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Logistics Performance of Thai Food Industry

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Abstract: The study focuses on investigating logistics performance of Thai food industry. The study is based on a collection of Industrial Logistics Performance Indicators (ILPI) database. ILPI comprises of 27 indicators, taken from 9 logistics activities with 3 dimensions, i.e., cost, time and reliability. With 355 food companies out of total 1,644 companies in that database, strengths of Thai food industry can be identified. It is found that Thai food industry is good in forecasting, warehousing and transportation. Logistics reliability is generally outstanding from average of the country. Further inspection is conducted in terms of size. Then, interesting characteristics of each size are identified. The paper also discussed the findings with the nature of the business and size. The information is suggestive if should the industry need improvement or support and on what activity or dimension.

INTRODUCTION

Food industry is among the biggest and most contributive industries in Thailand. There are more than 10,000 factories and companies registered. The industry involves with >1 million labors. This is not included the downstream supply chain which is expected to involve more than 5 million labors in agricultural and fishery sectors. In 2017, Thailand expected to export USD27b worth of food to the world. This figure accounts for >23% of country's Gross Domestic Product. With the strengths of material inputs, labor and standardized process, food industry is promoted by Thai government and now well known as "Kitchen to the World" and "Food basket of Asia".

Thailand top 5 food exports are rice, sugar, chicken, tuna and shrimp. The production technology of Thai food industry is today advanced. Ready-to-Eat (RTE), food

ingredient, deep sea fishery, food trading and cold chain, beverage and food additives are among 2017 rising stars. Halal, food safety and standard are also main focuses of Thai government to this sector^[1, 2].

MATERIALS AND METHODS

Logistics and logistics performance: Logistics is a main driver of the industry competitive advantages. Where logistics involves the flow of goods, information and finances between the point of origin to the point of consumption, the efficient logistics management allows the company to fulfill requirement of customers per their preferences^[3-5].

Today, Thailand is 46th in Ease of Doing Business in 2017. Thailand also ranked 45th in World Bank's Logistics Performance Indicators (LPI) in 2016. There are room of improvement in terms of facilitating and

Table 1: 27 ILPI: 9 Logistics activities ×3 Dimensions

Logistics activities	Cost dimension	Time dimension	Reliability dimension
ILPI1 Demand forecasting and planning	ILPI1C forecasting cost per sales	ILPI1T average forecast period	ILPI1R forecast accuracy rate
ILPI2 customer service and support	ILPI2C customer service cost per sales	ILPI2T average order cycle time	ILPI2R delivered in-full and on-time
ILPI3 logistics communication and order processing	ILPI3C information processing cost per sales	ILPI3T average order processing cycle time	ILPI3R order accuracy rate
ILPI4 purchasing and procurement	ILPI4C procurement cost per sales	ILPI4T average procurement cycle time	ILPI4R Supplier DIFOT
ILPI5 material handlings and packaging	ILPI5C damaged value per sales	ILPI5T average material handling and packaging cycle time	ILPI5R Damage rate
ILPI6 warehousing and storage	ILPI6C warehousing cost per sales	ILPI6T average inventory cycle time	ILPI6R inventory accuracy
ILPI7 inventory management	ILPI7C inventory carrying cost per sales	ILPI7T average inventory day	ILPI7R inventory out of stock rate
ILPI8 transportation	ILPI8C transportation cost per sales	ILPI8T average delivery cycle time	ILPI8R transportation DIFOT
ILPI9 reversed logistics	ILPI9C returned cost per sales	ILPI9T average cycle time for customer return	ILPI9R rate of returned goods



Fig. 1(a-c): ILPI of Food Industry and Thai Average, (a) Cost dimension (unit: percentage), (b) Time dimension (unit: day) and (c) Reliability dimension (unit: percentage)

internal logistics and supply chain in order to increase competitive advantage of Thailand. The suggests were given in many perspectives including improving logistics performance of the companies^[6, 7].

Industrial logistics performance indicators: The study focuses on logistics performance of Thai food industry, scoped in 9 logistics activities, i.e., demand forecasting and planning, customer service and support, logistics communication and order processing, purchasing and procurement, material handlings and packaging, warehousing and storage, inventory management, transportation and reversed logistics^[8]. In each activity, indicators in 3 dimensions are applied, i.e., cost, time and reliability. Therefore, an Industrial Logistics Performance Indicators (ILPI) comprises of 27 indicators, shown in

Table 1. Each ILPI is clearly defined and the calculation formula is suggested to overcome biasness. ILPI Manual and Website www.thailogisticsbenchmark.com is developed by Bureau of Logistics, Ministry of Industry of Thailand in order to educate and allow companies to self-assess their logistics performance. Industrial Logistics Performance Indicators (ILPI).

