



LOGISTICS MANAGEMENT FOR NATURAL RUBBER EXPORTING FROM THE UPPER SOUTHERN REGION OF THAILAND TO CHINA

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Abstract

Thailand has a large number of rubber plantations; hence, natural rubber is a very important industrial crop for the country, both for local consumption as well as the global market. The objectives of this research were to analyze the current logistics system and the problems in exporting natural rubber from the upper southern region of Thailand to China in order to suggest an appropriate model of logistics management. A qualitative research method with in-depth interview the key informants and case studies was used in this study during June-September 2013. The results revealed that (1) the logistics system for exporting natural rubber began with purchasing raw rubber sheets and field latex from a middleman, who conveyed this raw rubber to a factory. Various manufacturing processes were employed to meet customers' demands, such as block rubber, ribbed smoked rubber sheets, and concentrated latex. There were several ways to transport the natural rubber to exporting ports in order to export them to destination ports in China, such as roads, railway, and shipping by using 20-foot shipping containers. (2) The problems of logistics management for exporting natural rubber mostly involved transportation problems. For instance, road surface conditions were rugged and bumpy, causing driving difficulty, rail transportation times were uncertain, ports were small with no cargo ships, and another problem was a lack of containers. As a consequence, the cost of logistics tended to be high. It is recommended that in order to achieve effective logistics management in exporting natural rubber, the government should play a vital role in improving and developing the logistics system, including the rail transportation and water transportation, and road transportation should be better developed with an Asian highway that supports the manufacturers and exporters in reducing their logistics costs.

Keywords: *Logistics, Rubber, Southern region of Thailand, China*

INTRODUCTION

China consumes more natural rubbers in every year, hence China is now importing the most natural rubbers in the world. Moreover, several industries in China mostly import natural rubbers for manufacturing from Thailand, Malaysia, and Indonesia. Thailand is the number one natural rubbers exporter in the world, and these natural rubbers are mostly from southern region of Thailand. When markets were more demand of natural rubbers, it could lead to higher price of natural rubbers in each year. The higher number of natural rubber exported from Thailand to China led to the cost of exporting process in many parts; however, the main cost for exporting was logistics cost comprising of transportation cost, inventory carrying cost,



and management cost. The importance that the researcher stated above brought to the study on “Logistics System for Exporting Natural Rubbers from Upper Southern Region of Thailand to China” although this research was studied by other researchers before; however, the information on this research was ever studied 4-5 years ago. Also, the information on logistics for exporting natural rubbers to China has always and rapid changed depending on economic situations of both Thailand and China and global economy.

OVERVIEW OF THAI RUBBER INDUSTRY

The importance of Thai rubber

Rubber is a very important industrial crop for Thailand, both for the local consumption as well as the global market. The major export markets for Thai rubbers are German, China and Japan, with the export value of US\$ 134.9 billion in 2008(PhanjiraJanphaluek, 2010). Since Thailand has a large number of rubber plantations, a large quantity of rubber can also be produced. Most rubber plantations are in the southern part of Thailand and are likely to expand further. However, Thailand is still facing both internal and external obstacles that affect the wide range of Thai rubber industry.

Obstacles for the Thai rubber industry

Internal factors:

- The crises in Thai government cause a sharply rising rubber prices and the volatility of latex production. Like for any commodity crops, rubber farmer tends to plant rubber when the rubber price is high and plant palms or other vegetables instead when the rubber price is dropped down which cause the instability of raw material input to the plants. When the investors were not convinced, it will affect the economic in the whole area.
- Marketing of Thai entrepreneurs to build credibility and investor confidence leading to use the natural rubber as a raw material feedstock is not effective. While some products such as rubber tires, landing gear wheel require creditable brand and reliability.
- Zoning law enforcement has not been properly as buildings are still appear in the area provided for the cultivation and deforestation is also occur in those area.
- Policy Management and the government projects have no flexibility and change according to each.

External factors: The demand for rubber in China is increasing because of the expansion of the automotive industry. China has chosen to expand the rubber planted area in their country or imported from neighboring countries with lower transportation costs and wages such as Laos and Vietnam instead of importing from Thailand.

Another major problem is the union of the ASEAN Economic Community (AEC) in 2015 that allow the investment liberalization among member which might change



the rubber investment from Thailand to the lower costs countries. Beside, the low-cost products competing might be another problem to be concerned.

