

Efficiency and Potential of Logistic Management in Benjarong Industry

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Abstract. The objective this research is to analyze the efficiency and to assess the potential of logistics management of Benjarong industry is part of the ceramic industry in Samut Songkhram province. The data for this research was through interviews, questionnaires, and other types of assessments. The results are as follow: 1. Efficiency analysis of logistics management found that the establishment had high efficiency in quality and were more efficient than their competitors. Some time was found to be better efficient than their competitors. There were problems in the order processing cycle, material handling process packaging including inventory to answer customer demand. Cost efficiency was found to be better than competitor. 2. The potentiality of logistics management was found to be less ability level in 5 aspects arranging-from the most efficiency and effectiveness in logistics aspect, information system management and information technology, organization coordination, organization strategy, and planning and operation wise.

Keywords: Efficiency and Potential, Logistic management, Benjarong industry

1. Introduction

Logistic management is the planning of work processes that are to be used for controlling the efficiency of product circulation and service. It covers the finding of raw material, inventory management, the capital management for the transportation and the value chain up to the point of usage. Logistic are product management process which are support the planning and control the flow of activities. These activities include the product storage from the initial point to the destination point to answer the customer needs which are the most important aspect. The management of logistics is the process of controlling that related with the product that concern with the capital management from the initial point to the destination point. To make use of most effective logistic management, it is a must to associate all business process in each step that related as a chain or network to create the continuation of work coordination in order to manage the logistic system to have most effective in producing product and services in all work unit and to be aware of work process effectively, there for it is making work unit to work efficiently which will manage the logistic system with efficiently and able to cater customer needs with lowest cost.

The Thai logistic status for Infrastructure Project Office (IPO), Office of the National Economics and Social Development Board found that the Thai logistic management is low comparison to trading partners. There for the government sector having the policy to support the infrastructure adjustment within the country, emphasizing in industrial development aim to create knowledge and understanding of logistic management to the entrepreneurs to lift up the industrial efficiency. [1, 2]

The ceramic industries have the major role in the country development and associate with other industries such as construction, electronic, automobile, medical, and tourism, etc. By having small, medium and large ceramic establishments diffused all over country such as the big ceramic factory locate themselves as bunch within nearby province close to Bangkok capital for transport convenience and to cater an overseas. Provided that the medium and small establishment prefer to be located at raw material sites such as kaolin area at Lumpang province, red iron oxide source in all provinces such as Koh Kret Island at Nonthaburi province, Dankwian sub district at Nakhon Ratchasima province. In some area found that even though there are many raw material available but the transport of goods are not convenience, if there are not business

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center there for no ceramic establishment such as Ranong province, Thung Yai district at Nakhon Ratchasima province. Therefore to associate ceramic industry to other co-related industries quite important, in regards to having logistic system with effective chain helping much in product transfer from the initial source to destination. The government sector would like to have the improvement in logistic system within the factory in the year 2009 and in the year 2010-2011 to push and create balance between the production plan and the product storage (inventory) and also to push the supply chain planning. [3]

Benjarong is the white ceramic with drawing design on the surface of the product with 5 colors such as red, green, yellow, black, and white. These 5 colors represent the Name “Ben-ja” which mean “five” and the word “Rong” meaning “colors”, even though the evidence show that from the beginning Benjarong had only 3 colors. Benjarong are the work of handicraft art of Thailand with an identity since ancient times. Samut Songkhram province has a relation in Benjarong development until the present time Samut Songkhram province has become the source of Benjarong making with the unique ancient design and has also become an expert being selected as souvenir maker for the leader of different country and in the event of Asia-Pacific Economic Cooperation: APEC which host by Thailand from the year 2003.

From the above issue, logistic management in Benjarong industries Samut Songkhram province will lead to the efficient analysis and to estimate the potential of logistic management in Benjarong industry Samut Songkhram province which will create the movement within those group of entrepreneur to improve efficiency in logistic system or business logistics improvement which in harmony with the strategy of business logistics improvement in Thailand at the year 2007-2011 which follow with the Ministry of Industry policy to increase the capability to compete with others in more concrete and long term, also to have way to improve potential to create knowledge for those entrepreneur. It is the way to develop human resources in the ceramic industry to be able to manage logistic systems and also to increase efficiency and lower the cost and to develop and run the work to improve logistic systems and also by themselves in the future.

