INDUSTRIAL LOGISTIC PERFORMANCE INDICATORS OF THAI FOOD INDUSTRY

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ABSTRACT: *Industrial Logistics Performance Indicators (ILPI) has promoted as a tool for benchmarking of Thai industry. The aim of this study was to survey and collect ILPI data of 100 Thai food industry in Thailand 2018. Thai food industries were separated by size of, Small-Size (S) Medium-Size (M) and Large-Size (L). The data were collected from 9 activities and each activity focus on 3 dimensions; cost, time and reliability. The results of this study found that the average ILPI cost of Thai food industry are 14.39, 21.65, 10.40 percent per sales for S-Size, M-Size, and L-Size respectively. The average ILPI time used in each activity is not related to the size of the industry. Large industries get more reliability than medium and small size.*

Keywords: Industrial Logistics Performance Indicators (ILPI), Thai Food Industry, Logistic Cost

1. INTRODUCTION

Division of Logistics, Department of Industrial Promotion, Ministry of Industry of Thailand, has developed an Industrial Logistics Performance Indicators (ILPI) to use as a tool for benchmarking of 9 logistics activities and 27 performance for Thai industries. It is a tool to help the Thai company evaluate the internal organization's performance. In corporate management, all 9 activities within the organization are evaluated in 3 dimensions, which allows to analyze and evaluate the organization at the matrix level. The food industry is Thailand's economic backbone for decades. Thailand is originally an agricultural based economy. Today, the industry flourishes and Thailand is becoming well known as "Kitchen of the World". The value of export is up to US$30 billion per year.[1] The aim of this research is to survey and collect ILPI data of 100 Thai food industries in Thailand 2018. The concept of logistics performance assessment is adopted as ILPI in order to suitable for the Thai industry. There are 9 logistics activities; 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 [2] .

2. PROBLEM STATEMENT

To measure the performance of countries in terms of logistics, in 2007 the World Bank created the Logistics Performance Index (LPI), which uses six core indicators to rank countries with regards to their overall logistics performance [3,4].

In 2018, To Compared to ASEAN countries logistic performance, Thailand is ranked at 32th of International LPI results with its LPI score of 3.41 and a ranked at 2nd in ASEAN. Malaysia is ranked at 41th with its LPI score of 3.22 and a ranked at 3rd in ASEAN. However, Thailand has less score than Malaysia's in transport infrastructure and information technology [5]. The LPI assessment may not reflect the true development of the logistics system due to the limitations of the methodology of data collection and the format of data. The survey results are based on the views, opinions and satisfaction of the evaluator, which fluctuates. Therefore, the measurement of logistics efficiency in the country requires specific indicators. The traditional LPIs is incapable of quantitatively evaluating industrial logistic performance. Banomyong and Supatn have developed Thailand LPIs for industrial and quantitative evaluation which called ILPI [6].

3. THE AIM OF RESEARCH

The aim of this study is to survey and collect data on industry logistics performance indicators (ILPI) of 100 Thai food industry in Thailand 2018. These indicators are used as a tool for benchmarking of Thai food industry operators to improve the performance of enterprises. Performance indicators, logistic's management, and supply chain should be developed as an ILPI of standard Thailand database when the collected data are analyzed.

