (non-beneficiaries), who will be excluded from the above system, and a few large farmers (beneficiaries), who will be allowed to participate in the system as preferred suppliers. However, are small farmers really passive entities whose fate is in the hands of supermarkets? Small farmer organizing and agricultural cooperative organizations must also be considered; however, studies have paid limited attention to the reality of farmer organization. Underlying these three issues is the recognition that developing countries vary in terms of their colonial experience, colonial legacy, post-independence industrial structures, and economic conditions, among other factors. Moreover, empirical studies on Southeast Asia in this regard are of great significance as the theory mainly relies on cases of Latin America and sub-Saharan Africa.

Although the above three issues are interrelated, this study focuses on the part that overlaps

between the second and third issues, and empirically reexamines supermarket revolution theory based on the Thai case. According to Reardon et al. (2007), Thailand has the highest penetration of supermarkets among developing countries and is considered one of the groups most strongly affected by the "revolution," making it one of the best cases for a critical examination of the theory.[4]

Research Subjects and Points of Concern

This study specifically focuses on the production and distribution of horticultural crops in Thailand. Horticulture is currently the fastest growing high value-added agricultural sector, especially in developing countries. Moreover, agribusinesses and supermarkets are gaining increasing influence in the production and distribution of these products through their leveraging of commercial standards (World Bank 2007: 59, 134).

Among Thai horticultural crops, Endo (2014) clarified the distribution of onions, one of the most common vegetables used in Thai cuisine, and cherry tomatoes, a typical salad vegetable. According to Endo (2014), in the case of cherry tomatoes, a "coordinator-type intermediary" not only sells seeds imported from the Netherlands to farmers but also instructs them on cultivation methods. Further, these intermediaries conclude a contract farming agreement to purchase the harvest, while negotiating directly with supermarkets. However, in the case of onions, traditional local middlemen, known locally as "*kodan* (warehouse)," buy onions and sell them to wholesalers in the central wholesale markets near the capital; in some cases, they also trade with exporters. Endo (2014) contended that unlike the argument of supermarket revolution theory, supermarkets have little influence over the production and intermediate distribution stages, with intermediate distributors playing a key role. Indeed, in a comprehensive study of the supply chain of onions and Chinese cabbage in Thailand from the production to retail stages, Ørtenblad et al. (2020) suggested that there are interactions and inter-connectivity between small producers, traditional intermediate distributors, and preferred or dedicated traders for supermarkets, and supermarkets. Thus, intermediate distributors play an important role in vegetable distribution in Thailand, and supermarkets do not dominantly control the vegetable supply or value chains.

However, cherry tomatoes, onions, and Chinese cabbage are horticultural crops for the domestic market and not the main targets of the commercial standards (GAP) that the supermarket revolution theory focuses on. Therefore, this study will focus on mangoes, one of Thailand's most popular fresh fruits and key export products. Mangoes are one of the world's most exported tropical fruits, other than bananas, and Thailand has been the world's second largest mango exporter in recent years after Mexico (FAO 2023: 3, 16).[5] Mangoes are also one of the key crops involved in Thailand's efforts to promote tropical fruit exports (Thai Mango Growers Association, June 2014; Jaruwan et al. 2018: 14-15). Mangoes require careful handling during both the cultivation and distribution processes due to their thin epidermis and difficult quality control. Therefore, various stakeholders in the mango supply chain are likely to be actively involved in each stage. If supermarkets are not sufficiently involved in the production and distribution stages even in the case of mangoes, this suggests that they may be even less active in other horticultural crops. Hence, a study of mango production and distribution in Thailand can be an important case study for empirically reconsidering the supermarket revolution theory.

Furthermore, since small-scale farmers are the main players in mango production in Thailand, mangoes are an appropriate case study to consider the organization of small-scale farmers. As noted in the supermarket revolution theory, small-scale farmers in developing countries generally find it difficult to achieve commercial standards or GAP certification to provide a stable supply of high-quality mangoes. However, if they can organize effectively, they can participate in this high-value supply chain (World Bank 2007 : 127). However, to successfully organize themselves, small-scale farmers not only need the support of the government and other stakeholders but also proactive action by the farmers themselves. Moreover, effective producer organizations are not always found throughout the world. For example, according to Nakakubo (2017), small farmers in the Philippines are poorly organized despite support from government authorities. This is because contractors are responsible for the production and shipment of mangoes on behalf of the small owners of mango trees, and mango tree owners typically share profits (Nakakubo 2018, 2021). In Taiwan as well, the majority of mango growers are small-scale operators and joint sales by cooperatives do not play a sufficient role. Farmers prefer to sell to middlemen who are responsible for collection and transportation, grade sorting, and packaging (Koseki 2008). In contrast, small-scale mango producers in Thailand generally grow mangoes on their own farmland through family operations, but organize themselves to sell jointly when trading with exporters (Nongnuch 2017). This is because exporters prefer to buy from producer organizations that are better positioned to procure the required quantities of high-quality (A-grade) mangoes, rather than dealing with individual farmers or local brokers (Daret et al. 2012). Technology Chao Ban ed. (2016: 166) emphasized that networking among Thai mango growers has now made it impossible for middlemen and companies to buy mangoes from farmers at low prices. However, the actual situation, including the structure of Thai mango producer organizations, and their role in the production and distribution processes, has not been clarified in the literature.

Furthermore, while studying the production and distribution of export-oriented mangoes, both the export and domestic distribution channels should be considered.[6] This is because in Thailand's major mango-producing regions, farmers do not separate mangoes for export or the domestic market at the production stage. Rather, they export the highest grade (A-grade) of the harvested mangoes and distribute the lower grade (mainly B-grade or lower) in the domestic market. Buurma and Saranark (2006) studied Thailand's fresh fruit and vegetable supply chain using Thailand's only nationwide supermarket, and a fruit and vegetable exporter to the EU market as case studies. The authors observed that a supermarket-led preferred-supplier system is emerging in Thailand as well. Their analysis also showed that GAP certification has become essential at the production stage of fresh fruits and vegetables; at the intermediate distribution stage, dedicated, specialized wholesalers who work with supermarkets are preferred, while traditional wholesalers have been excluded from the supply chain. However, Buurma and Saranark (2006) seem to have relied too heavily on information from the two companies surveyed, rather than on empirical data collected at the production and intermediate distribution stages. In other words, studies have not sufficiently identified the actual situation of intermediate distribution between the production stage of export-oriented horticultural crops, and the export or domestic retail stage.

