

Factors Influencing Decision to Outsourcing Logistics Activities in Automotive Industry: Case Study of Amata Industrial Estate

ปัจจัยที่มีอิทธิพลต่อการตัดสินใจเลือกจัดจ้างกิจกรรมทางโลจิสติกส์ในอุตสาหกรรม
ยานยนต์: กรณีศึกษานิคมอุตสาหกรรมอมตะนคร

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Abstract

There are 2 objectives for this study which are (1) To study factors influencing decision to outsourcing logistics activities (2) To study the obstacles that could encounter the organization when they consider using a logistics (Third-party logistics providers) in the automotive industry at Amata Industrial Estate area. The methodologies for this study are descriptive analysis by using primary sources from 108 companies of questionnaire survey in in automotive industry at Amata Industrial Estate area. According to the research results, the researcher found are (1) Both SME and large enterprise recognize that they will get convenience in operations when hiring logistics providers to doing logistics activities. Which this factor is very important for decision outsourcing logistics providers (2) the questionnaire result is shows that main obstacle influencing decision outsourcing logistics provider from respondent attitude is lack of management confidence in an outsourcing logistics provider. Organization will take a risk to the confidentiality.

Keywords: Automotive industry, Third-party logistics providers, Outsourcing

ບທຄດຢ່ອ

ກາງວິຈີຍຄັ້ງນີ້ມີວັດຖຸປະສົງ 2 ປະກາດຄື່ອງ (1) ເພື່ອສຶກຫາປັບປຸງທີ່ມີອີທີພລຕ່ອກຕົວການຕັດສິນໃຈຈັດຈ້າງຜູ້ໃຫ້ບໍລິການ ໂລຈິສຕິກສ (2) ເພື່ອສຶກຫາລົງຂໍອຈຳກັດທີ່ຈ້າງເກີດຂຶ້ນກັບອົງການມີຄວາມຮັບຮັດໃຫ້ຜູ້ໃຫ້ບໍລິການໂລຈິສຕິກສໃນເຂົ້າພັນທຶນທີ່ນິຄມ ອຸ່ນະນີ່ ສວ່າງວັຊີ ອຸ່ນະນີ່ ສວ່າງວັຊີ ວິທີການໃນການສຶກຫາຄັ້ງນີ້ເປັນກາງວິເຄາະທີ່ເຊີງພຣຣມນາໂດຍໃຫ້ແລ່ງຂໍ້ມູນປະໜົມກົມືຈາກ ບຣິ່ນທີ່ສໍາຮວັງ 108 ແກ່ໄນ້ອຸ່ນະນີ່ ສວ່າງວັຊີ ຍານັດນິຄມອຸ່ນະນີ່ ສວ່າງວັຊີ ມອມຕະ ຈາກພລກາວິຈີຍຜູ້ວິຈີຍພບວ່າ (1) ທົ່ວອົງການ ຂາດກາລາງແລະອົງການຂາດໃຫຍ່ຍ່ອມຮັບວ່າພວກເຂາຈະໄດ້ຮັບຄວາມສະດວກສບາຍໃນການດຳເນີນງານເມື່ອຈ້າງຜູ້ໃຫ້ບໍລິການໂລຈິສຕິກສເພື່ອທຳກິຈການໂລຈິສຕິກສ ຊັ້ນປັຈຸນີ້ມີຄວາມສຳຄັນມາກສໍາຮັບການຕັດສິນໃຈຈ້າງຜູ້ໃຫ້ບໍລິການໂລຈິສຕິກສ (2) ພຸດການ ສໍາຮວັງແສດງໃຫ້ເຫັນວ່າຂໍອຈຳກັດຫຼັກທີ່ມີອີທີພລຕ່ອກຕົວການຕັດສິນໃຈຈ້າງຜູ້ໃຫ້ບໍລິການດ້ານໂລຈິສຕິກສຈາກທັກສະນິຕີຂອງອຸ່ນະນີ່ ສວ່າງວັຊີ

แบบสอบถามคือ องค์กรจะเสียต่อการรักษาความลับเมื่อตัดสินใจจ้างผู้ให้บริการโลจิสติกส์

คำสำคัญ: อุตสาหกรรมยานยนต์, บริษัทผู้ให้บริการด้านการจัดหาที่มาทำหน้าที่บางอย่างแทนองค์กร, การทำสัญญาจ้างบุคคลจากภายนอก