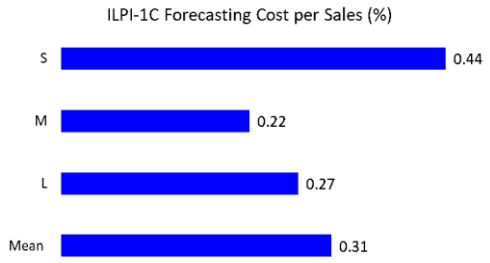
4. METHOD OF RESEARCH

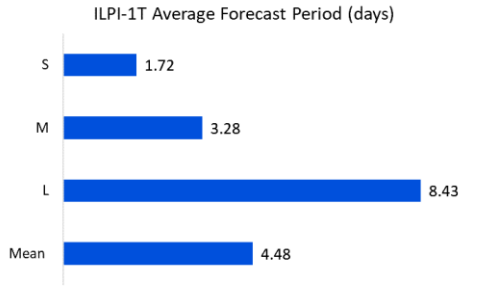
In order to evaluate logistics performance with 9 primary indicators for 100 food manufacturing companies in Thailand, In implementing the database development research project, the criteria for measuring the efficiency of logistics was created. The size of the industry was divided by base on asset value and the number of employees. This study was divided into 3 size food manufacturing companies, small, medium and large-size. The small-size company (S) has fixed asset value excluding land not exceeding 50 million Thai baht or employment, not more than 50 persons. This size was collected ILPI data for 60 companies for a case study. The medium-sized company (M) has fixed asset value excluding land exceeding 50 but not exceeding 200 million Thai baht or employment over 50 people but not over 200 people. The 20 M-size companies were selected. The large-size company (L) has fixed asset value excluding land exceeding 200 million Thai baht or employment exceeding 200 persons. The 20 L-size companies were included in collecting data.

The methodology of this study undergoes four steps. Firstly, the 27 ILPIs had to understand clearly (Table 1) before formulating into mathematical equations as the second step. These data were thirdly collected from 100 food manufacturing companies and finally put data into ILPI excel spreadsheet for calculating.

Table1: 27 ILPI: 9 Logistics Act. and 3 Dimensions [7]

Logistic Activities	Cost Dimension	Time Dimension	Reliability Dimension
ILPI 1 Demand Forecasting and Planning	ILPI-1C Forecasting Cost per Sales	ILPI-1T Average Forecast Period	ILPI-1R Forecast Accuracy Rate
ILPI 2 Customer Service and Support	ILPI-2C Customer Service Cost per Sales	ILPI-2T Average Order Cycle Time	ILPI-2R Delivered In-Full and On-Time
ILPI 3 Logistics Communication and Order Processing	ILPI-3C Information Processing Cost per Sales	ILPI-3T Average Order Processing Cycle Time	ILPI3R Order Accuracy Rate
ILPI 4 Purchasing and Procurement	ILPI-4C Procurement Cost per Sales	ILPI-4T Average Procurement Cycle Time	ILPI-4R Supplier Delivered In-Full & On-Time Rate
ILPI 5 Materials Handling and Packaging	ILPI-5C Damaged Value per Sales	ILPI-5T Average Material Handing and Packaging Cycle Time	ILPI-5R Damage Rate
ILPI 6 Warehousing and Storage	ILPI-6C Warehousing Cost per Sales	ILPI-6T Average Finish Goods	ILPI-6R Inventory Accuracy Rate
ILPI 7 Inventory Management	ILPI-7C Inventory Carrying Cost per Sales	ILPI-7T Average Inventory Day	ILPI-7R Inventory Out of Stock Rate
ILPI 8 Transportation	ILPI-8C Transportation Cost per Sales	ILPI-8T Average Delivery Cycle Time	ILPI-8R Transportation DIFOT Rate
ILPI 9 Reverse Logistics	ILPI-9C Returned Cost per Sales	ILPI-9T Average Customer Return Cycle Time	ILPI-9R Returned Goods Rate





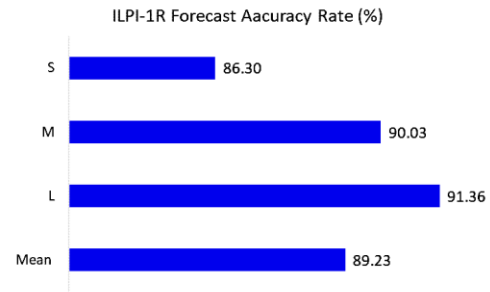
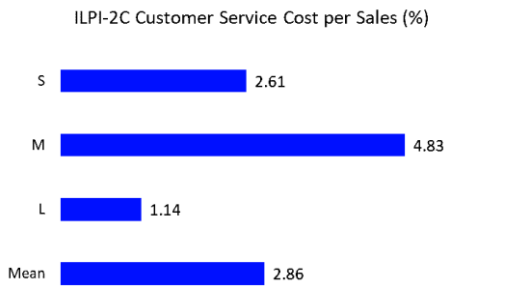
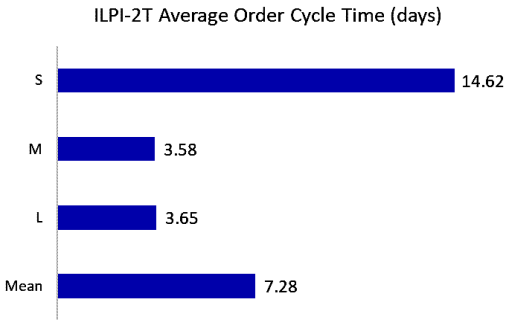


