PRIORITIZATION FACTORS OF LOGISTICS SERVICE QUALITY ON RETAIL COMPANIES

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ABSTRACT

Abstract—Logistics service quality is the importance of customer satisfaction and succession of the organization. The logistics service sector needs to maintain and increase a high level of service quality because of long-term market sharing and also to present the potential and credibility of the organization. This research purpose is to study factors affecting logistics services in retail companies and finds techniques to prioritize the factors of logistics in the retail company. The results of this study found 12 factors influencing this service. Analytic Network Process (ANP) was one of the techniques in Multi-Criteria Decision Making (MCDM), it finds alternatives solution for the most suitable decision which applies to both qualitative and quantitative factors. Therefore, ANP was a suitable technique due to it was general and could be prioritized from an expert point of view in retail companies. Then, the output is developed as a guideline for policies that are successful in managing the organization in the future.

Keywords—Logistics Service Quality, Analytic Network Process, Retail

INTRODUCTION

Nowadays, organization management requires taking into account logistics activities for management from upstream to downstream for having the competitive advantage. From the importance of the logistics system, the government of Thailand has always had a policy to drive the logistics system to raise the level of international competitiveness such as the NSW systematic investment project to link trade information, Rail transport to increase transport efficiency leading to cost reductions for entrepreneurs and also creating competitive opportunities. In 2021, it was found that the economy of the business logistics has an added value of more than 400 billion baht from increased transportation to growth in the online business. Even though there is an expansion of the domestic economy, the competition needs to study the main cost of logistics consisting of 3 costs: 1) Transportation cost 2) Inventory cost and 3) Cost management (Office of the National Economic and Social Development Council (NESDC), 2021) to produce competitive opportunities and make a good service quality for businesses. Especially for the retail business in 2021, it has Gross domestic product (GDP) has ranked 2nd in the country earning a value of 2.7 trillion baht with systematic store management. Which includes a modern logistics and distribution system as well as increasing online trading channels and using various technologies to create a competitive advantage of marketing. (Narin Tunpaiboon, 2022) Therefore, managing the quality of logistics services in the retail business is an important issue for enhancing future competitiveness in the industry sector.

The purpose of this research was to study factors affecting logistics services in retail companies to know the factors affecting the quality of logistics services and find techniques to prioritize the factors of logistics in the retail company as a guideline for ranking the importance of factors leading to the formulation of guidelines or policies to improve the quality of logistics services.

LITERATURE REVIEWS

SERVQUAL

Service quality theory have been developing since late 1970s, the concept of service quality has gained widespread attention from market researchers and the general public. Because service quality is the way to success in business competition. Service quality or SERVQUAL is an attitude arising from the comparison between expectations and perceptions of actual actions. The assessment of service quality in 5 dimensions (Ladhari, 2009) is as follows:

1. Tangible is the quality of things that can be exact or evident (Tangibility) meaning the physical characteristics that can be seen and touched to make it convenient for service recipients, helping customers to recognize that employees are willing to provide service and can clearly easy to understand.
2. Reliability is credibility or reliability refers to the standard of service that can be trusted and dependable. It is accurate to the needs of the service recipients and is consistent.
3. Responsiveness is the response of the employee and responding to service recipients (Responsiveness) means providing fast service, willingness to provide service as soon as the client requests it, and being ready to provide services thoroughly.
4. Empathy is the attention of the employees. In other words, knowing and understanding customers (Empathy) means the quality of attention and understanding the needs of clients with diverse needs and approaching clients' problems individually.
5. Assurance is sureness and quality assurance (Assurance) refers to the assurance of the service quality and the ability to build confidence in the service recipient to feel that they are receiving the best service.

Logistics Service Quality

The quality of logistics services has received a lot of attention, for example, development and improvement, providing services as well as creating appropriate measurement tools to drive better service quality (Andrejić, 2019). However, selecting the appropriate factors is necessary in order to maximize the impact on service quality. There are many factors that affect the quality of logistics services depending on different times and perspectives. from the research, the factors that affect the service quality can be divided into 12 factors as shown in Table 1.

