

Supply Chain System for Exporting Durian from Eastern Thailand to China

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Abstract— This research intends to 1) examine the logistics for exporting durian from the eastern portion of Thailand to China, and 2) investigate the difficulties in managing these logistical processes. 3) Offer insight and information regarding these obstacles. Chonburi, Rayong, Chanthaburi, and Trat are the provinces from which the participants picked for the interview are involved in the supply chain that exports durian to China from the eastern region of Thailand. The interview is organized into five portions, with farmers, freight forwarders, factory workers, truck operators, and port operators as the target audience; The Value Chain Model is used to analyze the data. The findings indicate that durian can be exported to China via road, rail, and water transit via coastal vessel containers from Laem Chabang port to the destination port in China. The most renowned Chinese ports for the importation of durian are Qingdao, Shanghai, Nanjing, and Xiamen Tianjin. When examining the logistics of exporting durians to these ports, the most significant factor appears to be the transportation infrastructure, including road conditions (i.e., the smoothness of the surface) and traffic uncertainty. Managing challenges associated with the cultivation of fruit crops is also difficult.

Keywords: *Supply chain, Exporting, Durian*

I. INTRODUCTION

Durians are cultivated in tropical regions and are regarded by the majority of Asians as "the king of fruits" due to its distinctive and well-known overwhelming perfume and flavor [1]. Thailand is the world's largest exporter of durian, accounting for more than 98 percent of the global durian market, with an export value of over 32 billion Thai Baht or one billion US dollars. Malaysia follows Thailand with a 1.62 percent market share, while

the remainder of the market belongs to other nations [2]. Recently, domestic demand for durian has begun to decline, but overseas demand continues to increase. The

primary market for Thai durian is the People's Republic of China, particularly Guangzhou, Chengdu, Shanghai, and Hong Kong. Farmers of durian have been debating and formulating a strategy plan to produce durian in the most efficient manner by examining various difficulties. This study intends to examine the solution that would satisfy the needs of durian farmers and businesspeople in order to improve the quality of durian production in Thailand and achieve sustainability. The bulk of those who like to consume durian exports from Thailand are foreigners with a higher income.

When durian is exported from eastern Thailand to China, numerous fees are involved. According to the government's national administration policies and strategies, the primary expense is logistics, which includes freight charges, inventory retention, and administrative expenditures. To increase the efficiency of essential logistics management for farmers, assist small entrepreneurs in the agricultural sector, and stabilize and strengthen the upstream industry in agriculture, it is necessary to examine the cost of logistics, as it represents the greatest expense in the cultivation and export of durian. This is the motivation for this study, which investigates the logistics system of durian export from the eastern part of Thailand to China.

A. Objective of the study

This research aims to study the logistics system of exporting durian from eastern Thailand to China in order to determine the most effective logistics management methods and provide recommendations for developing the most efficient logistics management system.

II. LITERATURE REVIEW

A. The Thai Durian Supply Chain

To effectively evaluate the performance of the supply chain management, it is necessary to identify the chain structure and characteristics [3]. The study is applicable until the year 2004, when China became the largest export market for Thai durians. This ascending of the Chinese market into the durian industry has somehow altered the logistics arena of Thai durian[4,5]. Therefore, the durian supply chain structure must be examined to understand whether any of the changes are a result of the transformation in the business [6].

B. The Value Chain Model

The value chain outlines the steps needed to bring a product from the initial idea and conception to the market in the supply chain. For example, In the food and beverage supply chain, there exists many relationships involving many players, starting from primary producers or farmers, collectors, manufacturers, processors, exporters, importers, wholesalers and retailers. These players engage in activities, such as, design, production, marketing, distribution, and support services. This research uses the Kaplan, Norton and Porter’s Value Chain Model. The value chain allows the alignment of processes with customers and generates a quality advantage. The value chain focuses on cost management efforts and provides efficient processes which improve the timeliness of operations[7].

