

Opportunity and Value Development for Thai Bananas

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Abstract. This paper examines the opportunity and value development for Thai bananas. It presents supply chain study of Thai banana. There are two case studies: Thayang Agriculture Cooperative Ltd. and Klong Prem farmers. It has been shown that supply chain process of a group of collaborative farmers and independent farmers are different. Even though the first group has more income, it requires knowledge of food safety and quality standards. Such standards become added value in export market. The result also presents production capacity, standard, and branding as opportunities and challenges of Thai bananas. This paper concludes that both Thayang and Klong Prem have potential to expand their market and increase revenue.

Keywords: bananas, banana supply chain, standards, branding, Thailand

1. Introduction

Bananas are considered to be one of the most important sources of energy in the diet of people living in tropical humid regions [1]. Originated in South East Asia, there are many producers around the world. The estimated total production worldwide in 2008, ranked from highest to lowest value, is in India, China, The Philippines, Ecuador, and Brazil. As for Thailand, its rank is 12 with the value of \$217,766,000 [2], which is competitive in the world market. There are several types of banana. The main genome groups of banana fruits are AA, AB, AAA, AAB and ABB, see [3] for further detail. The popular and widely grown in Thailand are ABB or Namwa banana (*Musa Sapientum* Linn) and AAA or Home banana (*Nyctanthes Arbor-tristis* L.). The majority of banana producers in Thailand focus on serving local and domestic consumption, however, some producers seek opportunity to export. To our knowledge, previous literature mostly covers breeding and planting, none covers issues in banana supply chain process. Therefore, the objective of this research is to study Thai banana supply chain and analyze opportunities and challenges in order to increase exporting. Two supply chain characteristics are studied: 1) individual farmers serving local market and 2) a collaborative group of farmers serving demand in international market. Banana supply chain at Klong Prem, Pathum Thani and Thayang Agriculture Cooperative Ltd. is selected in each characteristic, respectively. The rest of this paper is divided into four sections. First section presents methodology of data collection and criteria of farmer selection. It is followed by supply chain analysis result, opportunities and challenges for Thai banana, and conclusion.

2. Method of Approach

To analyze opportunities and challenges of Thai banana in the world market at operational level, we need to gain insight of supply chain. Data is collected from two different supply chains: 1) a supply chain that has

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farmer working individually, serving local and domestic market and 2) a supply chain that is formed by a group of farmers, working collaboratively, not only serving domestic market, but also trying to access international market.

Data is collected both primarily and secondarily so that supply chain process can be formulated and financial information can be captured. Primary data is collected through a survey, focus-group discussions, and expert interviews. Secondary data is obtained from various sources such as literature and videos, referred by experts and interviewee from a focus group.

In this study, the individual famers at Klong Prem, Pathum Thani, and Thayang Agriculture Cooperative Ltd., in Petchburi, are selected as two different supply chains. Klong Prem is located in Pathum Thani province, near Bangkok. It is selected because there are farmers who grow banana individually for local market and household consumption. The area has good access to water supplies and good infrastructure. For the latter, Thayang Agriculture Cooperative Ltd. is chosen because it is one of the top Thai banana exporters. It is a group of farmers in Petchburi, formed since 1966 and became a Thayang Agriculture Cooperative Ltd. in 1969, then combined with Ban Nong Tian Department of Land Cooperatives Ltd. in 1970. Thayang has 250 members with land of 2,000 rai in total (Thai measurement of area: 1 rai equals to 1,600 square meters or 0.395 acres). The cooperative has produced fresh pesticide-free Home Thong banana exported to Japan for more than 19 years. It generates high income and well recognized nationally and internationally because its products are sold to modern trade retailer, hotels, and a Japanese agency. A group of customers in Japan is called Thoto consumer co-operative society, or TOHTO, which is a joint buying co-operative society, having more that hundred thousand of members. Thayang also produced other species of bananas; namely, Nam Wa banana and Kai banana; but they are not exported. The cooperative also has other businesses including money loan and deposit service, central market, product collective market [4].

3. Supply Chain Process of Thayang Agriculture Cooperative Ltd. and Klong Prem

Analysis of supply chain shows the difference between Thayang Agriculture Cooperative Ltd. and Klong Prem. A comparison is illustrated in Fig. 1.