In summary, this study explores three specific issues: (1) the reality of GAP certification in Thailand, (2) background and actual conditions of small farmer organization, and (3) transactional

relationships between farmers/producer organizations and various stakeholders, including intermediate distributors, large-scale retailers (supermarkets), and exporters. The supermarket revolution theory essentially analyzes the impact of supermarkets on agricultural production and distribution in developing countries by leveraging their commercial standards. Note that exporters, who are an important part of the supply chain leading to supermarkets in developed countries, are just as important actors in this study as supermarkets in Thailand. By analyzing the aforementioned three issues, this study seeks to clarify: 1) whether the preferred-supplier system claimed by the supermarket revolution theory has actually been established in Thailand, 2) whether small farmers who cannot obtain GAP certification are excluded from the system, and 3) if not, what the actual situation is.

Research Site and Data Collection

The research site for this study was the Chiang Mai Province in North Thailand.[7] Located at a high altitude in the country and mountainous, Chiang Mai Province (covering an area of approximately 20,000 km^2) has a relatively cool climate. This climate has helped it as a major producer of several commodity crops, such as cherry tomatoes, onions, and Chinese cabbage. Although mangoes are widely grown in Thailand, the harvest season varies by region. Chiang Mai Province, where the harvest season is later than in other regions, has emerged in recent years as a major producer of export-oriented mangoes (Technology Chao Ban ed. 2016: 90–97).

As presented in Table 1, mango production by province shows that Chiang Mai Province was the national leader in mango production from 2014 to 2016, and remained in third place in 2017, when

Table 1. Mango production in Chiang Mai Province

Year	Number of farm households	Planted area[a] (*rai*[b])	Planted area per household (*rai*/household)	Production		Average production (ton/household)
				(ton)	National ranking	
The whole of Thailand						
2013	244,327	822,215.0	3.4	600,612.5	—	2.5
2014	230,249	806,678.2	3.5	576,798.7	—	2.5
2015	225,818	813,471.0	3.6	550,074.9	—	2.4
2016	211,725	796,225.6	3.8	530,413.4	—	2.5
2017	248,037	776,324.8	3.1	447,375.4	—	1.8
Chiang Mai Province						
2013	14,282	58,552.0	4.1	38,139.1	2	2.7
2014	13,010	58,159.0	4.5	59,554.5	1	4.6
2015	13,118	61,897.0	4.7	74,441.1	1	5.7
2016	11,619	58,015.0	5.0	95,723.8	1	8.2
2017	14,202	60,950.5	4.3	35,275.4	3	2.5

Notes: a. "Planted area" includes farmland that was not harvested in the year.
b. One *rai*: Equivalent to 0.16 ha.
Source: Department of Agricultural Extension (DOAE)

production declined significantly. Since then, the province's mango production has risen back into the rankings, ranking second in 2018 and first in 2019.[8] Notably, the average area of mango farmers in the province is slightly larger than the national average; however, it is still only four to five *rai* (0.64 to 0.8 ha), indicating that they are mainly small-scale farmers. Moreover, there are large fluctuations in production per household from year to year owing to unfavorable weather conditions, and the spread of diseases and pests.[9]

Sorting the mango cultivation area in Thailand by variety in 2015, the *Nam Dok Mai* variety accounted for nearly 34% of the total cultivated area, significantly ahead of second place.[10] This variety of mangoes are often grown for export and domestic supermarkets.[11] According to the Thai Mango Growers Association, a national organization whose members are mainly export-oriented mango growers, the main variety grown by its members is this variety.[12]

The author conducted intensive research in Chiang Mai Province in March and August of 2019.[13] For comparison, extensive research was conducted in Central and Northeast Thailand in March and August of 2018. As mentioned above, most mango growers in Chiang Mai Province are small-scale farmers and cannot become direct trading partners of supermarkets and exporters if they grow and sell mangoes independently. Consequently, some farmers have organized themselves to increase their bargaining power, and conduct business with supermarkets and exporters. Semi-structured interviews were conducted with members of mango producer organizations composing small farmers as well as with large-scale mango producers. Open-ended interviews were conducted with stakeholders in mango production and distribution, including intermediate distributors, exporters, government officials, and academics.

GAP Certification in Thailand

The most influential private commercial standards on which supermarket revolution theory focuses is GlobalG.A.P. Its predecessor, EurepGAP, was established in 1997 by the Euro-Retailer Produce Working Group (EUREP), an organization consisting of European supermarkets and other food-related companies.[14] The standard soon spread beyond Europe and was renamed GlobalG.A.P. in 2007. Campbell (2005) noted that GlobalG.A.P. is nominally a private standard established by private companies; rather, it has far-reaching implications beyond the national level. The author noted that GlobalG.A.P.'s implementation guidelines are so detailed that they are difficult for farmers in developing countries to comply with, and ignore the non-European world context.

Several empirical studies have supported this argument. For example, Asfaw (2007) and Graffham, et al. (2007) focused on Kenya, whereas Graffham and MacGregor (2007) and Kleih et al. (2007) used Zambia and Uganda, respectively, as case studies. All studies indicated that with the introduction of GlobalG.A.P., European supermarkets are increasingly auditing and controlling the production and distribution of fresh vegetables in these sampled countries, and that small farmers who cannot meet their commercial standards are being disadvantaged. While these studies in former colonies are extremely interesting, their cases are undeniably biased. These insights from former colonies in Africa may have limited applicability in other regions of the world, such as Southeast Asia.

Thailand is one of the major exporters of agricultural products in Southeast Asia, and stakehold-

ers, including the government, place great importance on the GAP certification system. However, obtaining this certification is difficult for small farmers in Thailand both financially (e.g., investment in necessary facilities) and practically (e.g., details of implementation guidelines). This is also the case for other Southeast Asian countries. Thus, each ASEAN government created a public GAP system adapted to their national circumstances as an alternative to GlobalG.A.P. and other private commercial standards (APEC 2006). One example is Thailand's "Q-GAP."[15]

Many studies that have examined the implementation of Q-GAP in Thailand have questioned its effectiveness, such as the inadequate on-farm auditing system due to personnel constraints at competent bureaus. Further, the purpose of GAP has been reduced to inspecting agricultural products for pesticide residue after harvest, which was not its original purpose.[16] Yet, Buurma and Saranark (2006) observed the creation of a supermarket-led preferred-supplier system with Q-GAP certification as a requirement in the production and distribution process of fresh fruits and vegetables in Thailand. In other words, the reality of the influence of public GAP in Thailand is not sufficiently clear.

In addition, the question of whether even public GAP-certified agricultural products with loose standards are acceptable in international markets needs to be considered. Fold and Larsen (2011), who used Africa as their case study, argued that upgrading to meet the strict standards of GlobalG.A.P. is not the only solution; another way is to consider consumer markets with looser standards, such as neighboring countries or emerging markets. Essentially, these markets can also serve as training grounds for small farmers.