Figure (1) average ILPI1 (1C,1T,1R) demand forecasting and planning of S, M, and mean of Thai food industries





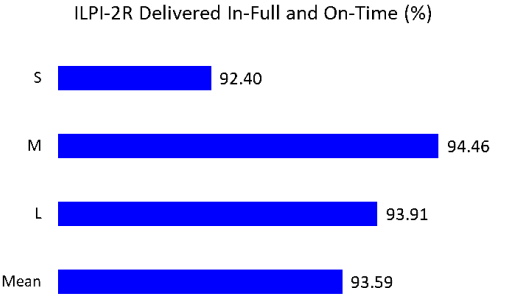
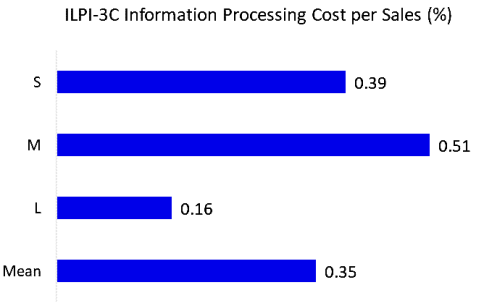
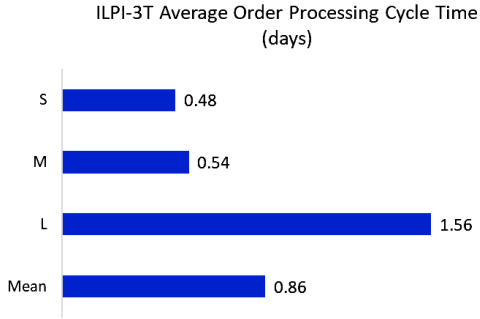


Figure (2) average ILPI2 (2C,2T,2R) customer service and support of S, M, L and mean of Thai food industries





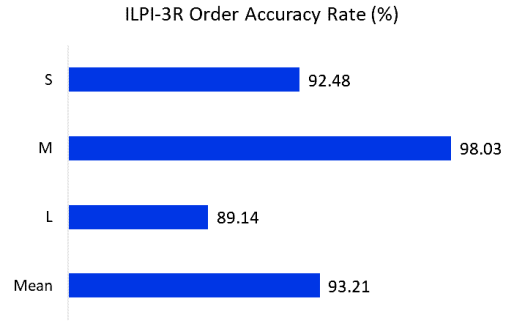
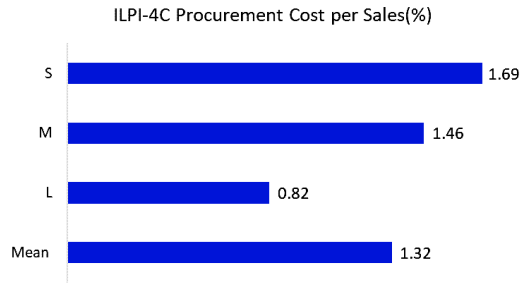
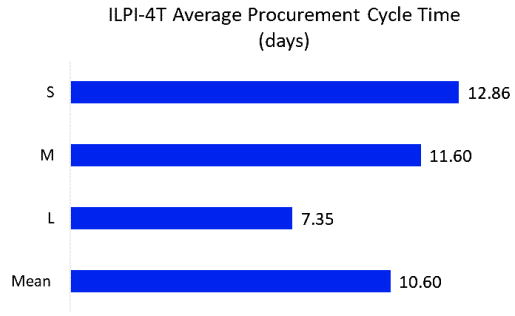


