A survey of criteria for a selection of logistics service providers: a case of Thailand’s automotive industry

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Abstract. This study aims to investigate the criteria that the automotive manufacturing companies currently consider when selecting a logistics service provider; and to prioritise the importance level of those criteria based on service buyers’ perspectives. The criteria were synthesised from the relevant literature review, and they were then used to develop the questionnaire. In this current study, the questionnaire was divided into two parts: the manufacturers’ current criteria for considering the service provider: and, the levels of importance for the criteria. It was then sent to five large-scale manufacturers in the automotive industry in Thailand. Following up with questionnaire responses, the researchers also conducted an interview with each participating manufacturer to elicit additional insightful information. According to the results, there were seven criteria that all five manufacturers collectively used to consider the logistics service: 1) Price, 2) Relationship, 3) Management system, 4) Flexibility, 5) Delivery, 6) Physical facilities, equipment and technology, and 7) Service areas. In this regard, the most important criteria were Price and Delivery, respectively. For logistics service providers, the findings of the study might be of use to design strategic planning, to improve their organization for a future service providing, and to maximize the competitive advantage. Additionally, the government could also implement these study findings to formulate the policy to support the logistics industry in Thailand to be able to grow sustainably and compete in the global market.

1. Introduction

During the past decade, the logistics industry in Thailand has been expanding rapidly. This may be partly influenced by the emerging of the ASEAN Economic Community (AEC) that stimulates the growing movements of goods among border countries. The Era of Digital Economy and online commerce also lead to a more intense competition regarding transportation and distribution, and this increases the demand for logistics services. Logistics now becomes a key factor for the successfulness of a plurality of industries [1].

With these reasons, a great number of companies start to consider outsourcing logistic service providers (LSPs) for their transportation, warehousing, and inventory management, etc. [2,3]. According to [4], there are multiple reasons for outsourcing a logistics service provider, namely reducing logistics cost, enhancing business performance since expertise and competent persons operated logistics functions, enhancing flexibility in operations, and accessing to emerging technology. Moreover, firms need to focus only on their core business process without worrying about transportation and warehouse management.
According to the review of relevant literature, it is seen that a selection of LSPs is a complicated decision-making problem as it contains a large number of criteria, in which more than ten criteria have always been considered. Additionally, the importance weights of the criteria are definitely unequal based on service buyers’ perspectives, and these tend to be different among various industries or business sectors. This issue makes it difficult for LSPs to decide which points they should improve themselves in order to meet customer needs in a particular industry.

This study aims to investigate the criteria that the automotive manufacturing companies currently consider when selecting a logistics service provider; and to prioritise the importance level of those criteria based on service buyers’ perspectives. This study focuses on the Thai automotive industry since Thailand has been well known as a hub of automotive manufacturing within the region [5]. Note that this paper reports merely an initial part of a full questionnaire-based survey, as its pilot study.

2. Methodology
The study started by gathering the criteria for selecting LSPs from the literature review. Research studies that mainly proposed methods or discussed issues about the selection of LSPs were reviewed. The reviewed papers were all taken from www.scopus.com through the keywords: logistics service provider selection, logistics service third party selection, and logistics 3PL selection. In this regard, the selected papers in this study were the ones with high citations or published during the past few years. There were selected 15 studies, accordingly [1-4,6-16]. After examining, a large number of criteria were collected and were synthesized into 13 criteria, as shown in Table 1.

To develop the questionnaire, it consisted of two parts. The first part asked the respondents about which criteria their companies have used when selecting LSPs. The respondents were then asked, in the second part, to rate the importance of each criterion towards 1-5 Likert Scale (5 = extremely important to 1 = never considered at all). After this questionnaire was constructed, five automotive industry managers from different manufacturing companies were contacted for the interviews. The five participating companies include both automakers and part suppliers. The managers’ reasons to support their questionnaire answers were also elicited during the interviews.

3. Result and Discussion
The questionnaire response of five automobile and parts manufacturers was shown in Table 2. All five manufacturers used seven criteria for considering the logistics service provider: 1) Price, 2) Relationship, 3) Management system, 4) Flexibility, 5) Delivery, 6) Physical facilities, equipment and technology, and 7) Service areas. The results also yielded that two criteria, which were Human resource policies and Environmental management, were least taken into account.

Concerning the levels of importance, it was found that Price and Delivery were the two most important criteria, respectively, based on the average rating scores. The interviews further demonstrated that a majority of interviewed participants considerably taken a cost reduction into account to attain the maximum profits. Employing the relatively inexpensive logistics providers helps manufacturers to save their total costs. Regarding the delivery, the participants reckoned that the goods and raw materials extensively needed quick and punctual delivery. Most informants in this study were from the leading automakers and parts manufacturers in Thailand; thus, a goods delivery to the manufacturing lines must be prompt. The goods quantity must be fully accurate, and the delivery to manufacturer mills must be well time so as not to cause problems or delay the production process.