Introduction

To enhance competitive advantage in business many companies have to find the gap between the goal and operation activities which competitive advantage is coming from core competency in the organization. The gap is between what they want in manufacturing is very dynamic and highly competitive. Many enterprises are aiming to gain a share of the global market and take advantage of sourcing efficiencies. The changing market environment causes increasing complexity of production processes and the whole supply chain management become more and more competitive advantage in business operation to accomplish and what they can do in-house. To maintain core competency, the organization need to focus on main activities of the organization and use outsourcing for support activities. Therefore, the role of outsourcing is still growing. To making the decision to outsource selected supply chain functions and processes to a Third-Party Logistics (3PL). Companies can be challenging yet rewarding to the organization. Supply chain function have grown increasingly complex with globalization, technology and competition advancing at a rapid pace. In deciding organization need to consider several factors including motivations, expectations and justifications for outsourcing critical supply chain functionality enables companies to make effective decisions which generate incremental profitability. Before decision to outsource logistics

activities, they should be careful consideration and analysis of cost factors, performance gaps, financial impact and suitability for outsource activities.

Nowadays Third-Party Logistics (3PL) companies have continued to evolve which they have been developed and improved functionality for competitive advantage. For example, warehousing has evolved from the simple activity devoted primarily to material storage in the 1950s and 1960s. Adoption of just-in-time (JIT) principles in the 1970s and 1980s drove smaller order sizes with increased frequency, lower inventory levels and a greater need for order assembly activities. Afterwards, they reengineered warehouses into distribution centers to meet customer needs. Adoption and growth of customer-driven designs, third-party logistics, postponement, mass customization, supply chain integration and global logistics.

Research Objectives

1. To study factors influencing decision to outsourcing logistics activities in the automotive industry at Amata Industrial Estate area.
2. To study the obstacles that could encounter the organization when they consider using a logistics (Third-party logistics providers).

Literature Review

The important of automotive industry

Importance of automotive industry, the automotive industry has played an important role in Thailand's economy for decades. With a strong local supply chain, efficient infrastructures, good

collaboration between government and private sector. Thailand's automotive industry has been continuously developing for over 50 years with strong support from both the public and private sectors. The automotive industry is a key industry for Thailand.

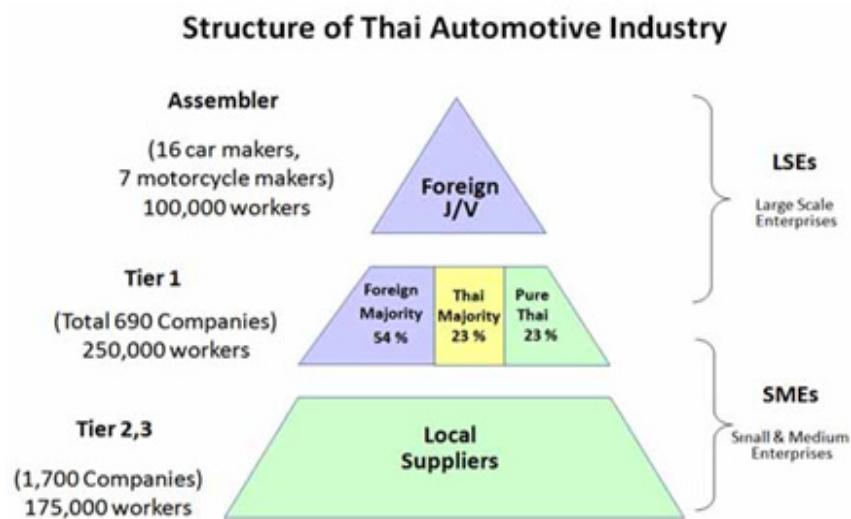


Figure 1 Structure of Thai Automotive Industry

Source: Thailand Board of Investment (2015)

Since 1961, Thailand implemented continuity policy to support the industry development. The initial objective was to reduce import by develop the emerging automotive industry of Thailand. During 1977 – 1997, Thailand promoted investment to create value added and develop export capacity by implementing free trade policy, joining World Trade Organization (WTO) and taking part in ASEAN Free Trade Area (AFTA). Presently, Thailand is fully engaged in free trade agreements. Auto motive industry is a major industry with opportunity for growth and expansion. Along with growth in emerging markets and competitors such as China and Indonesia as well as global trend toward more environmental friendly vehicles and higher technical and safety standard requirements for vehicles and parts affecting automotive technology

development, thus policy condition should enable the automotive industry to adapt to the market change is an essential element in developing and improving sustainable competitive advantages of Thailand automotive industry (Thailand Automotive Institute Ministry of Industry, 2012)