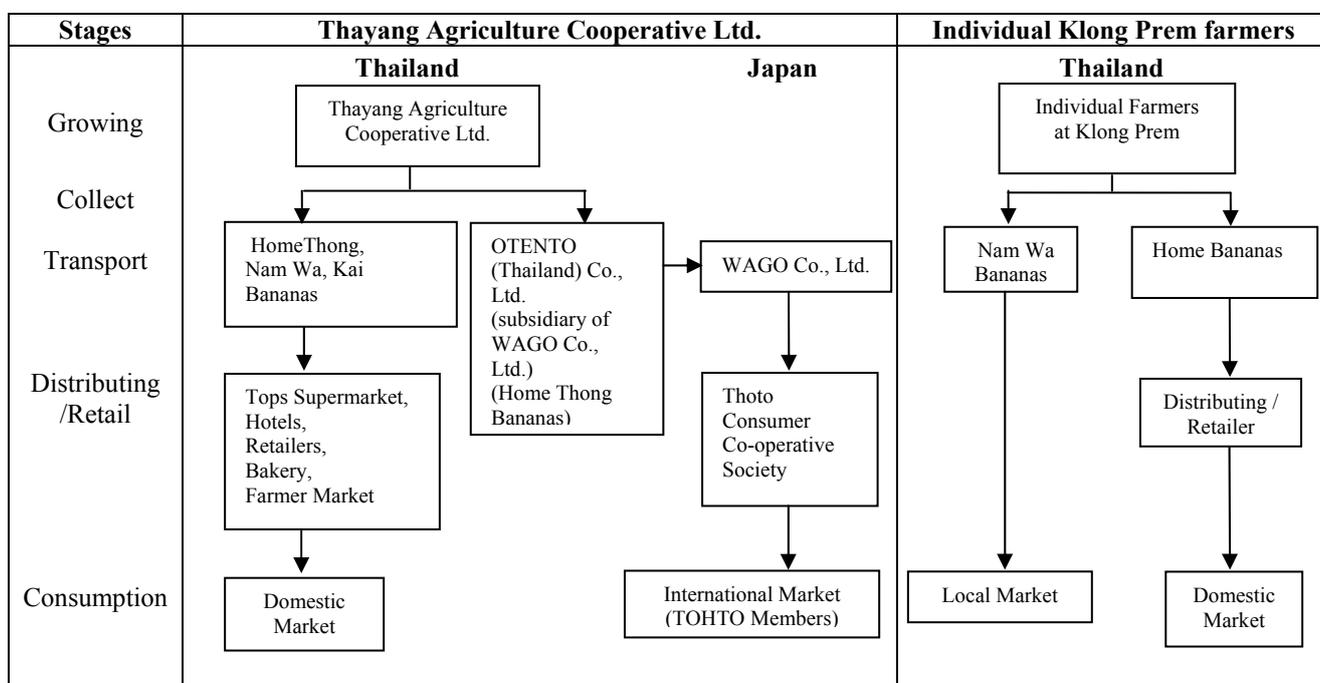


Fig. 1: Comparison of banana supply chain between Thayang Agriculture Cooperative Ltd. and the Klong Prem farmers

First, Thayang process is explained. A group of farmers in Thayang Agriculture Cooperative produce pesticide-free Home Thong banana. This is a niche product in international market. A supply chain in this case

is initiated when contract is signed between Japanese agent (TOHTO) and Thayang group. Farmers in the group have to abide the terms of the contract that includes planting method, specification of bananas, demand and schedule of delivery, etc. It usually takes approximately 9-11 months for a banana sprout to grow and bear fruits; and banana tree normally bears fruit every three months. Therefore, the cooperative has to plan one year in advance to meet a given demand in the contract. Since the quality of bananas from the sprout decreases from one generation to the next, Thayang farmers have to replace banana trees with a new batch after the second harvest. Nowadays, a productivity of Home Thong bananas is three tons per rai per year; and yields approximately 400 tons in total. Based on a contract, the cooperative delivers bananas to Japan twice a month in an amount of 30 tons per month. As a result, each farmer in the cooperative is allowed to plant Home Thong bananas in 30 rai for export. The cooperative works in many roles. Not only it manages land for members, it also ensures that banana fruits reach specification given by TOHTO. Therefore, when banana fruits are ready for harvesting, the cooperative selects which bunch should be cut on a condition of one fruit weighted more than 100 grams. Selected bunches are transported to the cooperative facility and weighted. Weight is recorded in the database and each farmer get paid based on banana's weight, collected from its land. Bananas are then sorted, washed and dried, divided into smaller bunches, packed in plastics and vacuumed, placed in boxes, and refrigerated at 14 degree Celsius, waiting to be exported. These bananas are transported and shipped to Japan by OTENTO Co. Ltd., a Japanese firm and a subsidiary of WAGO Co. Ltd. Once the bananas arrive in Japan, the retailer will do the ripening process before selling to the end customers. It takes 14 days in the process from leaving a dock at Thayang until it is ready for sale. Farmers at Thayang also grow Nam Wa and Kai bananas, domestically sold to modern-trade retailer and hotels. The cooperative acts as central buyer and distributor.