Figure (3) average ILPI3 (3C,3T,3R) logistics communication and order processing of S, M, L and mean of Thai food industries





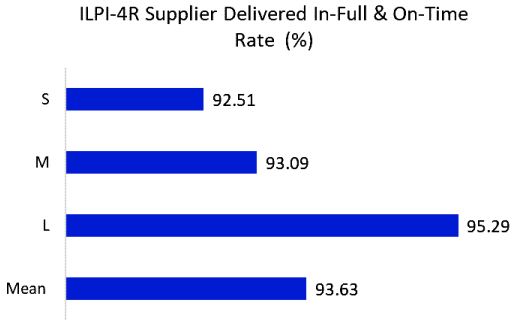
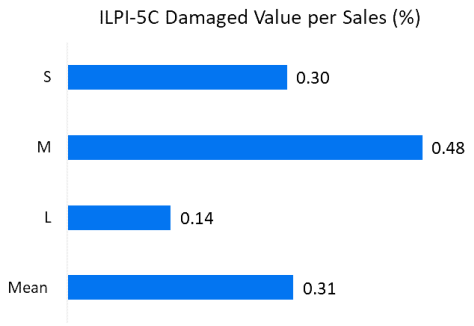
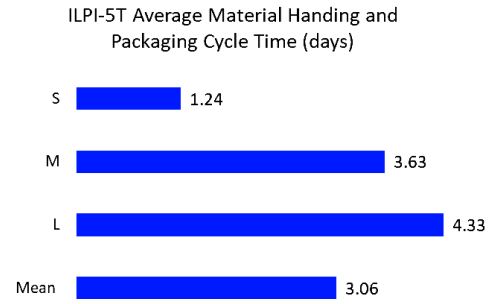


Figure (4) average ILPI4 (4C,4T,4R) purchasing and procurement of S, M, L and mean of Thai food industries





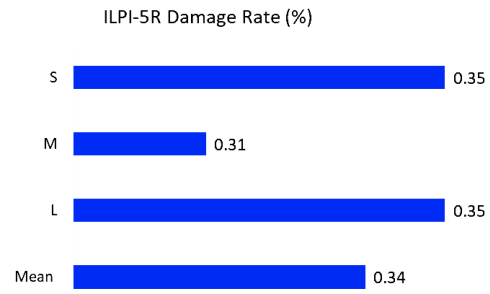
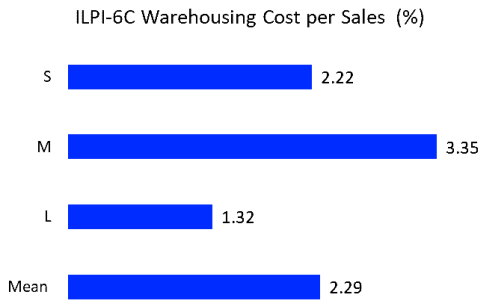


Figure (5) average ILPI5 (5C,5T,5R) material handlings and packaging of S, M, L and mean of Thai food industries