The certification body for Q-GAP is the Department of Agriculture (DOA) of the Ministry of Agriculture and Cooperatives. The Thai government is committed to promoting Q-GAP, and the certification process is free of charge. The certification is performed by farm and crop (DOA 2012). DOA publishes the status of Q-GAP applications, examinations, and approvals by province/district and crop/variety on a continuous basis. As of September 10, 2021, the number of farmers with Q-GAP certification for mangoes in Thailand was 5,264, with a total area of 59,138 *rai* (approximately 9,462 ha).[17] By province, Chiang Mai ranked second in the country in both the number of farmers (828 households) and area (6,335 *rai* or approximately 1,014 ha). By variety, the *Nam Dok Mai* variety—the main variety for export—dominated.[18] However, comparing with the data in Table 1, the percentage of certified farmers nationwide is approximately 2–3% in terms of the total number of farmers and 7–8% in terms of area. Even in Chiang Mai Province, a major mango production area for export, the former is only about 6–7% and the latter is 10–11%.

Thus, in Thailand, even public GAP, which is actively promoted by the government, has relatively loose standards and can be obtained free of charge; however, its diffusion is currently extremely limited.

Mango Producers and Organization

As noted in Table 1, mango producers in Thailand have, on an average, a small scale of production of less than 1 ha. Exporters and supermarkets place importance not only on the high quality of the produce but also on a stable supply of a certain quantity. Small farmers cannot meet this requirement, and therefore, are not selected as trading partners on an individual basis. Hence, small farm-

ers are attempting to organize.

According to the Chiang Mai Provincial Agricultural Office, as of 2018, 13 mango producer organizations existed in the province. Four organizations are officially registered as "small and micro-community enterprises" in their respective district offices. However, all of them, including other unregistered organizations, are voluntary organizations and are not cooperatives with legal personalities. The author interviewed representatives from these five organizations. Table 2 provides a summary of each organization (see Figure 1 for the location of each organization).

The common objectives of each organization are the joint purchase of agricultural inputs, such as fertilizers and pesticides, joint shipment of mangoes, exchange of information on production for export and new cultivation techniques, and liaison and cooperation with related government agencies. Regarding the number of members, some organizations are bigger than others, such as organization number 2; however, there is no significant difference in the average area cultivated by member farmers in each organization. While the average cultivation area of 15 to 24 *rai* (2.4 to 3.8 ha) is larger than the provincial average, it is still small-scale. In addition, much of the farmland is located in mountainous areas or on narrow plains between mountains which are unsuitable for rice cultivation.

However, a closer look at the background and characteristics of each organization's establishment reveals not only similarities, but also differences.

Producer organization 1 (PO 1; Phrao District)[19]

This organization was established in 1997 as the first mango producer organization in the Chiang Mai Province. Phrao District is located at an inconvenient distance of more than 100 km from Chiang Mai City, the center of the province. The district can be reached by taking the main road north from Chiang Mai City and then taking a provincial road through the mountains to the destination. The organization is managed by the president and other directors in charge of production, human resources, and the treasurer. However, there is no election or term of office for the president, and the founder has consistently served as president (as of August 2019). From Central Thailand, the president has experience as a middleman for garlic, red onions, and other vegetables. A modern collection and sorting facility is located on the president's premises, to which members bring harvested mangoes. A flow chart explaining the fruit sorting process is posted on the wall of the fruit sorting room, indicating that the entire process has been systematized. Most members are small farmers; few of them have more than 20 *rai* (3.2 ha) of farmlands, but nearly all have obtained Q-GAP certification. Under the president's leadership, the organization has been designated by the DOA as a model case for export-oriented mango production in the region. Moreover, the president's farm has been selected as a "post-harvest mango pest control learning center" by the Department of Agricultural Extension (DOAE) of the same ministry.

Producer organization 2 (PO 2; Phrao District)[20]

This organization, like PO 1, is also composed of farmers from the Phrao District. With 175 member households (as of March 2019), it is the largest mango producer organization in Chiang Mai Province. It includes 25 members—the president, and the board of directors, which consists of 12 vice presidents and the directors. The current structure has been in place since 2015. No elec-

Table 2. Mango producer organizations in Chiang Mai Province as of 2019

Organization No.	Location (district)	Distance from the center of the province (km)	Number of members (household)	Planted area (*rai*[a])	Planted area per household (*rai*)	GAP certification	President/board of directors
1	Phrao	103	75	1,180	15.7	Almost all members obtained Q-GAP certification	No election or term of office for President
2	Phrao	103	175	3,000	17.1	All members obtained Q-GAP certification	No election or term of office for President. Advisors include district head and district officials, local councilors, and Chiang Mai University faculty members.
3	Throughout the province, with a focus on Mae Taeng	40	47	800	17.0	While some members have obtained Q-GAP certification, others are unable to apply due to land ownership issues. Also, some farmland is not renewed for certification.	President is elected every two years. Chiang Mai University faculty members serve as advisors.
4	Chiang Dao	68	28	450	16.1	Many members have obtained Q-GAP certification, but some farmland is not renewed due to land ownership issues.	President elected every 4 years
5	Wiang Haeng	150	28	682	24.4	More than 50% of all farmland is Q-GAP certified	President elected every 3 years

Note: a. One *rai:* Equivalent to 0.16 ha.
Source: Based on the author's interviews with a representative (president or director) of each organization. Number of members and planted area comprise data provided by the Chiang Mai Provincial Agricultural Office.

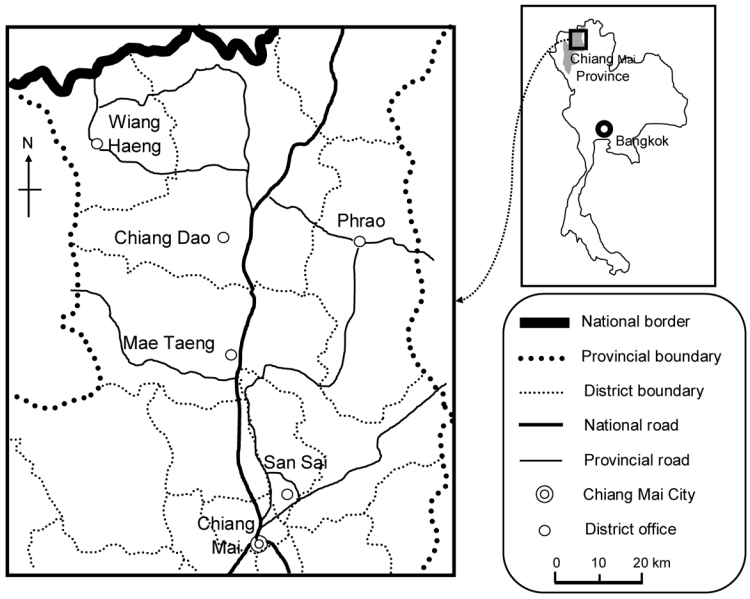

Figure 1. Research site.