Logistics opportunities in Thailand

Thailand is a newly industrialized economy and the second largest in South East Asia. Thailand is recognized by the WorldBank as “one of the great development success stories” in social and development indicators. Thailand’s geographical location gives it a unique advantage to becoming a future world logistics hub. Sharing borders with Burma, Laos, Cambodia and Malaysia it provides easy accessibility to all major ports in the vicinity, including Japan, China and India as well as emerging economies like Cambodia, Vietnam and Laos.

The strategic development of logistics in Thailand has been neglected for a long time. Like many of its ASEAN neighbors, the country has been affected by issues such as limited infrastructure, traditional cost containment and the lack of awareness about good logistics practices. About 86% of Thailand’s cargo is currently moved by road, 12% by ship, 2% by train and the rest via air freight (Kumnai Apiprachyasakul, 2011). To bolster the country’s investment attractiveness and meet the business demands of the future, the Thai government is committed to continued improvement of each method.

Thailand also has an extensive road network with a road density of around 125.7 kilometers per thousand square kilometers. With the possibility of a Trans-Asian highway networking most countries on the Asian mainland, this could be the key contributor to Thailand to become a regional logistics hub of ASEAN as it is bordering with countries such as Laos, Cambodia, Malaysia and Myanmar. In addition, the Government has taken initiatives to improve the country's road and rail infrastructure network to match global standards.

RESEARCH METHODOLOGY

This is the study of logistics system for exporting natural rubbers from the upper southern region of Thailand to China by using a qualitative research. The researcher collected data from structured in-depth interview the manufacturers and exporters of natural rubbers to China as following steps:

Population and Sample

Population were the manufacturers and exporters of natural rubbers to China divided according to the provinces in upper southern region totally 66 factories from 40 company groups. According to “Directory of Transform Factories in 2009” by Songkhla Rubber Central Market Office, Rubber Research Institute, Department of Agriculture, each group of the companies had one specialist, so population were 40 logistics specialists.

Purposive sampling was used to select the samples from data of the Office of the Rubber Replanting Aid Fund stating that there were the top 10 major rubber exporters of Thailand which had almost 50% export market together of Thailand



calculated from exporters who paid for rubber exporting surcharge (CESS). These exporters were comprised of Wong Bandit Company Limited, Sri Trang Agro-Industry Public Company Limited, Thai Hua Rubber Public Company Limited, Southland Resources Company Limited, Rubberland Products Company Limited, Thai Paktai Rubber Company Limited, Thaitech Rubber Corporation Limited, Bridgestone Natural Rubber (Thailand) Company Limited, Southland Rubber Company Limited, and B. Right Rubber Company Limited. According to information above, the researcher selected the sample of the group companies located in upper southern region consisting of Wong Bandit Company Limited, Sri Trang Agro-Industry Public Company Limited, and Thai Hua Rubber Public Company Limited.

For Snowball Sampling, the researcher received additional interesting data of manufacturers and exporters of natural rubbers to China from 6 companies, such as Thai Rubber Latex Corporation, Chumphon Rubber Industry Company Limited, Saengthai Rubber Company Limited, T.T and Products Company Limited, Sricharoen Rubber Company Limited, and ThaChang Rubber Company Limited. Moreover, if the data from the respondents had not been saturated, the research would have planned for selecting additional rubber manufacturers and exporters. According to Creswell (Creswell, 1998:65) stated that proper sample size of the research was Theoretical Saturation. This theory shown that it can happen when (a) there were not additional data to have a new type group, (b) a new type group obviously developed qualifications and dimensions already, (c) there was a relationship between type groups examined already. In other word, the researcher added more sample until there was not additional data for collecting anymore. Finally, respondents included 9 logistics specialists of manufacturers and exporters of natural rubbers to China.

Data Collection

The primary data was collected by structured in-depth interview between researcher and interviewees consisting of four parts, such as natural rubber products, natural rubber exporting, logistics, and problems including means of problem solving and suggestions.

The secondary data was collected to obtain data and opinions about logistics system for exporting natural rubber were collected in order to understand the systems and problems of logistics, such as natural rubber products, packaging, transportation, and export cost from academic paper, academic journals and magazines, suggestions of thesis, and internet resources of both organizations of government and private sectors.