Table 1 Factors of logistics services

Factor	Definition
Order Quality	Providing quality or efficient order services.
Quality of Employee	The quality of personnel or contacts providing services
Service Cost	Cost of logistics services
Quality of Information	Information is available and accurate in all respects.
Order Accuracy	Accuracy and completeness of the order according to the requirements.
Flexibility	Service can be adjusted according to problems or changes.
Punctual	The service is punctual. Have a short lead time for ordering or serving.
Order Handling	In case of an abnormal situation, service providers can report discrepancies and the origin of the situation. It also helps customers to resolve the situation.
Order Release Quantity	Able to follow orders/services to manage quantity of product demand requested by customers.
Failures	Failures of management in various areas
Order Condition	Providing services that are safe in terms of transportation and keeping the goods in accordance with the conditions.
Order Processing	Steps or processes for efficient service and ordering to make a variety of choices and convenience for service.

Source: (Andrejić, 2019; Giovanis et al., 2013; Sutrisno et al., 2019)

Multiple criteria decision-making, MCDM

Multiple criteria decision-making (MCDM) is widely applied in various problems. There is a trend of increasing application as Figure 1 shows that it is an important and accepted method. This method is used to factors in the variance of the problem (Emovon & Oghenenyerovwho, 2020; Stojčić et al., 2019). Deciding on variables under the expert of the problem or those involved in the problem is one way to give credibility to the research tool and to guide the way in which to formulate a solution to the problem. Early research studies or new research problems that change according to environmental factors all the time. Citation of other research is difficult or may be able to find information only in the environment. Having experts who see changes in industry or studies are therefore popular or in other words, assessing factors related to concepts, feelings, and factors that cannot be quantitatively measured. An expert assessment method is needed so that a group of factors influencing a problem can be formulated or decided on a common approach.

There are several MCDM methods such as Analytic Hierarchy Process (AHP), Weighted Sum Model (WSM), Weighted product model (WPM), Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), VIKOR, PROMETHEE, ELECTRE Multi-Attribute Utility Analysis (MAUA) and Decision making trial and evaluation laboratory (DEMAEL), etc.(Emovon & Oghenenyerovwho, 2020) Each method was applied to different problems as shown in Figure 1.

Method / Application	AHP	ANP	SAW	TOPSIS	ELECTRE	LA	GP	MOP	VIKOR	DEMATEL	PROMETHEE	SMART	FMCDM	Group MCDM	Group Decision Making	multiple criteria analysis	MAUT/MAVT	Compromise Programming	SMAA	OWA	DSS	DEA	choquet integral	rough sets Theory	Fuzzy set theory	Heuristic Algorithms	Other Methods	Total (Fuzzy/Crisp)	Total
Environment Management	3 / 1				1			1					3	1	1 / 3	2	1	2	1		9 / 1						2	27 / 5	32
Water Management	5	1	1	2			1				3					3	2	3		1 / 1	2				1		3	28 / 1	29
Business and Financial Management	9 / 5	4 / 2	1	5 / 2	1		2	1	1	1	1		8	1	1	1	1				1 / 1	1		1	5		7 / 2	39 / 26	65
Transportation and Logistics	14 / 9	11	8	5	1		6 / 2	7 / 4	2 / 1	1	2	1	4	2		1		1			2	2	2		8	5 / 8	2	79 / 39	118
Manufacturing and Assembly	4 / 4	1	1 / 1	1			1 / 1	5	1				4 / 1	1		1	1	1			3	2			2		5	34 / 14	48
Energy Management	5			2				3			3		2		1	1					1				1		5	21 / 3	24
Agricultural and Forestry Management	1						2									1	3				2						3	12 / 0	12
Managerial and Strategic Planning	9 / 3	6		3 / 1	1	1	2 / 1	4		1	4		5		2	1	1				1 / 1	2			1	1	8	47 / 11	58
Project Management and Evaluation	11 / 6	4		4			3	1		1			1	1	2	1					2 / 3	1			1		9	40 / 11	51
Social Service	1	2		1 / 1			1	3																			3	11 / 1	12
Military Service	2			1				1			1	1			1						1 / 1				1		3	10 / 3	13
Other topics	7 / 3	3 / 1	1	4 / 1				4			1	1	2 / 4			1		1			1	1	2		2		8 / 2	39 / 11	50
Non application Papers	38 / 2	3	2	10 / 5	7		15	16 / 3	3	1	3	1	1 / 1	1		4	7	1 / 2	8	6	12	8	6	2	12	4	72 / 9	230 / 44	274
Total	142	37	5	54	15	1	37	53	8	5	22	5	44	7	15	11	17	9	11	8	44	17	10	3	33	18	155	786	786