2. Research objective

- To analyze the efficiency in logistic management of Benjarong industry of Samut Songkhram province
- To estimate the potential in logistic management of Benjarong industry of Samut Songkhram province

3. Research methodology

3.1. Scope of the study

- To analyze the efficiency in logistic management in 3 areas 1) The quality 2) Time and 3) Capital
- To estimate the potential in logistic management by using index measure in 5 areas which are 1) To specify strategy of the organization 2) In planning and capability in work operation 3) The efficiency and result in logistic aspect. 4) The management of Data information and Information technology, and 5) the corporation between organization.
- Researched since March until September year 2010.
- Using Samut Songkhram province as the location in gather data specify only the Entrepreneur of Benjarong industry.

3.2. Research instrument and analyze data

- To analyze the efficiency of logistic management using questionnaire to obtain information.

1) To find the efficiency in Quality by calculating: (1) Delivery In Full and On-Time (DIFOT) of Customer Service and Support Rate, (2) Supplier in Full and On-Time Rate, (3) Order Accuracy Rate, (4) Delivery in Full and On-Time (DIFOT) of Transportation, (5) Inventory Accuracy Rate, (6) Forecast Accuracy Rate, (7) Inventory Out of Stock Rate, (8) Damage Rate, and (9) Rate of Returned Goods.

2) To find the efficiency of Time by calculating: (1) Average Order Cycle Time, (2) Average Procurement Cycle Time, (3) Average Order Processing Cycle Time, (4) Average Delivery Cycle Time, (5) Average Inventory Cycle Time, (6) Average Forecast Period, (7) Average Inventory Day, (8) Average Material Handling and Packaging, and (9) Average Cycle Time for Customer Return.

3) To find the efficiency of Cost by calculating: (1) Ratio of Customer Service Cost Per Sale, (2) Ratio of Procurement Cost Per Sale, (3) Ratio of Information Processing Cost Per Sale, (4) Ratio of Transportation Cost Per Sale, (5) Ratio of Warehousing Cost Per Sale, (6) Ratio of Forecasting Cost Per Sale, (7) Ratio of Inventory Holding Cost Per Sale, (8) Ratio of Value Damaged Per Sale, and (9) Ratio of Returned Goods Value Per Sale.

After that bring the assessment result compare with the standard index level that according with the Logistics Performance Assessment Tool: LPAT [4]

- To evaluate potential logistic management for Benjarong industry of Samut Songkhram province by using evaluate form to evaluate potential of logistic management for Benjarong industry Samut Songkhram province by consider using index measure for logistic system. The given point or score given according by number total of 23 numbers, in each number allow 1-5 score per number and calculate the average score per number and total income of establishment. The presentation of the analysis result is by comparing score level for efficiency per number and from establishment income with over view of establishment potential for Benjarong production at Samut Songkhram province that was given all the data by having criterion transform the value as 1.00-2.39 which mean having low potential and 2.40-3.79 mean middle level and 3.80-5.00 mean high level of potential.

4. Research result

4.1 The efficiency of logistic management for Benjarong industry at Samut Songkhram province.

Table 1: The efficiency of logistic management for Benjarong industry

efficiency indicators	standard index level			efficiency indicators	standard index level			efficiency indicators	standard index level		
	problem	normal level	advantage		problem	normal level	advantage		problem	normal level	advantage
Delivery In Full and On-Time (DIFOT) of Customer Service and Support Rate	< 80	80-95	> 95	Average Order Cycle Time	> 10	7-10	< 7	Ratio of Customer Service Cost Per Sale	> 5	0.5-5	< 5
Supplier in Full and On-Time Rate	< 80	80-95	> 95	Average Procurement Cycle Time	> 18	13-18	< 13	Ratio of Procurement Cost Per Sale	> 5	0.5-5	< 5
Order Accuracy Rate*	< 90	90-98	> 98	Average Order Processing Cycle Time	> 2	1-2	< 1	Ratio of Information Processing Cost Per Sale*	< 0.5	0.5-5	> 5
Delivery in Full and On-Time (DIFOT) of Transportation	< 80	80-95	> 95	Average Delivery Cycle Time	> 3	1-3	< 1	Ratio of Transportation Cost Per Sale	> 10	1-8	< 1
Inventory Accuracy Rate*	> 10	1-10	< 1	Average Inventory Cycle Time*	> 2	6 hrs. - 2days	< 6 hrs.	Ratio of Warehousing Cost Per Sale	> 8	0.5-8	< 0.5
Forecast Accuracy Rate	< 60	60-90	> 90	Average Forecast Period	> 30	30	< 30	Ratio of Forecasting Cost Per Sale	> 5	0.5-5	< 0.5
Inventory Out of Stock Rate*	> 10	2-10	< 2	Average Inventory Day	> 40	10-40	< 10	Ratio of Inventory Holding Cost Per Sale*	> 5	0.5-5	< 0.5
Damage Rate*	> 5	1-5	< 1	Average Material Handling and Packaging	> 7	1-7	< 1	Ratio of Value Damaged Per Sale	> 3	0.1-3	< 0.1
Rate of Returned Goods*	> 5	0.1-5	< 0.1	Average Cycle Time for Customer Return*	> 3	1-3	< 1	Ratio of Returned Goods Value Per Sale*	> 3	0.5-3	< 0.5