The concept of outsourcing

In response the changing demands and increasing complexities, business turn to outsourcing of supply chain operations including warehousing, transportation, materials planning, freight forwarding and reverse logistics. The general motivations for outsourcing these operations fall into three main categories: increase revenue, improve capabilities, and reduce cost. As Figure 2, multiple motivations fall into each category

Increase Revenue	Improve Capabilities	Reduce Cost
<ul style="list-style-type: none"> • Increase flexibility and responsiveness • Increase speed to market • Improve quality • Decrease customer response time • Gain access to new markets • New value-added services 	<ul style="list-style-type: none"> • Focus on core business • Gain access to new technology • Gain access to advanced skills • Provide flexible facility capacity • Create additional capacity • Provide backup capability 	<ul style="list-style-type: none"> • Reduce operating costs • Reduce capital investment • Transform fixed to variable costs • Meet downsizing requirements • Reduce development costs • Reduce healthcare exposure

Figure 2 General Outsourcing Motivations

Source: Hugh Kinney (2013)

Today outsourcing one or more logistical functions to 3PL is becoming a widespread practice in industry worldwide. An increasing number of companies, large and small are focusing their efforts on their core competencies that are critical to survival. Moreover, 3PL topics have attracted many researchers which virtually did not exist prior to 1990, particularly in the United States. 3PL can be used in nearly every industry (Retail, service, manufacturing etc.). During the 1970s, 3PL originally began a public warehousing provider. Later during the 1980s due to the need to improve customer service of distribution managers. 3PL expanded to offer throughput besides just selling space. In the 1990s, 3PL began to consolidate both transportation and warehousing and offered such service to managers who wanted to reduce operation costs and improve customer satisfaction by providing value-added services. The 1990s experienced explosive growth in the 3PL business by offering expanded service and one-stop service for all companies' need. Since 1990s onward, 3PL has grown dramatically.

Aghazadeh (2003) mentioned companies

has been outsourcing businesses to 3PL and relying heavily on 3PL for warehousing management (56 percent), transportation (49 percent) and shipment consolidation (43 percent). Previous extensive research indicated a record high rate of 3PL usage among Fortune 500 companies. Nearly 80 percent of the Fortune 500 companies are using 3PL. More and more companies adopt complex supply chain management strategies and use logistics expertise to obtain a competitive advantage in cost and time efficiency. Companies are more likely to have a partner who already has the equipment, system and experience and is ready to help. The expansion of 3PL in supply chain through supplementary service is also the result of customization of product or service offerings to customers. By expanding services, a 3PL is able to respond to specific customer demands and can also provide additional services. There are many reasons that encourage companies to outsource in-house business to 3PL as follows:

- Reduce logistics costs such as inventory, transportation and other costs.
- Concentrate on core competencies or main activities

- Improve customer service level
- Integrate the entire supply chain
- Reduce conflict and reciprocate on mutual goal-related matters
- Increase efficiency, stability and flexibility
- Establish market legitimacy
- Avoid extensive capital expenditures
- Increase productivity
- Reduce risk, uncertainty and fluctuation
- Leverage resources
- Improve expertise, market knowledge and data access
- Create a competitive advantage either locally or globally
- Reduce personal and equipment costs

Accordingly, companies are increasingly leveraging the capabilities of 3PL to magnify their

strengths and benefits. But there are a number of important factors that companies should consider when choosing a 3PL. Thus, there are an increasing number of companies focusing their efforts on their core competencies that are critical to survival. They outsource one or more logistics functions to 3PL. It is becoming a widespread practice in industry worldwide. In the future outsourcing functions to 3PL is still a major trend. But the rate of growth may decrease. 3PL used to provide services such as warehousing and transportation which is single and short-term logistics service. More recently, 3PL is putting more attention on establish a long-term contact relationship with their customers by providing multiple logistics services. We conclude that 3PL has a significant impact on not only the past and the present.