tion or term of office exists for the president; since the organization's establishment, "by consensus of the membership" (the organization's president), the same individual has served as president. The cultivation area per household among members varies widely, with various small farmers growing as little as 5 *rai* (0.8 ha), and some large farmers growing more than 200 *rai* (32 ha). All members were Q-GAP-certified. The president's husband is the head of the district's merchant organization and an advisor to the mango producer organization. Other advisors to the organization include the head of Phrao District, the head of the Phrao District Agricultural Office, an elected member of the provincial assembly of the district, the head of a *Tambon* (subdistrict) Municipality in Phrao District, and faculty members of Chiang Mai University, which shows the breadth of the president's personal connections. The president has over 40 years of experience in mango cultivation and extensive knowledge regarding mango cultivation, having visited advanced orchards in Japan and other countries every year to learn about their techniques. Therefore, the president is solely entrusted with the responsibility of sorting members' mangoes and inspecting their quality. Members are allowed the freedom to sell their own mangoes without going through the organization, but all members sell them to exporters and intermediate distributors through the president. The president may also extend credit to members or act as a guarantor of their debts. In addition, the president sometimes takes on members' purchases of fertilizers and pesticides, and receives reimbursement after the harvest is sold. With such powerful influence over members, the president also acts as a middleman.[21]

Producer organization 3 (PO 3; Mae Taeng District)[22]

This organization is registered with the Mae Taeng District Agricultural Office. The Mae Taeng District is a relatively accessible area 40 km north of Chiang Mai City on a main road. Unlike other organizations, it is a broad area-based, rather than region-specific organization, and its members are not limited to farmers in the district. The president, elected every two years, appoints directors in

charge of the secretariat, treasurer, marketing, etc., and the board of directors is composed of these directors. Many members attend regular monthly meetings, and faculty members from the Faculty of Agriculture at Chiang Mai University are actively involved as advisors. The founder moved from Central Thailand to Chiang Mai Province in 1976 and started growing mangoes around 1990. Initially, he belonged to a producer organization in another district of the province. However, as the number of farmers involved in mango cultivation in Mae Taeng District increased, he established the predecessor of PO 3 in 2004. In 2012, the organization became institutionalized by changing its title to its current name. A member, who was a former official of the Ministry of Agriculture and Cooperatives, was elected as the first president and the founder succeeded him as the second president. The founder is the former head of an administrative village in the district, and many members were encouraged to start growing mangoes. The variation in the area cultivated per household among members is relatively small, and the acquisition rate of Q-GAP certification is low due to constraints on land ownership rights.[23] To avoid competition among members for shipments, this organization has planned production as a group and has staggered the timing of pruning, ripening, and harvesting since 2017. The collection and fruit sorting workshop, and meeting room were built on the founder's property, the cost of which was paid by the members. Decisions on other important matters are also made through consultation with members.

Producer organization 4 (PO 4; Chiang Dao District)[24]

This organization is registered with the Chiang Dao District Agricultural Office. Chiang Dao District has a district office approximately 70 km north of Chiang Mai City on a main road; however, this organization is located more than 20 km northeast of it in a mountainous area. The founder is a former village head and a former subdistrict head, who is a prominent figure in the village. He was once a member of PO 1 in the Phrao District, which is adjacent and to the east, where he learned how to cultivate mangoes and subsequently spread mango cultivation in his own village. He founded PO 4 in 2008 and became its first president, establishing an election system and term of office for the president as well as a system of directors who share roles, such as secretariat and treasurer. As of August 2019, the current president was the second-elected president. He was not related to the founder, although they were residents of the same village. The founder's son-in-law was appointed treasurer. Almost all members are residents of the same village and have known each other on a daily basis for many years. Although the geographic scope of the organization is smaller and its membership is smaller than that of other organizations, there is no intention to expand the organization by accepting new members from outside the village to avoid compromising the strength of the organization. The cultivation area per member household is generally small, ranging from 1 *rai* (0.16 ha) for the smallest to much less than 100 *rai* (16 ha) for even larger households. Many members have obtained Q-GAP certification; however, due to restrictions on land ownership rights, most of them, including the founder, are unable to renew. Decisions on joint purchases of agricultural inputs, loans from the Bank for Agriculture and Agricultural Cooperatives (BAAC), and pesticide application plans to adjust harvest times are made through consultation with the members. In addition, bookkeeping and other accounting tasks are guided by officials from the Ministry of Agriculture and Cooperatives.

Producer organization 5 (PO 5; Wiang Haeng District)[25]

This organization was founded in 2012 mainly by farmers in the Wiang Haeng District on the northwestern edge of the province. It was registered in the district in 2016. The district is 150 km from Chiang Mai City and located in a mountainous area with an average elevation of 750 m, making it less accessible than other organizations discussed here. The president was elected for a three-year period. Under the president, vice presidents, secretariats, and treasurers serve as directors. Meetings are held monthly, but attendance by members is low. Forty years old as of August 2019, the current president stated that he believed he was selected for his excellent access beyond the region, including negotiating loans with the Bank for Agriculture and Agricultural Cooperatives (BAAC) and mutual purchase of agricultural inputs. His father has been running a farm and orchard in the area since his father's generation, and he himself has inherited it, but his home is in another district near Chiang Mai City. He relies on his father and relatives to manage the fruit trees, shuttling between his home and farmland. However, the size of the president's operations is significantly large for this organization, reaching 200 *rai* (32 ha). The organization's office and fruit-sorting workshop were built on the president's orchard. In addition, he owned a mango-processing plant. The percentage of members obtaining Q-GAP certification is slightly over 50%, which is lower than that of other organizations due to land ownership restrictions.

In summary, mango producer organizations in Chiang Mai Province can be categorized in terms of organizational characteristics as follows. The first type comprises the intermediate distributor-like leader-driven type, with POs 1 and 2 being typical examples. In these organizations, there is no electoral system, and the founder of the organization has consistently served as the president. The president has strong connections with the relevant government agencies and trading partners, including exporters. The secretariat of a networking organization consisting of mango producer organizations in Chiang Mai Province said, "Generally, the president of mango producer organizations acts as a liaison with buyers and plays the role of broker. The president deducts transaction costs from sales to make his/her own profit."[26]

As mentioned above, presidents (or their close relatives) of POs 1 and 2 have experience as middlemen and are entrusted with negotiating with exporters. In addition, they perform some of the roles of intermediate distributors, from fruit sorting and quality inspection to, in some cases, credit provision. Members are considered to understand the overwhelmingly important roles of the president and expect the benefits that come from membership in the organization.

The second is the geographically based leader-driven type, which includes POs 3 and 4. The founders of both organizations were former village heads. Although the administrative village is placed at the end of the provincial administration under the jurisdiction of the central government, the village head is directly elected by the villagers and enjoys a certain degree of respect from them while also having influence over them. They also shared the experience of joining mango producer organizations in other districts, where they learned about mango cultivation before introducing it to their own villages. When jointly shipping as a group, the president does not deduct the transaction costs from sales, and profits are distributed among all members.[27]

In the case of PO 5, the president plays the role of an intermediate distributor but originated from a farming family and has been mainly engaged in agriculture. Because the organization is also composed of members with strong geographical ties, it has intermediate characteristics between the

above two types.