Data Validity

To check the validity of the data collected from the primary and secondary sources, the researcher applied the triangulation methodology as follows:

Data Triangulation - Data from fieldwork and literature review were brought to analyze and compare between period, place, person, and different content. If the period had been different, would the data have been similar? Also, data from different



places are whether similar or not, and if a person had been changed, would the data have been similar? If the data had been similar, these data have been reliable.

Researcher Triangulation - This used a different researcher for interviewing, and examined how the data were different for receiving the quality and validity of the data.

Methodological Triangulation - Different data were collected together in several methods. Individual interview was used in the study along with study from document resources. If data had been different or incompatible, the researcher would have collected data again. If data had been checked and found the similarity, it would have been complete and accurate data. Then the results of the study were brought to analyze data in research report writing.

RESULTS

Logistics System for Exporting Natural Rubbers from Thailand to China

According to the study results, importers of natural rubber in China ordered many types of rubbers, such as block rubbers, ribbed smoked rubber sheets, and latex with terms of commerce and payment. After ordering, exporters provided raw materials for manufacturing many types of natural rubbers according to the demand of the importers. Packaging was made according to each type of natural rubbers. For instance, ribbed smoked rubber sheets (RSS) were lumped (111 kg/lump), block rubbers (STR) were produced 35 kgeach, and concentrated latex was contained in 200-liter tanks or 20,000 kilogram flexi bags. When there were products ready for exporting, the exporters had to reserve a truck, transfer truck, goods train, coastal ship, and international cargo ship for transporting goods to the importers. However, it depended on commercial terms on FOB or CIF and current situations in logistics which routes were the most suitable and lowest cost. The factories in Chumphon, and some in Suratthani and Nakhon Si Thammarat exported natural rubbers through Bangkok Port and Laemchabang Port, meanwhile the factories in Phang-Nga, Krabi, Phuket, and some in Suratthani and Nakhon Si Thammarat exported natural rubbers through Penang Port, Malaysia. Twenty-foot shipping containers were used for transporting natural rubbers. Natural rubbers were exported to destination ports; for example, Qingdao, Shandong Province (the rubber center of China), and Shanghai (the rubber futures exchange) that was mentioned above (see the Figure 1 below). For the cost of domestic container transportation, the lowest cost was rail transportation, and coastal ship and road transportations were the second in order. However, in terms of transportation period, road transportation was the fastest because the exporters were able to control speed and routes of transportation, but coastal ship and rail transportations were close period. The freight rates of international transportation through Bangkok Port, Laemchabang Port, and Penang Port were close approximately 200-250 US Dollar, so the best choice for transporting natural rubbers now is water transportation because the cost is not more high and close to rail transportation which is the lowest cost of transportation.