Another group of criteria that also received high average scores consisted of Service types, Management system, and Service areas. However, the Service types criterion had generated a high standard deviation (1.2) because one interviewee from a company had different comments from the rest that there was no demand for various services. Based on the experiences in employing logistics service providers, this interviewee found that services of most logistics services were not distinctly different and they had already met the company’s demands, such as the delivery and warehouse management services together with holding goods.
Table 1. The criteria.

| Criteria                          | Definitions                                                                 |
|----------------------------------|-----------------------------------------------------------------------------|
| Price                            | The cost of employing a logistics service provider, such as price, service price, and cost of service. |
| Relationship                     | The relationship, trust, compatibility, assistance between customers and logistics service providers. |
| Service types                    | The scope of service, various kinds of offered service, such as transportation and warehouse. |
| Management system                | The quality management, KPIs, quality certification, continuous improvement policy, technical controlling, and resource management policy. |
| Information & communication system| Information, equipment and technology system for contacting customers (such as Electronic Data Interchange: EDI, tracking system), and information safety. |
| Flexibility                      | Availability for customer needs, such as the capability to handle special requirement, instant needs, adaptation for future needs, and service cancellation. |
| Delivery                         | Time to transport, on-time shipments and deliveries, and on-time delivery performance. |
| Reputation and professionalism    | Knowledge and experiences, reputation, experiences in the same industry, and local or global market ranking. |
| Physical facilities, equipment, and technology | The availability of materials, equipment and technology for logistics services. |
| Service areas                    | Comprehensive service areas, service locations. |
| Human resource policies          | Human resource policies, employee satisfaction record. |
| Finance                          | Market share, asset ownership, and financial stability. |
| Environmental management         | Environmental awareness, environmental certification, and environmental management policy. |

Table 2. The survey results.

| Criteria                          | Number of companies using each criterion | Importance level |
|----------------------------------|------------------------------------------|------------------|
|                                 |                                           | Mean  | S.D.  |
| Price                           | 5                                        | 5     | 0.0   |
| Relationship                     | 5                                        | 3.8   | 1.1   |
| Service types                    | 4                                        | 4     | 1.2   |
| Management system                | 5                                        | 4     | 0.7   |
| Information & communication system| 4                                        | 3.8   | 0.8   |
| Flexibility                      | 5                                        | 3.8   | 1.6   |
| Delivery                         | 5                                        | 4.6   | 0.5   |
| Reputation and professionalism    | 4                                        | 3.6   | 1.1   |
| Physical facilities, equipment, and technology | 5                                        | 3.8   | 0.8   |
| Service areas                    | 5                                        | 4     | 1.0   |
| Human resource policies          | 3                                        | 2.8   | 0.8   |
| Finance                          | 4                                        | 3.8   | 0.8   |
| Environmental management         | 3                                        | 3     | 1.2   |
The criterion, which had the highest standard deviation, was Flexibility. This was because some manufacturers always had a definite manufacturing plan. They, therefore, attached no importance to those delivery providers who were able to respond quickly to urgently changed sale orders while the other manufacturers still regarded this criterion as the crucial issue.

The least two important criteria were Human resource policies and Environmental management. This was resonated with the first part of questionnaire results that yielded no favours to these two criteria at the present. However, the Environment management criterion had reached the high standard deviation of 1.2 because one of five participating interviewees ranked this criterion at 5. This interviewee further added that the current environmental laws are playing more roles in Thailand and gradually becoming effective in the warehouses and transportation. Logistics service providers needed to well maintain truck conditions to be constantly ready and efficient. Trucks must not have belched out black smoke. Manufacturing automobile parts needed the most decent goods holding; for example, the warehouses must have been operated in closed premises which were free of dust, insects, birds, and rats.

4. Conclusion
This study aims to survey the criteria that five automotive manufacturers currently used to choose the logistics services and rank the importance level of the criteria. The study employs the questionnaire as a research tool to collect the quantitative data and follows up with the interviews to elicit the in-depth information. According to the data collection, there were seven criteria that all five manufacturers used for selecting the service providers: 1) Price, 2) Relationship, 3) Management system, 4) Flexibility, 5) Delivery, 6) Physical facilities, equipment and technology, and 7) Service areas. The two most important criteria were Price and Delivery, respectively; these two criteria were considered relatively crucial in which logistics service providers needed to consider so as to compete with other providers. A good-quality and punctual delivery with a low cost would enable logistics service providers to increase their competitiveness.

Among all criteria, the least important ones were Human resource policies and Environmental management. However, although these two criteria were not the prime considerations that the respondents mainly used to choose the logistics services at present, these criteria deserved no ignorance, particularly for the environmental management, because service users were increasingly aware of it. In the future, the environmental law enforcement seemed to be more rigorous. If logistics service providers have an earlier preparation than others, this will construct the uniqueness to increase the sales and receive more market shares.

The study findings might be of use for logistics service providers to formulate the strategic plan in order to improve the service performances for the future business, and to maximize their competitive advantage. Moreover, if the government wants to level up the competitive edge in the logistics industry of Thailand, it should formulate the policy to enhance two aspects for the logistics providers that manufacturers consider them important, which are cost and delivery. In this regard, the government possibly launches a campaign to entice logistics service providers to use the alternative energy for the cost reduction, or to invest in an alternative transportation system, namely more convenient train and ship delivery. Perceivably, the total delivery cost is lower than a truck delivery. If the government wants to support the Thai logistics system to compete with the global market, it needs to motivate the manufactures and logistics service providers in Thailand to have an awareness of the environment. For example, the government promotes the evaluation of carbon dioxide emission or carbon footprint as a means to prepare Thai entrepreneurs for the global competition. Ultimately, this will thus be regarded as sustainable economy development and helps to alleviate the environmental problems in Thailand.
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