In either type, small farmers can conduct business with exporters and supermarkets by joining producer organizations. The benefits of producer organizations also come into play when exporters and supermarkets require farmers to be Q-GAP-certified. This is because it is common in Thailand that if a representative farmer of an organization is Q-GAP certified, the entire organization is treated as certified by its trading partners, even if there are non-certified members in the group.[28] All of these farmers, regardless of whether they are certified, grow their mangoes under the same conditions, including the type and use of pesticides. Non-certified farmers grow in the same manner as certified farmers because if they ship mangoes that do not meet the standards, the reputation of the entire organization will be damaged.[29] Indeed, while exporters conduct another quality inspection after purchase, it is typically not a problem.[30] Buurma and Saranark (2006) argued that Q-GAP was not acceptable for fresh produce in the European market, and that exporters led the way in getting small farmers to obtain GlobalG.A.P. certification, allowing them to enter procurement networks of multinational retailers. However, the majority of mangoes shipped from producer organizations in Chiang Mai Province are destined for East Asian countries, such as Japan, Korea, and China. At present, GlobalG.A.P. certification is not required, with the less stringent Q-GAP certification serving as a requirement. Moreover, as discussed earlier, the implementation of Q-GAP certification is not thoroughly enforced, and the involvement of exporters and supermarkets in the production stage of mangoes is very limited. For example, the secretariat of the networking organization of mango producer organizations in Chiang Mai Province stated:

Exporters and supermarkets were not involved in mango production. What is important to trading partners is the condition and color of the outer skin, and ripeness of the harvested mangoes. In fact, there is no real difference between Q-GAP-certified and non-certified farmers since farmers do not use hazardous pesticides for their own safety. (Interview with the secretariat of the networking organization, August 2, 2019)

Distribution of Mangoes

Mangoes collected at the collection points of each producer organization were sorted into A, B, and "out of standard" grades, based mainly on the color and condition of the outer skin. Grade sorting is conducted by the respective organizations and not by the trading partners. Exporters prefer A-grade mangoes with the highest transaction prices. Thus, all organizations prioritize doing business with exporters; mangoes that do not meet the standards required by exporters are distributed in the domestic market.

Dealings with exporters

In transactions between producer organizations and exporters, exporters send their employees to the production area to purchase directly in some cases; in other cases, production area middlemen are involved. For example, Company D (headquartered in Central Thailand), one of the major exporters of mangoes, first sends its employees in charge of purchasing to the area to confirm cultivation conditions, sign a contract for the start of cultivation, and then sends them again just before

the harvest to inspect the harvest before making purchases.[31] Q-GAP certification is a necessary condition for trade and more stringent cultivation conditions are added depending on the requirements of the export destination. This seems consistent with supermarket revolution theory, which asserts that control extends to the production stage in transactions with exporters.

However, the company's president stated the following in an interview with the author.

> We did not inspect the quality of the products after procurement. The conditions have already been confirmed between the two parties at the production stage, and farmers cultivate them accordingly. (Interview with the president of Company D, August 23, 2019)

In other words, the exporter's degree of involvement in the production stage is limited, and transactions are based on trust in producer organizations. Of course, if a problem is discovered during an inspection just before harvest, there is the possibility of rejection of the purchase and the risk of losing the opportunity to trade the following year and beyond; hence, producer organizations also pay close attention to the cultivation process.

As of 2019, mango procurement sources for Company D in Chiang Mai Province included only PO 2 and an independent large-scale grower. The company's president explained:

> In the past, we did business with (POs 1 and 3), but stopped due to inadequate supplies of A-grade mangoes. By contrast, the suppliers with whom we continue to do business are large and have a stable supply of A-grade mangoes. (Interview with the president of Company D, August 23, 2019)

The large independent mango grower, with whom the company does business, operates a large mango orchard of 286 *rai* (about 46 ha) in San Sai District, an easily accessible location near Chiang Mai City.[32] This grower had a history of mango cultivation in his hometown in Chiang Mai Province after retiring from the DOA, which is currently in charge of Q-GAP certification. He was the first grower in the province to obtain Q-GAP certification and operate a vast farm with advanced technology. The percentage of A-grade mangoes in the total harvested mangoes was relatively high at 60–70%. His trading partners include two exporters—Company D and another company—and wholesalers which are based in the central region's central wholesale market. A-grade mangoes are traded with exporters, whereas B- and lower-grade mangoes are traded with wholesalers.

However, even small-scale growers can do business with exporters if they can increase the volume of shipments through the organization. The president of Company D added:

> Recently, we decided to start doing business with a new producer organization in the Chiang Dao District. This is an unregistered organization of small farmers, but because of their large membership, we can procure the quantity of A-grade mangoes we need. (Interview with the president of Company D, August 23, 2019)

Thus, the most important thing for exporters is to procure a stable supply of A-grade mangoes for export; both large and small farmers are preferred as trading partners if they are organized and

have a sufficient supply. Of the five producer organizations considered in this study, only PO 2 has been able to continue trading because of the strong leadership of its president, who acts as an intermediate distributor and is able to ensure a stable supply of A-grade mangoes. Nevertheless, other sampled organizations were also able to continue doing business with other exporters. In Thailand, where small-scale farmers predominate, it is possible for farmers to participate in the supply chain of exporters by organizing themselves.[33] However, in such cases, local middlemen in the production area often play an intermediary role in distribution. This is because the middlemen procure A-grade mangoes from multiple trading partners and consolidate them into the supply needed by exporters. Therefore, the role of intermediate distributors remains important in the export distribution of mangoes.

Dealings with domestic supermarkets

Of the harvested mangoes, B- and lower-grade mangoes are mainly traded in the domestic market. However, compared to their dealings with exporters, mango producer organizations in the surveyed areas are generally not active in conducting business with domestic supermarkets. Some of the five sampled producer organizations used to conduct business with supermarkets, while others were approached for business but could not reach an agreement. This is because transactions with supermarkets are not based on the purchase method but on the consignment sales method. In this method, a sales booth is set up inside a supermarket store, and the supermarket treats only what is actually sold as purchased. While this method is convenient for the supermarket because it does not have to bear the risk of unsold products, it is unattractive for producer organizations that shoulder the risk.[34]

As of August 2019, only PO 1 was conducting business with domestic supermarkets. The transaction is conducted as follows.[35] In dealing with local supermarkets, mangoes are consolidated under the organization's president, who personally delivers them to various stores in the Chiang Mai Province. This is because the number of stores is small, their locations are concentrated in Chiang Mai City and its suburbs, and delivery costs are low. In contrast, transactions with a major supermarket E, which has a nationwide chain of supermarkets in Thailand, involve a specific intermediate distributor F. Intermediate Distributor F had been a brokerage business for fresh fruit sales run by a couple and had experience in doing business with a large retail business group with Supermarket E under its umbrella.[36] As of 2019, Intermediate Distributor F is dedicated to the business of acting as a broker to mediate transactions between PO 1 and Supermarket E, and describes its own role as follows:

> We are in charge of sales as if we were the sales representative (of PO 1), and we deliver the fruits of this organization to the stores of Supermarket E. We put the organization's symbol stickers on the products and sell them in stores under the organization's name. We also manage sales in the stores. When we sell products, we clearly advertise that they are GAP-certified. (Interview with Intermediate Distributor F, August 8, 2019)

PO 1 started doing business with major Supermarket E through the intermediary Intermediate Distributor F. Even today, this distributor plays many important roles, such as liaising with

Supermarket E, managing sales in stores, and developing new markets. Nevertheless, there is no written contract between PO 1 and Intermediate Distributor F. Officially, both parties are free to change their counterparties at any time, but in practice, transactions continue over the long term. As mentioned above, Intermediate Distributor F plays an important role for PO 1. This does not mean that intermediate distributors are in a superior position to lead transactions. This is evident from the fact that Intermediate Distributor F calls themselves "the sales representative (of PO 1)." For the distributor, which is a small family business, the intermediate business between PO 1 and Supermarket E is the entire scope of the business that they can handle.[37] Even if a one-time opportunity to do business on more favorable terms is encountered, there is no guarantee that the opportunity will continue to be available, and the benefits of sustaining the current business relationship are greater for both parties. Thus, despite the lack of a written contract, the two parties have a long-term business relationship based on trust and backed by benefits.

Notably, not only is the consignment sales method convenient for supermarkets because it allows them to enhance their fresh food assortment without taking risks, but it also saves personnel costs by leaving the management of the sales booths to intermediate distributors. Moreover, the procurement and sorting of mangoes to be placed on store shelves are also left to intermediate distributors. In this regard, Intermediate Distributor F stated:

> The supermarket trusts my ability to sort the fruit quality. The main points of sorting were the ripeness of the fruit, its size, and the condition of the skin. The mangoes of the organization (PO 1) are of such high quality that they have obtained Q-GAP certification and have been designated by the government as learning centers for mango cultivation. (Interview with Intermediate Distributor F, August 8, 2019)

Thus, the supermarket side has little involvement in the intermediate distribution stage.[38] Naturally, there is no involvement in the production stage. The president of PO 1 also asserts that "no supermarket employees come to our farms" (interview with the organization's president, August 2, 2019).[39]

Dealings for domestic wholesale markets

Most B- and lower-grade mangoes are distributed through traditional distribution channels via local middlemen and wholesalers based on wholesale markets. For producer organizations with a small percentage of A-grade mangoes, working with intermediate distributors becomes more important. For example, PO 3 deals with local middlemen and wholesalers in the central wholesale market who come to the area to buy, as well as with Wholesaler G in the provincial wholesale market in the center of Chiang Mai Province. The distribution channel for mangoes when viewed from the starting point of PO 3 is illustrated in Figure 2.[40]

Wholesaler G employs four employees in addition to the couple to run the wholesale fruit business.[41] Mangoes are purchased through brokers from two major producing provinces in Central Thailand, and directly from only PO 3 in Chiang Mai Province, indicating that PO 3 is an important supplier for Wholesaler G. The business relationship with this organization, which began through an introduction by an acquaintance, has been long-term; however, no written sales contract has been

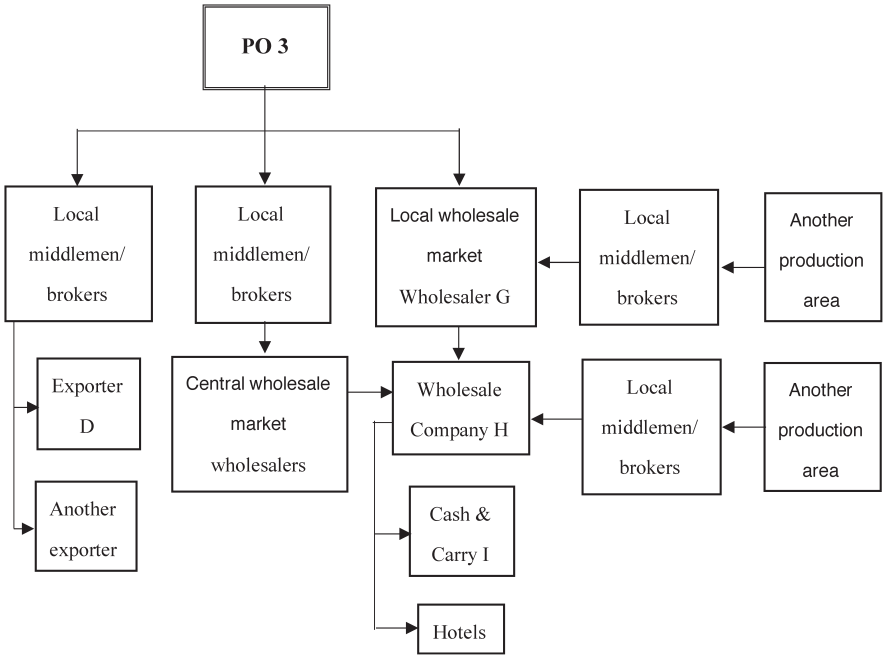

Figure 2. Mango distribution channels with a focus on PO 3.
Source: Based on the author's interviews with PO 3 and its trading partners

signed. Wholesaler G explained:

> We are free to do business with anyone since we have not signed a contract, but I would be surprised if the organization suddenly changes its sales destination to another intermediate distributor. (Interview with Wholesaler G, August 7, 2019)

For PO 3, working with Wholesaler G was preferred. This is because there is no guarantee that intermediate distributors in other regions will always purchase products every year, while Wholesaler G has a store in the wholesale market in the same province, making the transaction more feasible. Therefore, Wholesaler G and PO 3 also have a long-term business relationship based on trust, backed by the advantage of highly reliable transactions.[42]

Wholesaler G wholesales and retails the mangoes it purchased at its store in the wholesale market, as well as a major customer, Wholesale Company H, which operates a fruit wholesale business outside the market. Company H uses three store houses: its office, warehouse, and processing workshop.[43] The company purchased mangoes from three sources: other regions' producing areas through middlemen and brokers, the central wholesale markets near Bangkok through wholesalers, and directly from Wholesaler G in a nearby local wholesale market. Company H's main sales destination is Cash & Carry I, and the company procures mangoes according to orders from Cash & Carry I. Company H packs the procured mangoes into plastic bags for Cash & Carry I and delivers them to the chain's distribution center established for its northern regional stores. Deliveries to the distribution center are made by Company H pickups, including two refrigerated vehicles. The president of Company H described the transaction with Cash & Carry I as follows:

> Cash and Carry I does not want to carry a large inventory of fresh fruit to sell. Therefore, they prefer to deal with wholesalers who can deliver small quantities daily. The delivered fruit undergoes quality inspections by the inspection department; however, it mainly focuses on the color and condition of the skin. (Interview with the president of Wholesale Company H, August 7, 2019)

At first glance, Company H seems to be a "dedicated, specialized wholesaler," as claimed by supermarket revolution theory, in that it procures the necessary quantity of mangoes of appropriate quality to meet the requirements of Cash & Carry I. However, mangoes sold at Cash & Carry I stores were delivered through several intermediate distributors, and neither the chain's headquarters nor its direct business partner, Company H, was involved in the production stage. Thus, it is unlikely to be consistent with supermarket revolution theory. Nevertheless, the quality and quantity of mangoes on the shelves of Cash & Carry I meet the chain's requirements because of the well-functioning intermediate distribution stage that connects the production and retail stages.