The result in efficiency of logistic management for Benjarong industry at Samut Songkhram provinces are as follow:

- Quality side, found that the Benjarong establishment at Samut Songkhram province had an efficiency advantage over the competitors in four points of comparison: (1) Delivery in Full and On-Time (DIFOT) of Customer Service and Support Rate (100%), (2) Supplier in Full and On-Time Rate (100%), (3) Delivery in Full and On-Time (DIFOT) of Transportation (100%), and (4) Forecast Accuracy Rate (250%).
- With the Time, found that the Benjarong establishment at Samut Songkhram had an efficiency level advantage with two points which are Average Procurement Cycle Time (1 day) and Average Delivery Cycle Time (0.13-0.25 day). But for the Average Order Cycle Time for those five establishments there was a problem (3-30 days); the finding found that there are three categories had a problem such as Average Order Processing Cycle Time (3-30 days), Average Material Handling and Packaging (30 days), and Average Inventory Day (30-120 days).
- With the Cost, found that the Benjarong establishment at Samut Songkhram province had an efficiency advantage over the competitor in three points which are Ratio of Customer Service Cost Per Sale (0.06-0.75%), Ratio of Procurement Cost Per Sale (0.11-1.033%), and Ratio of Warehousing Cost Per Sale (0.02-0.12%). For the index measure Benjarong production had a normal level compared with the competitor by the Ratio of Transportation Cost Per Sale (0.01-1.28%), Ratio of Forecasting Cost Per Sale (0.81%), and Ratio of Value Damaged Per Sale (0.4%).

4.2 Logistic management potential of Benjarong industry in Samut Songkhram province

The potential in logistic management assessment are as follows:

- The organization strategy specification had a lower than expected average ($\bar{\chi} = 1.86$). A case by case consideration found that the system to use measure for assessment and to get customer satisfaction had middle level of potential in one case (O4, $\bar{\chi} = 2.4$) with others four cases had less or low potential: creating an agreement with main customers and do exchange information between themselves (O3, $\bar{\chi} = 2.0$) also do the agreement with the main transport point and also do exchange information (O2, $\bar{\chi} = 1.8$), do have development and assessment system for their human resource (O5, $\bar{\chi} = 1.7$), and having an organization awareness to the important of logistic strategy and do apply the logistic strategic planning (O1, $\bar{\chi} = 1.4$).
- The planning and operation capability was quite low in average ($\bar{\chi} = 1.72$). In a case by case consideration it was found that in all six cases had less or low potential: the product follow up status, storage, and logistic activities (P4, $\bar{\chi} = 2.2$), having work process and operation procedure according with the standard accurate and documented (P5, $\bar{\chi} = 2.0$), having ability in forecast customer needs and market tendency and ability in planning (P2, $\bar{\chi} = 1.8$), planning adjustment in logistic for the organization (P3, $\bar{\chi} = 1.8$), having operation unit development and responsibility for logistic aspect (P6, $\bar{\chi} = 1.5$), and having logistic planning specification and having consideration in using resource appropriately (P1, $\bar{\chi} = 1.0$).
- The efficiency and effectiveness in logistic had a low average ($\bar{\chi} = 2.34$). In case by case consideration it was found that four cases had efficiency and effectiveness category as middle level: efficiency and product transport quality (E4, $\bar{\chi} = 3.0$), environmental activities and safety that organization involve with (E6, $\bar{\chi} = 2.6$), product transport period to customer and effectiveness in transport goods to the customer (E3, $\bar{\chi} = 2.4$), storage and loss of opportunity cost (E5, $\bar{\chi} = 2.4$) other three cases having potential in efficiency and effectiveness in logistic low level: the storage turn over (E2, $\bar{\chi} = 2.2$), cash flow and logistic cost (E7, $\bar{\chi} = 2.2$), and logistic activity development (E1, $\bar{\chi} = 1.6$).
- The overall management of data and information management and information technology was the low level (average 2.0). In a case by case consideration it was found the all three cases had a low level these were human resource in technology information management system with the supply chain and logistic (T3, $\bar{\chi} = 2.2$), the use of computer program in supply chain and logistic (T2, $\bar{\chi} = 2.0$), and standard code specification for the product and process (T1, $\bar{\chi} = 1.8$).
- The organization cooperation had a low level ($\bar{\chi} = 2.0$). A case by case consideration found both points were in a low level: having awareness with the important of cooperation of logistic between

an organization and with research or development institute (C2, $\bar{\chi}= 2.2$), and having awareness with the important of cooperation of logistic between business alliance and with same type of business (C1, $\bar{\chi}= 1.8$).