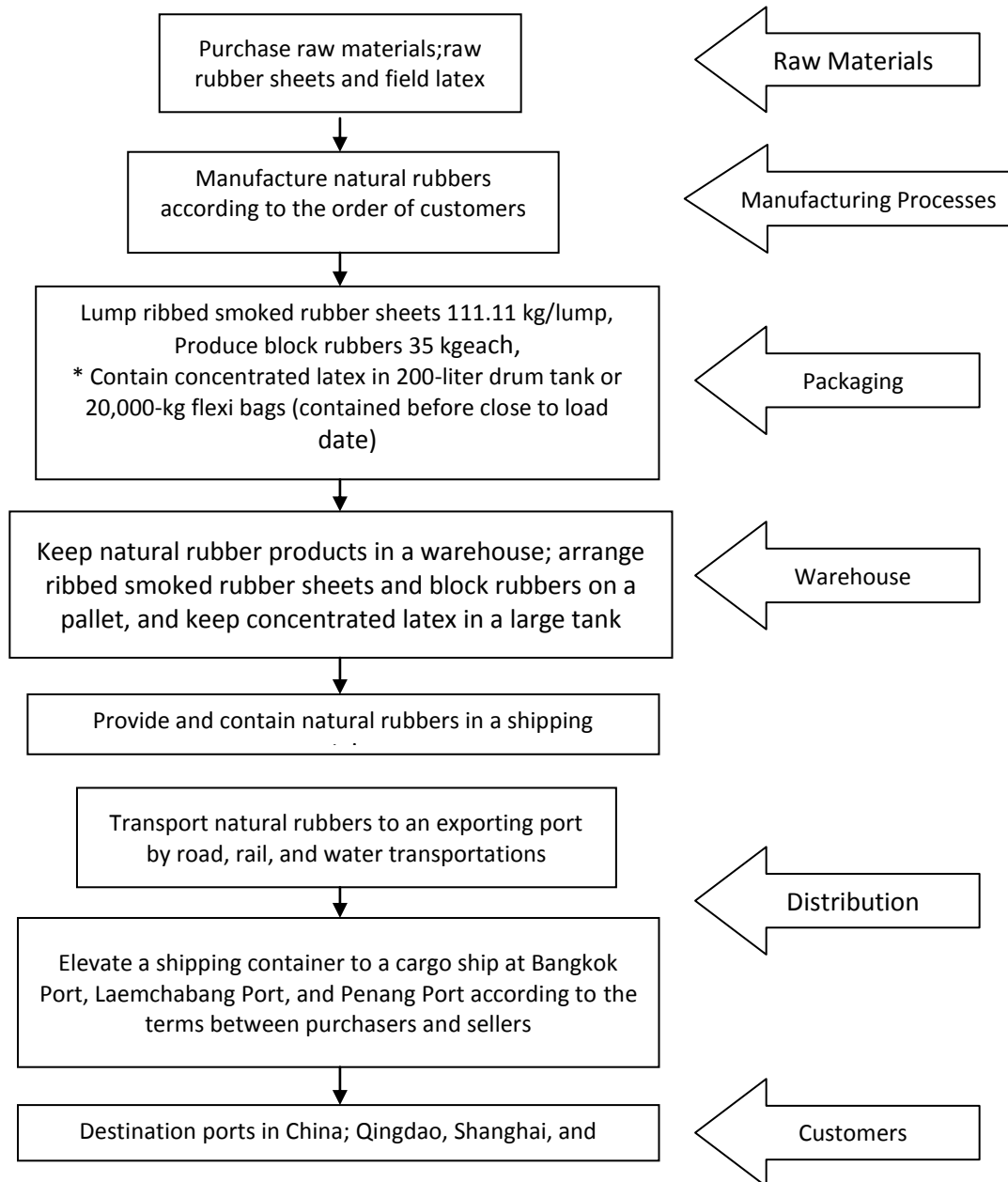


Figure 1: Summary of logistics activities for transporting rubbers from Thailand to China

Problems in Logistics Management for Exporting Natural Rubber from Thailand to China



The study found that logistics problems were mostly from transportation that was infrastructure of the country; for instance, transportation systems of road, water, and rail were not effective enough for more increasing exporting currently including short of improving and developing infrastructure of the country continuously. In addition, the study found labor problems for manufacturing because the labors were mostly foreign, and it had to spend time for training in manufacturing and language skills. According to the interview of natural rubber exporters found the following problems:

- (1) Some documents were delayed in exporting management.
- (2) Containers were damaged, so it was delayed in exporting because it had to waste time to change to a better one.
- (3) There were a few potential deep-sea ports in southern region of Thailand enough for exporting.
- (4) The ports in southern region of Thailand were not potential for exporting; however Songkhla Port was potential enough, but it was a small port, and it did not support a large number of goods for exporting.
- (5) Songkhla Port did not have enough shipping containers for exporting because there were not goods imported to this port. If the goods had been exported through Songkhla Port, the shipping containers would have been brought from Penang Port, so it was also wasteful for this.
- (6) Sometimes, cargo ships were unavailable and full of goods.
- (7) Rail transportation system was delayed because the railways are now single track.
- (8) Rail transportation services were bad in delayed transportation and irresponsibility for a damage of goods.
- (9) Rail transportation of Thailand did not extremely support domestic transportation because of single track railways, and it was more focused on public transportation.
- (10) Exporting cost of Thailand was higher than other countries because domestic transportation mostly used road transportation which was more cost than rail and ship transportations.
- (11) KTM train problems between Padang Besar Customhouse and Penang Port, such as damaged cranes and unloaded shipping containers happened in Malaysia, so the companies in Thailand could not control, and the problems usually happen at the end of year.
- (12) In terms of road transportation, if a road had got a problem, the exporters would have changed to another route, so it caused traffic jam problem on the road and export customs house because only one truck can drive through for submitting export documents.
- (13) Sometimes, domestic trucks were not enough to transport natural rubbers for exporting.
- (14) Some small companies were short of logistics staff, but import-export staffs were responsible for this.