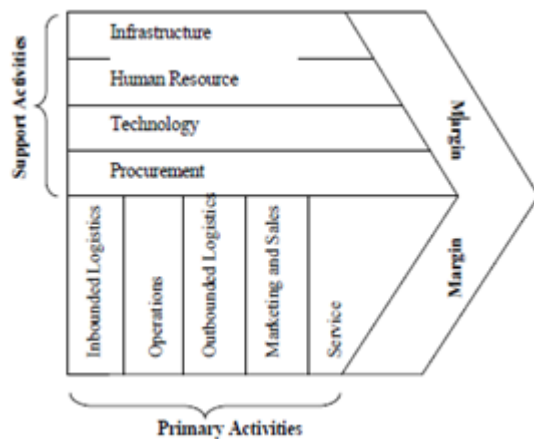


Figure 1 Value Chain Model of Porter S: [7]

III. RESEARCH METHODOLOGY

The purpose of this research is to study the logistics system of exporting durian from the upper eastern region of Thailand to China. It is a qualitative case study research, whereby the researcher collected data from in-depth interviews. The target group of participants are durian producers and exporters to China. The following research methods are used for this research: The simple

random sampling method was applied in order to reduce the amount of bias by supplying an independent and equal opportunity for every member of the population [8] [9]

- Exploring the theories and principles from research papers related to the production and export of durian from Thailand to China

- Analyzing the objectives of the research to determine the guidelines and scope for creating the questions for interviews

- Creating a draft interview form whereby the scope of the questions is set according to the stated objectives

Producing the final interview form to be used in interviews with durian manufacturers and exporters to China

- Data Collection The primary data were gathered by the administration of in-depth structured interviews, each of which consists of two sections. The first section analyzes the supply chain for exporting durian from Thailand to China, while the second section looks at the challenges and potential solutions facing the logistics system. The interviews were conducted with 125 individuals belonging to five distinct groups, each of which played a distinct role in the supply chain. These five groups were comprised of 25 durian farmers, 25 freight forwarders, 25 truck operators, 25 port operators, and 25 selected durian distributors and exporters to China.

IV. RESEARCH RESULTS

A. Respondent Information

After studying the logistics system of exporting durian from the upper eastern region of Thailand to China from 125 farmers, results show that most respondents are engaged in their occupations. Data collected on the durian export supply chain in Rayong province shows that 42 per cent of farmers use approximately 11-20 rai and yields 1,100-1,500 kg of durian per rai. The majority of farmers use the method of cultivation and the durian collected are both sold as wholesale and retail. Moreover, the quality of the produce is classified according to ABC standard. As for the issues found in the cultivation of durian, most farmers claim they are facing problems with diseases and pests.

B. Descriptive Information

Table I: Descriptive data

Problem	Response
Name of company	Phonthawee-winter fruits
Location	Chanthaburi, Thailand
Revenue	Approximately 1,080,000 baht per day (excluding other costs)
Products/Services	Exporting durian to other countries
Market Segment	Exporting durian to China only
Customer group in China	Guangzhou, Chengdu, Shanghai China
Transportation	Container from warehouse to China, through Laos and Vietnam
Packaging	Boxes (1 box per 6 durians, 1 container has 960 boxes)

C. Supply Chain Activities

1) *In-Bound Process* Raw Materials and Package Management There are processes that manage and control raw materials, packing material, and finished goods and services when exporting durian from Rayong and Chanthaburi in Thailand to consumers in China. The primary raw material in the durian business is the fruit tree, which is of the cotton family (Malvaceae) and known as “the king of fruits”. The durian fruit is large and bristly covered at the bark. It may be up to 30 cm in length and up to 15 cm in diameter, generally 1-3 kg in weight. The shell color ranges from green to brown and the texture is pale yellow to red and varies by species.

The label of the product is as important as the product itself. Labelling is also beneficial for all the other components within the production process. For example, the manufacturer uses product labels to communicate and advertise products to consumers, therefore, adding value to the product. Furthermore, trade competition government agencies and stakeholders attempting to protect consumer products use labels as a tool to track and monitor product quality. When exporting goods to foreign countries, the government must apply strict monitoring in order to maintain the country’s reputation and quality standards. Often times, chemicals or medicine are used to apply certain remedies onto the stalk of the durian in order to accelerate the ripening effect. Plastic straps are used for packing or to strapline the box once the durian has been placed inside.

The majority of suppliers will have local vendors/staff on payroll for just 5-6 months per year. This means that for some warehouses, their business is only operational during durian season. Some warehouses, however, will have orders all year long.