For those bananas that do not pass grading for export, either over ripe or having lighter weight, they are also sold to modern-trade retailer and hotels in domestic market. The process used for domestic-sold fruit is different from that of the exporting fruit. First, bananas are graded and let to rest eight hours before going through the ripening process, using gas for 12 hours to ripen every fruit. They are picked up by a truck owned by the retailer.

Next, a supply chain at Klong Prem, located on the right side of Fig 1, is described. Area used is approximately 10 rai, which is three times smaller than Thayang's. Farmers select their own planting and growing method and do not have to hire any workers to work in the orchard. Farmers in this area focus on other plants and grow Home banana and Nam Wa banana for extra income. Thong as called in Home Thong indicates golden-look of banana's skin. Even though Home banana is different from Home Thong banana, it still needs careful treatment in many processes such as fertilizing and packing. While Home bananas are distributed to distributor or retailer before selling at domestic market, Nam Wa is transported directly to local market. Farmers select how to transport the product to the customers by themselves.

Next, expense and income of Thayang Agriculture Cooperative Ltd. and Klong Prem farmer are compared in Table 1. These numbers are for Home Thong and Home banana only, not for Nam Wa, because data has never been recorded at both places. It shows that a Thayang farmer has higher expense, higher income, and higher revenue than one from Klong Prem.

Table 1 Comparison of expense and income between
Thayang Agriculture Cooperative Ltd. and the Klong Prem Farmers

	Thayang's Home Thong Bananas	Klong Prem's Home Bananas
Expense/rai/year	(in baht)	(in baht)
Soil preparation	2,200	-
Sprout	1,600 (4 baht/sprout)	5 baht/sprout
Sprouting labor	800 (400 sprouts, 2 baht/sprout)	-
Fuel	1,200	-
Fertilizer	6,000 (3 tons, 2,000 baht/ton)	4,000 (Sail Boat brand, formula 10-16-16)
Weeding labor	6,000 (3 times, 2,000 baht/time)	-
Pole for trunk	1,400	-
Trimming and wrapping labor	1,200	-
Other expense	1,000	-
Income/rai/year		
Per yield	40,200 (400 sprouts/rai, 12 baht/kg.)	10,000 (100 bunches, 100 baht/brunch)
Revenue	18,800	1,200

There are few issues found at Thayang – packaging material and noise protection. They use thin foam sheet to wrap bananas. If they change to special paper, they can apply for ISO 14000. They use air blower to dry bananas after washing; this causes loud noise. Even though earplugs are provided to workers, they do not wear them. This could harm workers' hearing. At Klong Prem, land is flooded in raining season, causing the death of banana trees, which need to be replanted.

4. Opportunities and Challenges for Thai Bananas

This study indicates that to increase opportunities of Thai bananas in the market, it is necessary to integrate these things into the process: 1) production capacity to guarantee quantity matching market demand, 2) standardization to ensure quality, and 3) branding to confirm creditability of the product and service.

4.1 Production Capacity

Nowadays, demand for Thai bananas in Japan is high. While Japan needs to import bananas approximately 501,805 tons in 2007, Thailand has accounted for only 1,101 tons or 0.22 percent of the total [4]. Since Thai Home Thong banana has delicious taste, good texture, and thin peel, they are well known and in demand by the Japanese. The pesticide-free process also increases value of the product. These help Thai bananas receive a higher price.

For that reason, Thailand has opportunity to increase production capacity. However, from Thayang study, there are problems that farmers can encounter. That is, some farmers use the same land to grow bananas and lime. When market price of lime is higher, the farmers plant lime. The planting process usually uses chemicals and pesticides, which is contradictory to the pesticide-free process in bananas planting. Therefore, if a farmer wants to go back to plant banana, the top soil needs time to regenerate before it is ready for the next banana plantation. In the other case, increasing productivity at Klong Prem has a challenge because farmers have to overcome flooding problem during raining season.