Conceptual Framework

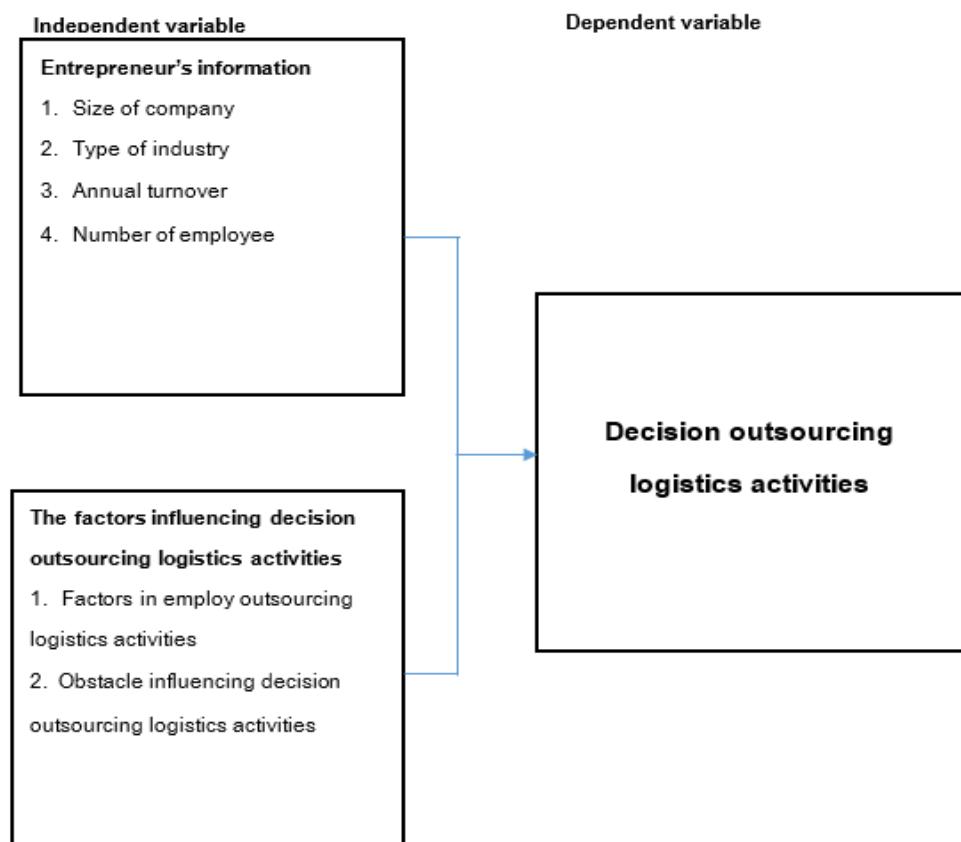


Figure 3 Conceptual Framework

Research Methodology

This study will use descriptive statistics to the analysis of data. Descriptive analysis is used to describe the percentage, distribution and frequency distribution of the demographic factors as details below:

1. Frequency and percentage will be used to describe the general information of the respondents.

2. Mean and standard deviation (SD) will be used to determine the level of important for factors influencing decision outsource logistics activities.

Regarding data analysis part, this part comprise question about the factors influencing decision outsourcing logistics activities and obstacle in decision outsourcing logistics activities. The aim of this part is attitude measurement toward factors in employ outsourcing logistics activities. The respondents will be asked to express their attitude toward each factor in form of rating scale. Then the researcher interpreted data by using descriptive statistics consist of Percentage, Mean and Standard deviation.

Studied variables	Measurement scales
Independent variable: The entrepreneur's general information	Nominal scale
Dependent variable consists of: 1. The factors influencing decision outsourcing logistics activities 2. Obstacle for decision outsourcing logistics activities	Ordinal scale

Population and Sample

In the study, Researcher used simple random sampling technique through the probability sampling; each member of the population has an equal and known chance of being selected. That is a subject who met the criteria of selection was approached to ask for their willingness to participate in the study. Simple random sampling is simple to accomplish and is easy to explain to others. Because simple random sampling is a fair way to select a sample, it is reasonable to generalize the results from the sample back to the population.

For the sample size of the respondents. Researcher used Yamane formula to calculate the sample size for automotive industries in Amata Industrial Estate. The number of target population in this case (N) is 147 companies. The significant

level (e) is 0.05. Thus, the required sample size (n) should be in the range of 108 companies.