From above, data can be concluded in Fishbone Diagram (Figure 2) of problems in logistics for transporting natural rubber as follows:

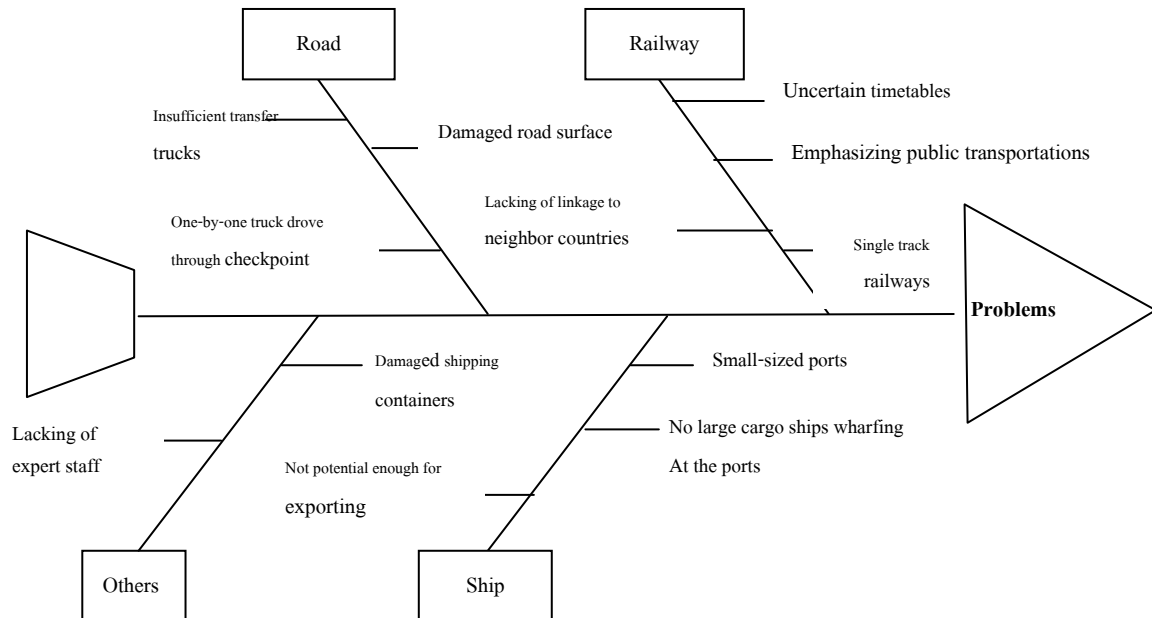


Figure 2: Fishbone diagram of problems in logistics of natural rubbers

Problem Solving of Logistics Management for Exporting Rubbers to China

The suggestions from the respondents to solve the problem of logistic management for natural rubbers to China can be summarized as follows:

- (1) Official export documents should be organized the system of faster documents issuing for exporters.
- (2) Shipping containers for exporting natural rubbers must be checked and always maintained.
- (3) Railways should be changed into double track railways in order to solve delayed problem and make the transportation faster.
- (4) Rail transportation system should be developed to be more effective because it could have an effect on logistics cost reduction.
- (5) Songkhla Port should be developed to become the port of export because there were a lot of exporters, and natural rubbers were top priority exported in Thailand, but most exporters in southern region of Thailand must depend on Penang Port in Malaysia for exporting.

Furthermore, the researcher used the TOWS matrix to propose the alternatives of strengthening the logistic system for exporting natural rubbers to China as shown in Table 1 below.





Discussion

According to KumnaiApiprachyasakul (2013) stated on international transportation that it included domestic transportation and international transportation. In terms of import and export, before transporting goods, it started from offering and confirming a price with commercial terms, and a bank issued a letter of credit. After receiving L/C, the goods were started to manufacture or acquire and packed with goods control list, import-export documents from Customs Department, certificate of origin and required certificates, and bill of lading for water, land, and air transportations including multimodal transport. Then freight forwarders and freight reserving lists were selected to be representational for managing documents, selecting means of transport corresponding to logistics system for exporting natural rubbers from southern region of Thailand to China. Starting from importers of natural rubbers from China purchased many types of natural rubbers, such as block rubbers, ribbed smoked rubber sheets, and latex with terms of commerce and payment. Exporters had to provide raw materials in order to manufacture many types of natural rubbers according to the demand of importers. Ribbed smoked rubber sheets were lumped (111 kg/lump). Block rubbers were produced 35 kgeach, and concentrated latex was contained in 200-liter tank or 20,000-kg flexi bag. When goods were ready to export, the exporters had to reserve a truck, transfer truck, goods train, coastal ship, and international cargo ship for exporting goods to the importers.