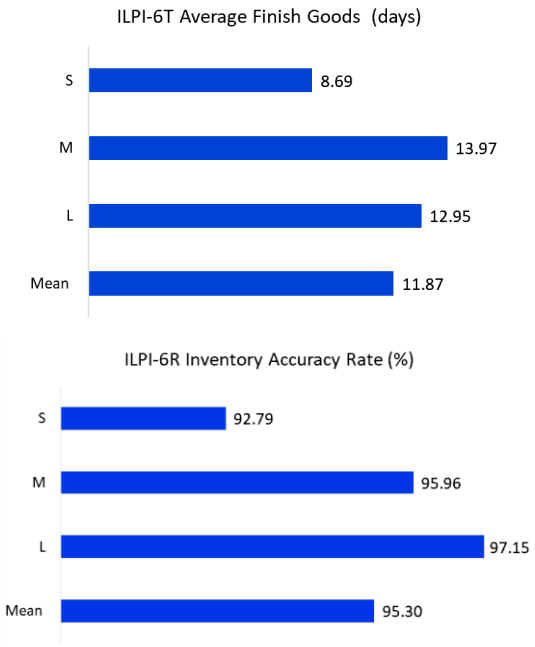
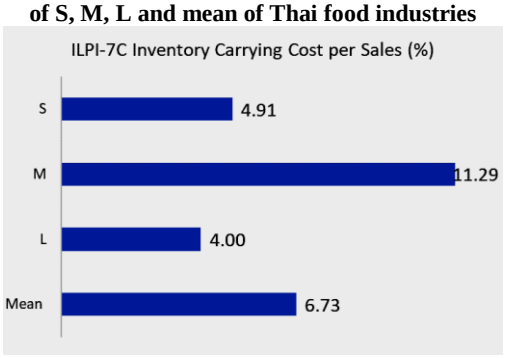
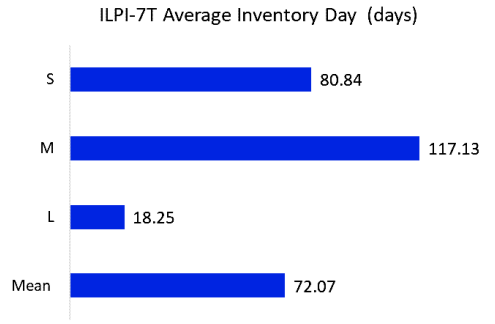


Figure (6) average ILPI6 (6C,6T,6R) warehousing and storage of S, M, L and mean of Thai food industries





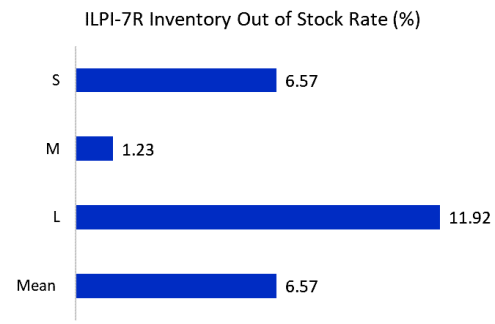


Figure (7) average ILPI7 (7C,7T,7R) inventory management of S, M,L and mean of Thai food industries

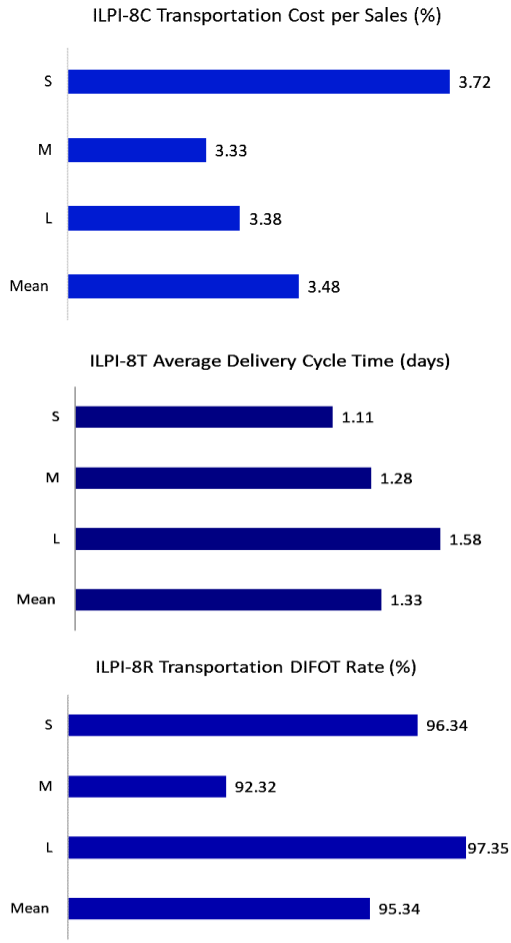
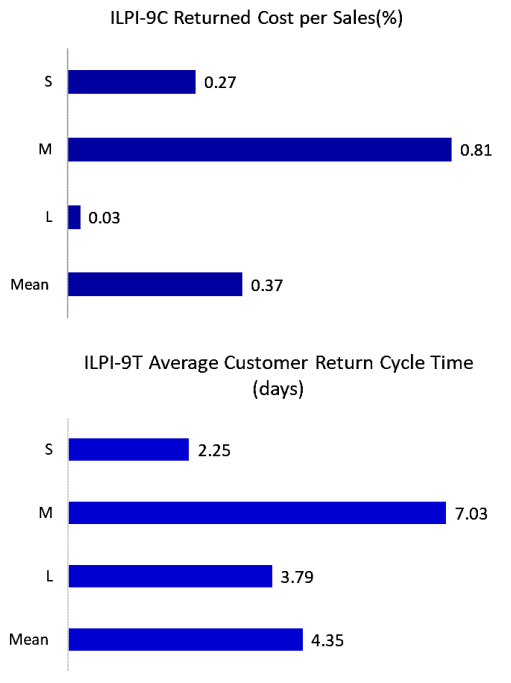