Research Tools

In this study, the researcher will conduct survey by using questionnaire as a research instrument to collect data for this research which are all information will be used to be the result according research objectives. This study was designed to utilize a quantitative approach to address the research question which including 4 parts of questionnaire consists of the part of the entrepreneur's general information, the part of understanding about employment outsourcing logistics activities, the part of attitude toward factors influencing decision outsourcing logistics activities and obstacle influencing decision outsourcing logistics activities. The questions

can be of attitude toward factors influencing decision outsourcing logistics activities and obstacle influencing decision outsourcing logistics activities covered by a total 24 questions

The part of questionnaire were used to accumulate data from automotive industry in Amata Industrial Estate. The researcher distributed questionnaire by e-mail and send a letter directly to purchasing department of the automotive industry in Amata Industrial Estate areas. Furthermore, the researcher tested the reliability of the questionnaire by Alpha coefficient according Crombach's alpha form. Which Alpha coefficient for this study equal to 0.77

Data Collection

The researcher used both primary and secondary data in this study. To collect the primary data, the researcher was required to distribute copies of the self-administered questionnaires to target respondent totally 108 companies by e-mailing. This approach is the most flexible method of data collection, as it gives respondents the freedom and privacy to complete the questionnaires.

The questionnaire consists of closed-ended question and rating scale. The results will be processed through statistic program. In addition to the primary source, the researcher used secondary data such as textbooks, previous research, business journals and other related information from the websites that were relevant to study.

Statistical Analysis

In the study, Researcher used simple random sampling technique through the probability sampling; each member of the population has an equal and known chance of being selected.

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Result

The results are collected from the questionnaire in order to prove the research objectives. The results of the data analysis are based upon the data collection of 108 respondents which presented in part analysis result of the respondent's attitude toward factors influencing decision outsourcing logistics activities and analysis result of the respondent's attitude toward obstacle influencing decision outsourcing logistics activities.

The general information of entrepreneur automotive in Amata industrial estate. All these are demonstrated from table 1. The total of respondents up to 108, recruited in this study are large enterprises accounting for 51.85% and the rest of 52 or 48.15% are small and medium enterprises.

Table 1*Entrepreneur's general information*

The entrepreneur's general information	Frequency	Percent
Size of company		
Small and Medium Enterprises	52	48.15
Large Enterprises	56	51.85
Total	108	100.00

Regarding to entrepreneurial experience in outsourcing logistics providers, majority of the respondents up to 75 or 69.44% used

outsourcing providers in logistics activities, and the rest of 33 or 30.56% never used outsourcing provider in logistics activities.

Table 2*Entrepreneurial experience in outsourcing logistics providers*

Have you ever experienced in employ outsourcing logistics providers	Frequency	Percent
Yes	75	69.44
No	33	30.56
Total	108	100.00

For logistics service used by the respondents, the analysis result reflects that 17 respondents or 15.74% use logistics service in supply spare parts and auto part. The

second group use logistic service in warehouse management consists of 14 respondents or 12.96% while the smallest group uses logistics service in reverse logistics, comprises 4 respondents or 3.70%

Table 3*the respondents classified using logistics service*

Logistics service	Frequency	Percent
Customer services	11	10.19
The implementation of customer orders	11	10.19
Warehouse management	14	12.96
Reverse Logistics	4	3.70
Purchasing	8	7.41
Supply spare parts and auto parts	17	15.74
Packaging	10	9.26
Never used logistics service	33	30.55
Total	108	100.00

Based on the observation of table 4, the respondent's attitude toward factors influencing decision outsourcing logistics activities is at a very important level ($\bar{X}=3.92$). When considering in detail, the top 5 of most important factors that influencing decision outsourcing logistics activities with the following factors: Outsourcing logistics

provider can make enterprise convenience in operations ($\bar{X}=4.15$, $SD=0.73$). Cost reduction ($\bar{X}=4.11$, $SD=0.83$), Organization would like to focus on core competencies ($\bar{X}=4.09$, $SD=0.74$), Organization would like to transfer unnecessary to an expert ($\bar{X}=4.05$, $SD=0.84$) and increase quickness in implementation ($\bar{X}=4.03$, $SD=0.66$)

Table 4

Respondent's attitude toward factors influencing decision outsourcing logistics activities