The transactions between PO 3 and Wholesaler G, and between Wholesaler G and Wholesale Company H do not have written contracts and the freedom to change the counterparty. Despite this, long-term business relationships have been established between them not because of ad hoc high or low transaction prices, but because of the importance of "trust" in terms of the quality of the mangoes for the buyers and certainty of payment for the sellers. Such trust-based transactions are intricately intertwined in the distribution of mangoes from the production stage, mainly by small-scale farmers, to the complex intermediate distribution till the retail stages. It is extremely difficult for foreign supermarkets, or even supermarkets with domestic capital, to intervene in and control the production and intermediate distribution stages.

Conclusion

This study reconsiders supermarket revolution theory using the production and distribution of fresh mangoes in Thailand in Southeast Asia as a case study. Specifically, this study focused on the actual situation of GAP certification and organization of small-scale farmers, and analyzed whether a "preferred-supplier system," as assumed by the supermarket revolution theory, has been established.

For mangoes destined for export markets, Q-GAP, an official standard established by the Thai government, is more widespread than GlobalG.A.P.. Compared to GlobalG.A.P., obtaining Q-GAP is much less expensive and it has less stringent conditions, making it relatively easy for even small farmers to obtain certification. As Fold and Larsen (2011) argued, it can serve as an effective standard by targeting consumer markets with looser standards than Western Europe, such as neighboring countries. Furthermore, it can serve as a training opportunity for the future achievement of standards with more stringent conditions, such as GlobalG.A.P., in the future.

However, even Q-GAP, with its less stringent requirements, has a low acquisition rate in Thailand. Moreover, applying for or renewing Q-GAP is challenging, depending on the status of the farmland title document. Nevertheless, even farmers who are unable to obtain certification can solve this problem through organizational responses. This is because even if some members are not Q-GAP-

certified, if other members are certified, their trading partners can treat them as having obtained certification for the organization as a whole. All mango producers, regardless of whether they have obtained Q-GAP certification, grow mangoes under the same conditions, including the type and use of pesticides. Non-certified farmers grow mangoes in the same manner as certified farmers because if they ship mangoes that do not meet the standards, it will damage the reputation of the entire organization. This is not due to the influence of exporters or other trading partners, but rather due to organizational autonomy. Exporters and supermarkets are rarely involved in the production stage of mangoes; as long as the quality of the final delivered mangoes meets their standards, the process leading up to that point is rarely an issue.

Exporters and supermarkets prefer conducting business with farmers and intermediate distributors, who can provide a stable supply of the required quantity of mangoes of the desired standard, emphasizing standards such as epidermal color and blemish-free skin. In this respect, large-scale farmers are important suppliers for exporters and supermarkets. However, as small-scale farmers predominate in Thailand, it is not possible to procure sufficient quantities by doing business with only a small number of large-scale farmers. In addition, agricultural products are susceptible to weather, disease, and pests, and their yields are unstable, making it necessary to diversify procurement sources to avoid risks. Yet, it is inefficient for exporters and supermarkets to conduct business individually with small farmers in terms of cost-effectiveness. Thus, the organization of small farmers is also important. Specifically, large producer organizations led by leaders with strong intermediate distribution functions are prioritized because they can provide a stable supply of the required quantity of mangoes of a standard that meets the requirements. Small producer organizations with weak intermediate distribution functions can participate in the supply chain of exporters and supermarkets through the intervention of intermediate distributors, such as production area middlemen and wholesalers in wholesale markets. Conversely, exporters and supermarkets can also benefit from using intermediate distributors; they can reduce the risks associated with the concentration of procurement sources and procure mangoes of the required specifications in the required quantities at the required times without bearing the burden of large inventories. In other words, in either case, intermediate distribution in the production area serves an extremely important function, and its bearers are, in the former case, de facto intermediate distributors who are also farmers, and in the latter case, independent production area middlemen.

Members of producer organizations often participate in joint shipments, even if they are not obligated to go through the organization when selling their own harvest. This is because they recognize that organizational transactions are more advantageous than individual transactions in terms of price and the continuity/stability of transactions. Mangoes that do not meet export specifications will be distributed through traditional channels via local middlemen, whether they are shipped jointly or sold individually by each farmer. In this traditional channel, transactions between farmers and intermediate distributors (local middlemen and wholesalers in wholesale markets) are formally one-off transactions with no written sales contracts. However, in reality, transactions often continue over the long term. The parties involved maintain a relationship of trust; that is, the trust that the products adequately meet the required standards regardless of whether they are Q-GAP-certified, and trust that payment for the products is assured.

Thus, the actual production and distribution of mangoes in Thailand deviates significantly from

the "preferred-supplier system," as envisioned by supermarket revolution theory.[44] Nevertheless, the production and distribution systems of export-oriented horticultural crops vary by country and crop. This study is just one case study to empirically reconsider the supermarket revolution theory. As explained earlier, mangoes can be an important case study; however, the analytical results remain hypothetical. Regarding the organization of small farmers, this study has not yet been able to fully elucidate the factors that have led to the spread of small producer organizations in Thailand and the certain effectiveness of their organizational behavior, in contrast to the Philippines and Taiwan. To relativize supermarket revolution theory, which is considered conformist in case studies of Latin America and sub-Saharan Africa, and develop it as a more explanatory theory, additional case studies on horticultural crops must be conducted in Thailand as well as in other countries in Southeast Asia.

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Notes

1 For example, see Reardon (2006) and Reardon et al. (2003; 2007; 2012) and Reardon and Hopkins (2006). The term "supermarket" here includes hypermarkets, cash-and-carry, and other new retail formats that handle fresh food products. Here, the term supermarket is used in the same broad sense.

2 Initially, the supermarket revolution theory took as its starting point research on the impact of the import behavior of European supermarkets on horticultural agriculture in developing countries, which was developed as part of the Global Value Chain theory.