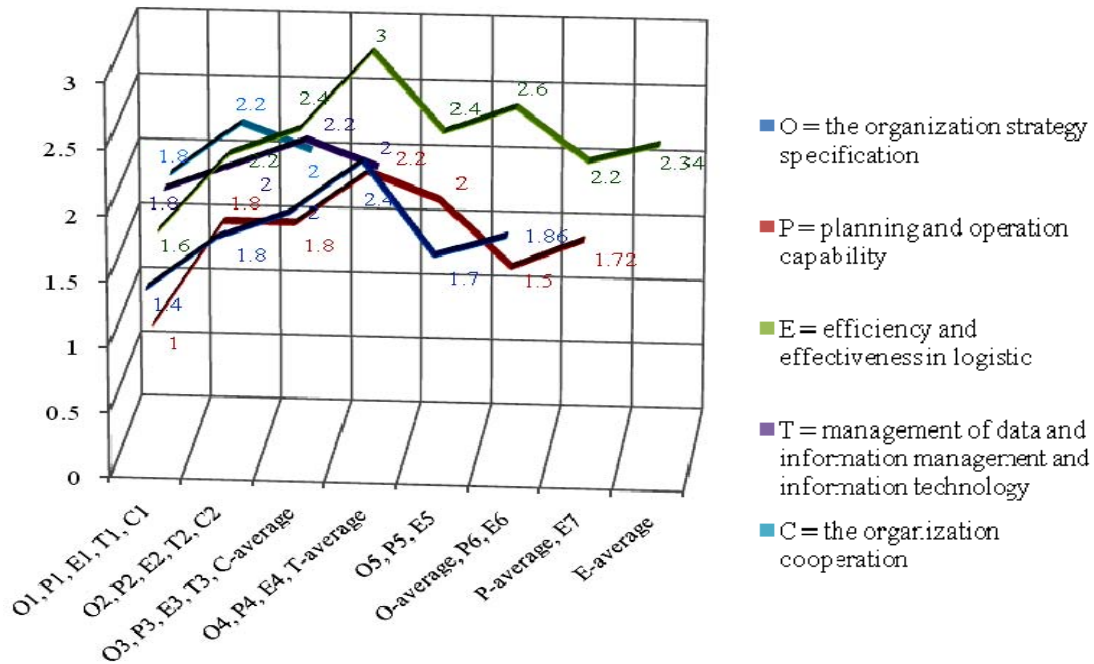


Fig. 1: The potential of logistic management for Benjarong industry

5. Research discussions

The results can be debate as follows:

- Base on the research result finding found that most or almost all of Benjarong production or the establishment do not have data base or storage of all data regards to the production and data of distribution of goods also including no human resource analysis, marketing, transport goods, and more others. Therefore they are not able to measure efficiency in Quality, Time, and Cost index. The reason of Benjarong establishment does not store all work process data is because the items are manually skilled made: the product is handcrafted not the industrial type, so to have competition is quite rare, also Benjarong at Samut Songkhram province are in demand in the market for having their own identity and Thai unique style specially their design, there for it is popular to be as gift given items, souvenir which show the Thai value as well. It is also supported that establishment of Benjarong at Samut Songkhram are cottage or household industry.
- The research found that Benjarong establishment had logistic management potential over all total in 5 aspects low level but there are some establishment having logistic management potential efficiency and effectiveness over all categorize as middle level, it is because from the indication of logistic efficiency and effectiveness which are transport of good activities, purchase order, cost, and inventory, most establishments do not have quantity data based information but those establishments do not have problems in regards to the business process.

6. Recommendation

6.1 Suggestion for research use

The result found that Benjarong establishment at Samut Songkhram province did not have a data base system to store the data properly. A data base system would help planning and developing their establishment in the near future.

From the interview process found that Benjarong establishment at Samut Songkhram province provide logistic data to government sector before and quite similar one but never have return of study result back and

also found that those establishment still do not have enough understanding into the detail and the important of logistic management. There for researcher, technocrat, and those related institute must increase and provide knowledge base related to logistic management to those establishment as possible.

6.2 Further suggestion for more research

Development on logistic management in different activities such as reducing production cost, Transport management and goods distribution, storage management, etc. by using cooperation research process type from the establishment and with related work unit also including in creating efficiency index that suite with working process of Benjarong industry.

Study product identity and the local culture that related with Benjarong making from Samut Songkhram province to support production and promote conservation tourism according to the suggestion and needs of those establishment.

7. Acknowledgements

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