Figure (8) average ILPI8 (8C,8T,8R) transportation of S, M,L and mean of Thai food industries



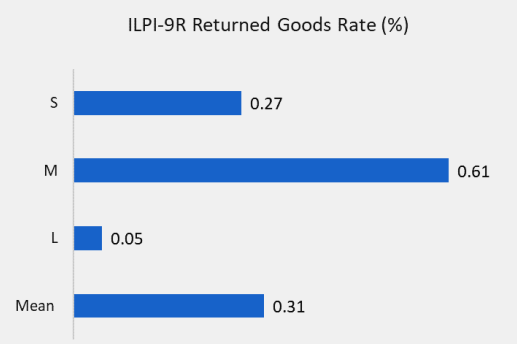


Figure (9) average ILPI9 (9C,9T,9R) reversed logistics of S, M,L and mean of Thai food industries

5. RESULT

The 100 food manufacturing companies in Thailand were studied as S-size, M-size, and L-size. From Fig. 1-27, the average cost per sale of ILPI- 1C to ILPI-9C are 0.31, 2.86, 0.35, 1.32, 0.31, 2.29, 6.73, 3.48, and 0.37 percent respectively. It was found that 1C-S, 2C-M, 3C-M, 4C-S, 5C-M, 6C-M, 7C-M, 8C-S, and 9C-M have a cost per sale more than the cost per sale average in percentage measurement. For the time dimension section, the average number of days of ILPI-1T to ILPI-9T are 4.48, 7.28, 0.86, 10.60, 3.06, 11.87, 72.07, 1.33, and 4.35 days respectively. The result of time dimension section found 1T-L, 2T-S, 3T-L, 4T-S, 5T-L, 6T-M, 7T-M, 8T-L, and 9T-M more than average in a number of day measurement. The last one, the average reliability dimension of ILPI-1R to ILPI-9R are 89.23, 93.59, 93.21, 93.63, 0.34, 95.30, 6.57, 95.34 and 0.34 percent respectively. It can be seen that the result of the reliability dimension, 1R-L,2R-M, 3R-M, 4R-L, 5R-S, 5R-L, R6-L, 7R-L, 8R-L, and 9R-M was more than average in percentage measurement.

6. CONCLUSIONS

The result of this study found that the average ILPI cost of the Thai food industry is 14.39, 21.65, 10.40 percent per sales for S-Size, M-Size, and L-Size respectively. The average ILPI time used in each activity is not related to the size of the industry. Large industries get more reliability than medium and small size.

This information was used as a tool for benchmarking of 9 logistics activities and 27 performance for Thai industries. It is database management to help Thai company evaluate internal or organization's performance.

7. ACKNOWLEDGMENT

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