Usually, each warehouse will have their standard for purchasing raw materials by looking at the quality of the goods that meet the company or customers’ needs.

They may refer to the day of the durian flowering, which needs to be approximately 60-75 days. The company normally purchases, packs and delivers daily in order to maintain the quality of durian as best as possible.

2) *Operation Process* Distribution Process

1. The farmers sell their products to the manufacturers
2. The managers or supervisor check the products to select and negotiate the best price
3. The products are moved to the checking process for weighting and counting
4. The repacking process prepares the packaging for the merchandise
5. After weighing the product, the staff applies chemical to the stalk of the product for ripeness
6. The products are placed into each case
7. The boxes are sent to the step line for sealing and numbering
8. The products are separated by types of species
9. A forklift is used to pick up the products in order to move it to the product area it belongs to
10. The forklift then transfers the products to the container or truck
11. The products are exported

3) *Out-Bound Process*

● Warehouse/Stock Management

The farmers store the durian from the farm and then either sell them at the market or send them to the warehouses. The farmers must manage the stock themselves and bring them by car to the market, either immediately or after storing it. On the other hand, the factories need to clear out all of the durian at the end of each day. Stock management and produce distribution is done day-by-day, which means there can be no inventory left at the end of each day because stocking is not possible as products cannot be kept overnight at the factory.

● Logistics Activities

Farmers have their own transportation used to deliver and sell durian in the country. This means that transportation costs are low because they manage their own method of transportation. On the other hand, warehouses have higher transportation costs because they do not transport durian themselves but outsource to a supplier. There are two types of delivery options, either by ship or by truck.

● Type of Transportation

The products are shipped by using private trucks and transported by the farmers themselves, thus, saving cost. Transportation cost is higher for warehouses, where two methods are used, either by ship or by truck. Moreover, the

shipping process can be carried out directly from the warehouse in Eastern Thailand to China.

4.) *Marketing and Sales* Thailand is the world’s number one exporter of durian. While domestic demand for durian has been declining, demand from the international market continues to rise, especially from China. China is the primary market for Thai durian exports, particularly targeting warehouses in Guangzhou, Chengdu, Shanghai, and Hong Kong. Farmers have been engaging in consultation and planning by gathering various issues to form a strategy for effectively exporting durian. The purpose of this research is to propose a solution that meets the needs of durian farmers and entrepreneurs, which will increase the quality of Thailand’s durian production and achieve sustainability

D. Preliminary Findings

Issues	Solutions
The middleman forces the farmers to sell at a lower price	The farmers must sell products by themselves
High quality products are exported to foreign countries, while lower grade products are sold within the domestic market	Domestic prices must increase, or the government should have a policy to control product prices that are sold within the country
Durian is difficult to care for because it is easily infected with diseases	The farmers must use a chemical to treat durian or combine different species together, such as Mhon Thong and Chani

V. CONCLUSION

The majority of exporters will experience difficulties with the transportation infrastructure system, specifically the road and its conditions, such as the surface being too rough with holes; the timing of the transportation, which can be unpredictable; the conditions of the traffic; and finally, the price volatility of the product. In addition, the growing procedure might be problematic due to the fact that durian is a difficult crop to cultivate and keep in good condition. In addition, additional factors, such as an inadequate supply of containers, might also contribute to the occurrence of difficulties. The Thai government ought to initiate the process of regulating Chinese people through the implementation of measures such as trade rules. For example, the Agricultural Standard Taxation and Trade Competition law was created with the intention of leveling the playing field when it comes to competition between Thai and international companies. In addition, the unpredictability of durian prices needs to be handled in order to mitigate the damaging effects that it is now having on growers. In addition, the private sector ought to be incentivized to conduct research and development of value-added durian goods in keeping with consumer

behavior in order to alleviate the pressure caused by the loss of bargaining power. It will preserve Thai durian marketing. Businesses in Thailand that sell durian should work to improve their capacity to react to threats in the market, reduce the risk of incurring losses related to logistics costs, improve the efficiency of their logistics operations, and cut the amount of time it takes for these operations, all of which will help the Thai durian industry grow in a sustainable manner.

VI. REFERENCES

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