However, it depended on commercial terms on FOB or CIF and current situations in logistics which routes were the most suitable and lowest cost. The factories in Chumphon, and some in Suratthani and Nakhon Si Thammarat exported natural rubbers through Bangkok Port and Laemchabang Port, meanwhile some factories in Nakhon Si Thammarat exported natural rubbers through Penang Port, Malaysia by using 20-foot shipping containers transporting natural rubbers for exporting. Twenty-foot shipping containers were used for transporting natural rubbers. Natural rubbers were exported to Qingdao, Shandong Province, and Shanghai which was main automobile manufacturing base of China. For transportation cost, it corresponded to data of Thailand Logistics Cost Report by Office of the National Economic and Social Development Board stating that cost of road transportation was higher than cost of water and rail transportations.

Logistics system problems for exporting natural rubbers form Thailand to China corresponding to KumnaiApiprachyasakul(2012) stating that the processes of importing, exporting, and document issuing were complex and delayed. Also, transportation and service charge was pretty high, and there were few rail transportations including short of service improvement and ongoing development. Major problems were delayed official documents for exporting natural resulted in delayed goods exporting. Moreover, rail and water transportation system in southern region was not potential enough for transporting extremely, and rail transportation was delayed and uncertain timetables including public transportation was more emphasized than goods transportation. Water transportation was short of deep-sea ports for supporting a large amount of exporting; moreover, shipping containers were



damaged and insufficient. In addition, the ports were small size, and management system of ports was unsystematic leading most natural rubber exporters to count on Penang Port, Malaysia for too much exporting. This related to the research of AnattaChaichomphoo, (2006) reported that border trade was difficult because exporting management system was not standardized; moreover, laws and importing processes of China had to be developed afterwards. Furthermore, it related to the research of CharoenchaiKhompatraporn et al. (2008) found that government should participate in encouraging State Railway of Thailand to be more able to service an entrepreneur especially in insufficiency of a locomotive and train cradle, enrichment of goods transportation services, and punctuality of travelling according to timetables. Also, double track railways should be constructed for traffic jam period in order to save time of shunting for making the timetables more certain.

Means of problem solving of logistics management for exporting natural rubbers to China, logistics system of exporting natural rubbers in upper southern region of Thailand have been developed and improved in: 1) Rail transportation should be developed the railways to become double track railways, and a locomotive should be changed to a new one in order to make goods transportation faster. 2) Water transportation should be developed deep sea ports in southern region of Thailand to be as potential as Laemchabang Port in exporting to reduce too much dependence Penang deep-sea Port and support the manufacturers and exporters to reduce logistics cost. Also, shipping containers should be fixed in order to solve the container shortage problem. 3) Road transportation, Asian highway should be well developed. Now, these developments make the manufacturers and exporters reduce logistics cost. Therefore, the government must study and invest in transportation structure seriously and clearly in order to be ASEAN logistics center. Nowadays, logistics data development staffs, Office of the National Economic and Social Development Board reported logistics cost in Thailand Logistics Cost Report 2012 (2013) that cost of goods transportation was the highest scale of logistic cost, but rail transportation was the lowest cost, and water and road transportations were the second in order. The government must start from developing rail, water, and road transportation systems respectively corresponding to the research of SommatSaengpradubet al. (2011). This research stated that government sector had to develop infrastructure of transportation system and mode to be proper and effective resulting in decreasing expenses for exporting, and increasing capability in competition by developing the ports at present. Particularly, extending enfranchisement for a private company administrating Songkhla Port resulted in decision capability in port service development. Also, the development of railways to become double track railways for effective transportation and low cost was in accord with the research of CharoenchaiKhompatraporn et al. (2008). The research explained that it should study the possibility of a company formation for manufacturing or fixing containers in order to solve container shortage problem and make certificate issuing and quality check results for exporting faster in order to save time of exporting processes.