3 Examples include Wrigley et al. (2005), Coe and Wrigley (2007), Humphrey (2007), and Trienekens (2011).

4 Endo (2013), who shed light on the actual state of Thailand's retail and distribution industry in detail, also argued that new retail formats, including supermarkets, have been rapidly expanding in Thailand since around 1990. However, the author stressed that the traditional distribution industry still plays an important role.

5 However, "mango" in this report includes mangosteen and guava. The share of mangoes is estimated to be approximately 75% of the total (FAO 2023). However, in the case of Thailand, the value of mangosteen exports is higher (Thailand Foreign Agricultural Trade Statistics 2017, Office of Agricultural Economics). Therefore, Thailand may not be the world's second largest exporter of mangoes.

6 Regarding the export channel, the focus is on the relationships between the production and intermediate distribution stages in Thailand, and the exporters. The relationship between exporters and export destination markets will be discussed on another occasion.

7 Except Bangkok, the capital city, Thailand's provincial administration is divided into provinces (*changwat*), which are established as broad administrative units, and districts (*amphoe*), subdistricts (*tambon*), and administrative villages (*muban*) under each province. Of these, provinces and districts are positioned as national government agencies, and the positions of governor and district head are held by central bureaucrats. Subdistricts and administrative villages are also terminal administrative units delineated by the Ministry of the Interior; however, village heads are elected directly by the residents, who then elect subdistrict heads (*kamnan*) from among themselves.

8 DOAE's (Department of Agricultural Extension) *Rai'ngan Khomun Phawa Kanphalit Phueat* (Annual report of crop production data). (Th)

9 *Chotmai Khao Samakhom Chao Suan Mamuang Thai* (Thai Mango Growers Association newsletter), December 2017. (Th)
10 DOAE's (Department of Agricultural Extension) *Rai'ngan Khomun Phawa Kanphalit Phueat* (Annual report of crop production data). (Th)
11 More precisely, it is *Nam Dok Mai Si Thong*, an improved variety of *Nam Dok Mai*.
12 *Chotmai Khao Samakhom Chao Suan Mamuang Thai* (Thai Mango Growers Association newsletter), June 2015. (Th)
13 In his field survey in Chiang Mai Province, the author was accompanied by a Thai research assistant, who was a graduate student at Chiang Mai University and knows the local dialect.
14 GlobalG.A.P. http://www.globalgap.org/uk_en/ (Accessed on September 6, 2020)
15 There are also differences among the public GAPs of ASEAN countries in terms of content and stringency (Amekawa 2009). Among these public GAPs, Thailand's Q-GAP has relatively loose requirements (Amekawa et al. 2015).
16 Examples include Schreinemachers et al. (2012), Mankeb et al. (2013), Pongvinyoo et al. (2014), and Srisopaporn et al. (2015).
17 DOA (Department of Agriculture). http://gap.doa.go.th (Accessed on September 10, 2021) (Th)
18 ibid.
19 Based on the author's interview with the president of PO 1 (August 2, 2019).
20 Based on the author's interview with the president of PO 2 (March 11, 2019).
21 During the interview with the author, the president's two smartphones kept receiving calls for business meetings one after another.
22 Based on the author's interviews with the president and director of PO 3 (March 9 and August 4, 2019). For more details on the activities of this organization, see Tawatchai and Chanthalak (2017).
23 Land rights in Thailand are divided into several statuses based on the strength of the rights, such as "right of possession," "right of use," and "right of ownership." For farmland that remains under the status of right of possession, renewal of the Q-GAP certification is not allowed as of 2019, even if the farmland has already obtained Q-GAP certification.
24 Based on the author's interviews with the president and director of PO 4 (March 11 and August 8, 2019).
25 Based on the author's interview with the president of PO 5 (August 10, 2019).
26 All mango producer organizations known to the provincial agricultural office, including the organizations discussed here, are the networking organization's members. The author conducted interviews with him on March 9 and August 2, 2019.
27 Based on the author's interviews with the secretariat of the networking organization in Chiang Mai Province and director of PO 3 (March 9 and August 2, 2019), and director of PO 4 (March 11 and August 8, 2019).
28 A large grower in Central Thailand, who exports mangoes to European countries with GlobalG.A.P. certification, also stated in an interview with the author that this is true for the producer organization he leads (August 8, 2018). Chiang Mai Provincial Agricultural Office, which is responsible for Q-GAP certification in Chiang Mai Province, also acknowledged in an interview with the author that the same is seen in general (March 11, 2019).
29 This is not due to control by exporters or other trading partners, but rather due to organizational autonomy.
30 Company D, an exporter that does business with the mango producer organizations discussed here, sends staff to the farms just before harvest to bring back samples of mangoes and test for pesticide residues. However, in the author's interview at the company, there appeared to be few problems with exceeding the standards, leading to suspension of shipments (interview with the president of Company D, August 23, 2019).
31 Information here on Company D is primarily based on the author's interview with the company's president (Ayutthaya, August 23, 2019).
32 Based on the author's interview with the large mango grower (August 15, 2019).
33 Company D's president also actively participates in the Thai Mango Growers Association's national meetings and events, and makes efforts to maintain close ties with its member organizations, as evidenced by the association's newsletters.
34 This was the explanation given unanimously by all but PO 1, which does business with domestic supermarkets.
35 Based on the author's interview with the president of the organization (August 2, 2019).
36 Information here on Intermediate Distributor F is primarily based on the author's interview with its manager (Chiang Mai, August 8, 2019).
37 As of 2019, the only growers with whom this intermediary does business is PO 1.
38 However, both supermarkets, who are the trading partners of the intermediate distributor, conduct sample testing for pesticide residues.
39 The secretariat of the networking organization in Chiang Mai Province similarly stated, "The role of independent

intermediate distributors remains significant. Both exporters and supermarkets depend on them" (interview with the secretariat, August 9, 2019).

40 Another distribution channel for mangoes is through "*long*s," which are trading posts that also serve as fruit sorting and packing workshops. *Long*s primarily target small-scale mango growers who are not part of a producer organization. In the case of longan, a specialty fruit of North Thailand, *long*s, especially those run by Chinese nationals, have come to play a central role in the distribution channel (Khana kamathikan phanit 2016; Mittraporn and Watcharee 2019). In the case of mangoes, however, the role of *long*s is limited.

41 Based on the author's interview with Wholesaler G (August 7, 2019).

42 Nakakubo (2011) argued that mango wholesalers in the Philippines prefer to establish ongoing business relationships with an emphasis on securing stable profits rather than acting opportunistically in search of temporary gains. This is consistent with this study's analysis of the situation in Thailand.

43 Based on the author's interview with the president of fruit wholesaler Company H (August 7, 2019).

44 Thanarat et al. (2018), who studied three major mango-producing provinces in the lower north of Thailand, also concluded that there is still no "focal firm" controlling the supply chain of mangoes for export in Thailand and that distribution channels are highly flexible.

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