4.2 Standards

When food safety and quality has become consumers' concern, having standards can add value to product and service. For global standard, three most important generic quality assurance systems in the food sector are Good Agricultural Practices (GAPs), Hazard Analysis of Critical Control Points (HACCPs) and International Organisation for Standardisation (ISO) [5]. In Thailand, ThaiGAP certification, a voluntary private standard, is a pre-farm-gate standard designed to reassure consumers how food is produced on the farm from seeding to produce handling. It assures food safety and quality, health safety and welfare of producers, and sustainability of Thai agriculture and its environment. It has approved as equivalent to GLOBALGAP, used in European Union to certify fruits and vegetables [6]. This is opportunity for Thai producers to access export market, particularly in the EU. For ISO standards, there is ISO 9000 ensuring quality system in all activities and handling established in procedures. It is extended to the ISO 9001:2000 quality management system standard, which is widely implemented in all sectors but does not specifically address food safety. In addition, ISO 14000 is employed to ensure environmental management. It provides a framework for the development of an environmental management system and the supporting audit program [7].

Founded in 1966, Thayang Agriculture Cooperative has created agreeable standard with its customer, i.e., Thoto consumer co-operative society, to provide pesticide-free Home Thong banana to Japan. Thayang has maintained this standard and also able to implement ThaiGAP successfully. However, a lack of traceability system and waste water treatment at Thayang has prevented them from applying for ISO 9000 and ISO 14000. Usually, when farmers decide to implement the ISOs, it takes approximately six months to one year to obtain the standards; and the government will fund half of the payment [8]. In the other case of Klong Prem, farmers have not employed any standards yet; therefore, their bananas are only sold at locals and in domestic market. Adopting standards at Klong Prem becomes a great challenge because farmers do not see bananas as main source of income.

4.3 Branding

Competition in marketing is broadened and more complex. An effective brand name can enhance awareness and create a favourable image for the product and differentiate a seller from those of competitors

[9]. Therefore, branding becomes more important. For Thayang Agriculture Cooperative Ltd. and Klong Prem individual farmers, branding can highly influence their products to be more well-known to customers. In this research, we analyze brand building in four factors.

Factor 1: Find target market and target customers – It is almost impossible for small and medium enterprises brand to compete in the market, because of the limitation of marketing budget that bigger-size companies spend. One of a good solution to build brand for small and medium enterprises brand is to focus on their specific target group. From this research, Thayang Agriculture Cooperative Ltd. has target markets – Japan, Tops supermarket, hotels and local vendors. In contrary, Klong Prem does not have specific market but they can search neighbourhood vendors who can become target customers.

Factor 2: Product Development – Since the market after the year 2000 is more competitive, producers have to develop their products continuously; especially the product that has short life cycle such as fruits. Beside fresh banana, both case studies can create product innovation and attractive packaging for banana. Klong Prem can form a cluster of banana producers not only to achieve economies of scale but also share knowledge in every process in supply chain ranging from planting to finding customer preference. This can help them get access a market of One Tambon One Product, or OTOP. Supported by government, OTOP is a local entrepreneurship stimulus program. Products from this program are sold widely in the nation and some are developed and sold internationally.

Factor 3: Advertisement – For banana branding, advertisement is an effective tool to build, maintain, or change the brand image. Products of Thayang has added value because of pesticide free, non-chemical growing process, and ThaiGAP. These make customers become confident in their products. Klong Prem farmers do not have any standard guaranteed, however, if they can be in OTOP selling channel, they can become well known to specific target.

Factor 4: Customer Service – A brand relationship is logical extension of brand personality if brands can be personified, then consumers would not just perceive them, but would also have relationships with them [10]. Therefore, customer service is the most important and cannot be neglected in business world nowadays; especially when customers are oriented. Small and medium enterprises can satisfy their customers by attire, speaking, attitude, their knowledge of product, and interesting to customers. Building a brand can be compared to growing plants. We have to spend time, take care of them constantly before they can give us beautiful products, which will be attached in customer's and brand owner's mind.

5. Conclusion

This paper has presented supply chain study of Thai banana. There are two case studies: Thayang Agriculture Cooperative Ltd. and Klong Prem farmers. The first case is studied how farmers work collaboratively in the cooperative organization to gain assess in both domestic market and exporting market like Japan. The latter case is investigated how individual farmers work individually to serve demand in their neighbourhood and domestic market. It has been shown that supply chain process of a group of collaborative farmers and independent farmers are different. Even though the first group has more income, it requires knowledge of food safety and quality standards. Such standards as ThaiGAP and ISOs become added value in export market like Japan. The result also presents production capacity, standard, and branding as opportunities and challenges of Thai bananas. This paper concludes that both Thayang and Klong Prem have potential to expand their market and increase revenue. The study paves the way for a future research that should focus on testing the propositions empirically in a quantitative phase, trying to overcome the limitations we found.

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