Logistics performance of Thai food industry: The information and data used in this study is based on the ILPI database of 355 food companies in Thailand with the country average, yielded by total database of 1,644 companies. ILPI database has been collected by bureau of logistics, ministry of industry of Thailand. Figure 1 shows the average of food industry and the average of the country. In quick inspection, it can be seen that

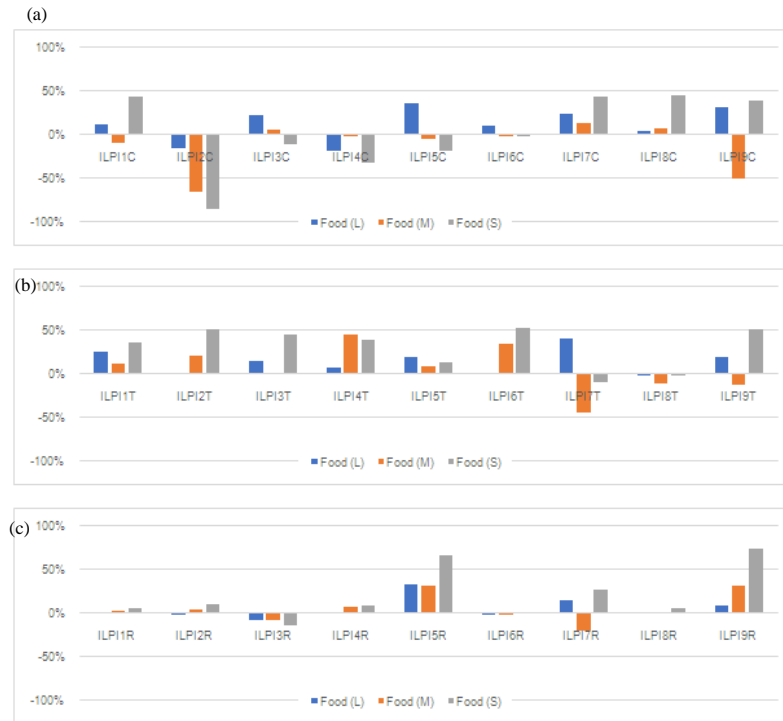


Fig. 2: Normalized ILPI of food industry-advantage percentage to Thai average, (a) Cost dimension (b) Time dimension and (c) Reliability dimension

warehousing and transportation costs of the food industry is slightly low. Forecasting period is short and the accuracy is good. However, order cycle time is long. Up to here, it cannot be said that Thai food industry significantly advances than the country average

RESULTS AND DISCUSSION

Logistics performance

Size inspection: Focusing on sizing of the factory, should it be advantageous to the logistics performance Fig. 2. then summarizes gap of food industry in terms of size “Small (S)”, “Medium (M)” and “Large (L)”, categorized by annual sales of <THB100 m, THB100-600 m and >THB600 m, respectively. The figures of indicators shown are normalized and the gap to country average is identified. Here, the higher, positive percentages indicate a better logistics performance. Here, it can be seen that, in general, small food companies tends to perform better than the medium and large. In terms of cost, the small companies have smaller expenses in forecasting, inventory, transportation and reverse logistics. However, with a high customer service and support cost. Yet it is very small compared to those advantageous ones, mentioned above. The large companies also comparably good in cost management of logistics communication,

material handling and packaging and warehouse. The medium companies are found worst in customer service and reverse logistics.

In terms of time, food industry is very quick. The small food companies tend to be very fast in customer response, communication, procurement, inventory and reverse logistics. The medium companies also advance in managing procurement and inventory cycle time. The large companies are only outstanding here in managing their inventory day.

In terms of reliability, food industry is logistically reliable compared to the country average. Material handlings and packaging is outstanding. Damage rate is very low. Returned goods are also low. However, the food industry is found to be lack of order accuracy when communicate within the companies. Again, in general, small companies tend to have better reliability and accuracy in logistics.

To discuss the findings, we must understand the nature of Thai food products and companies^[9]. Thai food products are normally large in volume, but cheap. They are mostly short life, perishable and fragile. For Thai food companies, if categorized small are mostly very small. With limited workforces, the business functions are mostly not separated. Logistics functions and productions are normally crossed-function. The small

food companies are born and died so quick. Therefore, the competitive advantages are either their product innovation or their customer understanding. New products are developed to meet customer sophistication. Therefore, it can be seen that they are good in time and customer responsiveness. And as the company organization is small, they tend to manage their logistics activities in a “small fish” way.

On the other hands, the large companies here are mostly mass production, multi-national and export-based^[2,10]. Therefore, it is normal that they are slow, lengthy and complicated process due to high standard and control. However, this is results in their strength in communication, manage and control of inventory.

The medium size company has the mixture characteristics of those large and small. As it can be seen that they are not outstanding in most ways, they still perform better than the country average. However, this findings from the study is suggestive that if they wish to become a larger company, they must improve in many ways to be survive in this competitive supply chain environment.

CONCLUSION

The study focuses on logistics performance of Thai food industry based on the database of Industrial Logistics Performance Indicators (ILPI). Compared to average of Thai industry, food industry is good in managing forecasting period and accuracy and managing warehousing and transportation costs. However, it cannot be concluded that food industry is logistically better than other industry.

Further inspection is conducted in terms of size. It can be found that, in general, small companies tends to perform better than the medium and large in terms of quick response, communication, procurement, inventory and reverse logistics. Reliability and accuracy is very good. They also manage cost well in forecasting, inventory, transportation and reverse logistics. The large companies also good in managing cost of logistics communication, material handling and packaging and warehouse. They also tend to keep inventory day on good control. The medium size companies are found to be mixed characteristics between the small and large.

The findings are suggestive should the industry need improvement or support and on what activity or dimension.

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