No	Factors in employ outsourcing logistics activities	n = 108		Interpretation	Rank
		\bar{X}	SD		
1	Cost reduction	4.11	0.83	Very importance	2
2	Change fix cost to variable cost	3.76	3.76	Very importance	12
3	Risk management	3.95	0.63	Very importance	8
4	Transfer unnecessary activities to expert	4.05	0.84	Very importance	4
5	Better management control	3.96	0.8	Very importance	7
6	Shorten system development	3.57	0.68	Very importance	14
7	Eliminate employee's problem in organization	3.61	0.75	Very importance	13
8	Flexibility in administration	3.77	0.69	Very importance	11
9	The effectiveness of the work	3.87	0.66	Very importance	10
10	Increase quickness in implementation	4.03	0.66	Very importance	5
11	Convenience in operations	4.15	0.73	Very importance	1
12	Having long-term partner	3.91	0.72	Very importance	9
13	Distribution management efficiency	4.03	0.75	Very importance	6
14	Focusing core competency	4.09	0.74	Very importance	3
Total		3.92	0.41	Very important	

Based on the questionnaire results of table 5, the respondent's attitude toward factors influencing decision outsourcing logistics activities is at a moderate important level ($\bar{X}=3.18$)

When considering in detail, the top 5 of most important obstacles that influencing decision outsourcing logistics activities with the following factors:

If entrepreneur make decision to out

sourcing logistics providers, they must take a risks to the confidentiality of the organization ($\bar{X}=3.86$, $SD=0.84$), Increased organization expenditure ($\bar{X}=3.48$, $SD=1.05$), Employees have the knowledge and ability for doing logistics activities ($\bar{X}=3.38$, $SD=0.76$), Outsourcing will make employees lack of knowledge in logistics activities ($\bar{X}=3.19$, $SD=0.81$) and faced with conflicts of benefits in the organization ($\bar{X}=3.14$, $SD=0.74$).

Table 5*Respondent's attitude toward obstacle influencing decision outsourcing logistics activities*

No	Factors that makes the decision not hire outsourcing logistics activities	n = 108		Interpretation	Rank
		\bar{X}	SD		
1	Increased organization expenditure	3.48	1.05	Very important	2
2	Employees have the knowledge and ability for doing logistics activities	3.38	0.76	Moderate important	3
3	Outsourcing will make employees lack of knowledge in logistics activities	3.19	0.81	Moderate important	4
4	Risks to the confidentiality of the organization	3.86	0.84	Very important	1
5	Working process increased and affect to administration delays	2.78	0.82	Moderate important	10
6	Conflicts of benefits in the organization	3.14	0.74	Moderate important	5
7	Conflicts might be happening with third party logistics provider in organizational system	3.09	0.66	Moderate important	6
8	The risk of unprofessional in third party logistics provider	3.08	0.9	Moderate important	7
9	Ineffectiveness of employees working in logistics activity.	3.02	0.86	Moderate important	8
10	Logistics activities have no important to the production and administration in organization	2.81	1.13	Moderate important	9
Total		3.18	0.49	Moderate important	

Discussions

Research Findings from Questionnaire

Firstly, the researcher needs to find of entrepreneur's general information in order to understand their industrial characteristic. In this research, the researcher separated criteria of entrepreneur follow size of company. Which the researcher found that 51.85% of respondents of this research are from large enterprises and another 48.15% are from small and medium enterprises.

Secondly, the researcher was surveying the understanding about outsourcing logistics activities of respondent by 2 perspectives include entrepreneurial experience in outsourcing

logistics providers and classical of logistics services that they used. The results show that entrepreneurial experience in outsourcing logistics providers, majoring of the respondents 69.44% used outsourcing providers in logistics activities and classical of logistics service is supply spare parts and auto part accounting 15.74%.

Thirdly, the researcher was analysis the result of respondent's attitude toward factors influencing decision outsourcing logistics activities. The results of respondents is show that the 5 main reasons for outsourcing logistics activities, they think that outsourcing logistics providers can make convenience in operations

($\bar{X}=4.15$, $SD=0.73$) and reduce cost in organization ($\bar{X}=4.11$, $SD=0.83$). The respondents would like to focus on core competencies of organization ($\bar{X}= 4.09$, $SD=0.74$) and transfer unnecessary activities to outsource or an expert ($\bar{X}=4.05$, $SD=0.84$). Another reason is increase quickness in implementation ($\bar{X}=4.03$, $SD=0.66$)

Fourthly, the researcher was analysis perspective of respondent's attitude toward obstacle influencing decision outsourcing logistics activities. For obstacle, the result is shows that main top 5 obstacles for decision outsourcing logistics activities is a risks to the confidentiality of the organization ($\bar{X}=3.86$, $SD=0.84$) if they make decision to outsourcing logistics providers. And another the obstacles to decision out sourcing logistics activities, they think that outsourcing logistics provider will increase organization expenditure ($\bar{X}=3.48$, $SD=1.05$). and some respondents think that employees in their companies have the knowledge and ability for doing logistics activities ($\bar{X}=3.38$, $SD=0.76$) which they no need to outsourcing logistics providers. If they transfer some logistics activities to outsource, Outsourcing will make employees lack of knowledge in their activities ($\bar{X}= 3.19$, $SD=0.81$) and sometime they might be faced with conflicts of benefits in the organization ($\bar{X}=3.14$, $SD=0.74$).