CONCLUSION AND RECOMMENDATIONS

Raw materials of logistics system for exporting were raw rubber sheets and field latex. Manufacturing processes produced block rubbers, ribbed smoked rubber sheets, and concentrated latex. Packaging for exporting ribbed smoked rubber sheets was lumped (111 kg/lump). Block rubbers were produced 35 kgeach, and concentrated latex was contained in 200-liter tanks or 20,000-kg flexi bags. In terms of keeping in a warehouse, ribbed smoked rubber sheets and block rubbers were arranged overlap each other on a pallet as well as the concentrated latex was initially kept in a large tank. Natural rubbers were transported in several ways, such as road, railway, and water. Shipment ports comprised of Bangkok Port, Laemchabang Port, and Penang Port. Destination ports comprised of Qingdao Port in Shandong Province and Shanghai Port in Shanghai. The problems of logistics were mostly transportation problems. For instance, water transportation system had small-sized ports supporting a small number of goods for exporting, and there were few foreign ships wharfing at the ports. Moreover, rail transportation system had the problems of uncertain timetables, quite long period of transportation, and emphasizing public transportation. The problems of road transportation were rugged and bumpy road surface, and insufficient trucks or transfer trucks. The means of solving logistics problems should develop infrastructure of the country to be more effective in both public and goods transportations. Single track railways should be changed to double track railways in order to make goods transportation faster. Rail system should be linked between Thailand and Malaysia by not changing a locomotive in order to shorten time of transportation. For road transportation, main road should be checked and kept in good condition to make the speed of trucks stable and save energy. In terms of water transportation, the ports should be developed to be effective and able to support more goods to reduce the dependence Penang Port for exporting. Additionally, the government should play a key role in developing goods transportation, link transportation systems to neighbor countries, and set ASEAN central rubbers for research and developing rubbers collaborating between exporter countries. Also, the government should support natural rubber industries from upstream to downstream in order to add more value of goods and the dependence foreign markets for exporting natural rubbers.

REFERENCES

- AnattaChaichomphoo, (2006), *A Study of Logistics System for Exporting Natural Rubber to China. Industrial Research Project*, Master of Engineering Program in Manufacturing Systems Engineering, Faculty of Engineering, KingMongkut's University of Technology, Thailand.
- Agriculture and Cooperatives, (2012), *“Academic Data of Rubbers”*. Bangkok: Rubber Research Institute of Thailand, Department of Agriculture, Ministry of Agriculture and Cooperatives.
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- CharoenchaiKhompatraporn et al.,(2006). *“A study of Logistics System for Exporting Rubbers and Fruits from Thailand to China”*,The 6th Academic Conference 2006 on Logistics and Supply Chain Management at King Mongkut's University of Technology, Thailand.
- CharoenchaiKhompatraporn et al.,(2008),*“Project of a Study to Enhance the Thai - Chinese Trade Logistics System in the Context of ASEAN-China Free Trade Agreement: Case Study of Selected Export Items”*,Full Report supported by The Thailand Research Fund, King Mongkut'sUniversity of Technology, Thailand.
- Creswell, J.W. (1998).*Qualitative inquiry and research design: Choosing among five traditions*. London: Sage.
- KumnaiApirachyasakul. (2011). *Logistics Cost Management*. Bangkok :Focus Media and Publishing.
- KumnaiApirachyasakul, (2012).*LogisticsClinic for Exporters and Importers Manual*. Bangkok:Focus Media and Publishing.
- KumnaiApirachyasakul, (2013). *Goods Transportation Routes Management*. Bangkok: Focus Media and Publishing.
- Office of National Economic and Social Development Board, (2013).*“Project of Database Development of General Cost and Added Value of Logistics Industry, 1st Stage”*, [Online], Available: <http://www.nesdb.go.th/national/competitiveness/attach/data26.zip> (accessed 12 May 2013).
- PhanjiraJanphaluek, (2010).*The Export of Rubber and Rubber Products from Thailand to the People’s Republic of China*.**Thesis**, Master of Economics, Faculty of Economics, Ramkhamhaeng University
- SommatSaengpradubet al., (2011), *“Logistics Management of Rubber Processing in Southern Part of Thailand”*, *Full Research Report 2011*. (pp.151-184). Rubber Research Institute of Thailand, Department of Agriculture.
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