Research finding from questionnaire, both SME and large enterprise recognize that they will get convenience in operations when hiring logistics providers to doing logistics activities. Which this factors is very important for decision outsourcing logistics providers. which shows that professional think using logistics provider is quickly and easy in management. Logistics providers can make convenience in their organization operation. For obstacle, the questionnaire result is shows that main obstacle influencing decision outsourcing

logistics provider from respondent attitude is lack of management confidence in an outsourcing logistics providers. Organization will take a risk to the confidentiality. This is same result from personal interview which shows they are afraid of loss of control to an outside third party. The result shown that this research related with the research of the factors affecting the selection of Fourth Party Logistics provider in the automotive and consumer product industry. Which found the factor consists of;

1. The most important factors in selecting 4PL provider are supply chain integration, focusing on core competency and using multiple 3PL in the same time.
2. The differences in selecting 4PL provider between automotive and consumer product industry. Automotive industry concerned more in the need of supply chain integration, focusing on core competency while consumer product industry has focused more in customers supply chain demands exceeding its capability to deliver.
3. The customer's expected benefits are cost and efficiency improvement.
4. The obstacles in using 4PL provider are the lack of management confidence in an outside party to deliver the same high level service that company employees provided and loss of control to an outside party.

Recommendation

The researcher suggests to emphasize on qualitative research and focus group interview methodology from both automotive companies and logistics providers in order to understand more deeply about their attitude and suggestion.

This research is limited to the two size of companies are small and medium enterprise

and large enterprise who using outsourcing logistics providers in logistics activities. Therefore, the results from this research are not guaranteed against the negative results operation of all logistics

industry in other areas because of the different place, different people attitude or different social norm may yield to different outcomes results.



References

Aghazadeh, S. M. (2003). How to choose an effective third party logistics provider. *Management Research News*, 26(7), 50-58.

Chuthaphisith, T. (2007). *The factors affecting the selection of fourth party logistics provider in the automotive and consumer product industry*. Chulalongkorn University.

Denisa, H. (2013). The Analysis of the use of outsourcing services in logistics by Czech. *Manufacturing Companies*, 10-13.

Hoek, R. I. (2001). The contribution of performance measurement to the expansion of third party logistics alliances in the supply chain. *International Journal of Operations and Production Management*, 21(1), 15-29.

Hugh, K. (2013). The Analysis of the use of outsourcing services in logistics by Czech. *Manufacturing Companies*, 25-30.

Knemeyer, A. M., & Murphy, P. R. (2005). Exploring the potential impact of relationship characteristics and customer attributes on the outcomes of third-party logistics arrangements. *Transportation Journal*, 44(1), 5-19, 2005.

Lim, W. S. (2000). A Lemons market: An incentive scheme to induce truth-telling in third party logistics providers. *European Journal of Operational Research*, 125(3), 519-525

Murphy, P. R., & Poist, R. F. (1998). Third-party logistics usage: an assessment of propositions based on previous research. *Transportation Journal*, 37(4), 26-35.

Sheffi, Y. (1990). Third party logistics: present and future prospects. *Journal of Business Logistics*, 11(2), 27-39

Sink, H. L., Langley, C. J., & Gibson, B. J. (1996). Buyer observations of the US third party logistics market. *International Journal of Physical Distribution & Logistics Management*, 26(3), 38-46,

Stank, T. P., & Maltz, A. B. (1996). Some propositions on third party choice: domestic vs. international logistics providers. *Journal of Marketing Theory and Practice*, 4(2), 45-54.

Thailand Borad of Investment. (2015). *Structure of Thai Automotive Industry*. Retrieved from <http://www.boi.go.th/index.php?page=index,2015>.

The progress group LLC. (2017). *The Logistics outsourcing*. Retrieved from <http://theprogressgroup.com>.