Figure 1 MCDM method and application
Source (Toloie-Eshlaghy & Homayonfar, 2011)

METHODS

In 1999, Thomas Saaty developed a technique known as Analytic Network Process (ANP) based on AHP by ANP technique. This process can manage the relationship between the decision criteria and their impact on each other between the decision criteria and the alternatives by using the comparison ratio and processing in the form of a super metric. ANP techniques can reduce AHP errors and can be applied to many tasks such as the selection and recommendation of profitable stocks using the Analytic Network Process (ANP), which has presented a prototype method using Multi Criteria Decision Making (MCDM) analysis to assist real estate developers in making project development decisions by taking into account the project's risk factors. From preliminary research, it was found that This prototype can help entrepreneurs make more efficient decisions on which projects to develop. The ANP method has 4 main steps (Pumalee, 2013), which can be applied to the research as follows:

Step 1: Define the structure of the problem or build a model, which is the factor that most affects the quality of logistics services.

Step 2 : Match the vector importance matrices. Determine priorities by using a matrix as a tool to compare priorities in pairs. By making pairwise comparisons between groups of elements and compare in pairs between elements within the same group. Then, compare the group relation of the elements and replace the values with numbers according to the ratio in order to indicate the level of importance with significance from 1 to 9. It was found that the range of numbers from 1 to 9 was most suitable for differentiating human comparison decisions. A score of 1 is equal in importance between the two compared components. In the other hand, a score of 9 is the most important of an element relative to an element being compared, weighed by an expert. Which will be considered based on the qualifications that are relevant in the retail business, have a working period of not less than 5 years and an education level from a bachelor's degree or higher.

In this research, the quality of SERVQUAL service was studied with 5 groups of factors and 12 factors. The assessment was then performed on a scale of 1-9 to indicate the level of significance by comparing pairs between groups of elements. which has details as shown in Figure 2
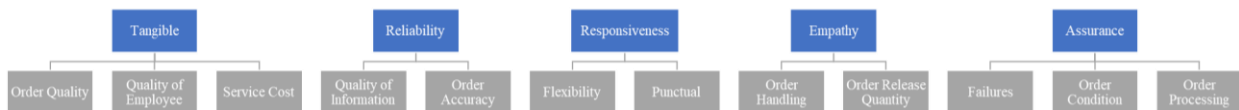

Figure 2 SERVQUAL and Logistics Service Quality Factors

Step 3: Calculate the order of precedence in Supermatrix. In this step, the order of precedence of all is computed by the Supermatrix, a procedure similar to the Markov chain process.

Step 4: Choose the best alternative from step 3 to get the value of the priority score of each choice. The score value of the highest scoring option is the best choice under the consensus of the factors.
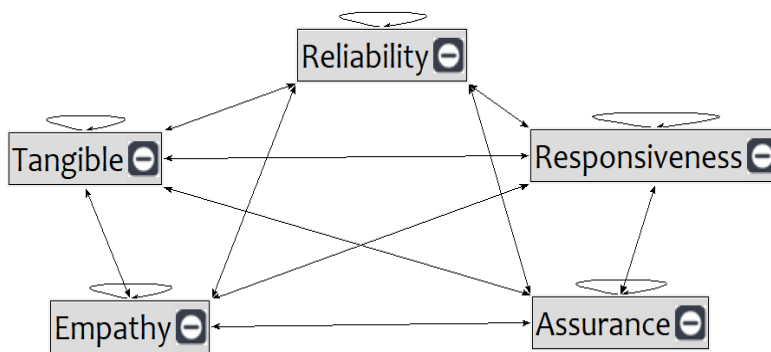

Figure Factors Network

RESULTS

The relationship of importance weight from experts affect to ANP technique with difference perspective. After factor analysis using ANP technique present prioritization factors of logistics service quality on retail companies. Moreover, priority of each factor in each SERVQUAL groups present importance group. For example, the top 5 factors affecting the quality of logistics services are as follows: 1) Failures 2) Service Cost 3) Order Accuracy 4) Order Quality and 5) Flexibility. In each factor lead to decision making in action of activity and plan and enhance logistics service quality in the further.

CONCLUSION AND FUTURE WORK

According to the ranking, it will be found which factor has the greatest effect on service quality. The information from the analysis is useful for planning operations or determining appropriate guidelines for creating better service quality and being able to manage more directly to the point. It affects resource management such as

the number of employees, training, budget allocation and equipment, etc. Clear planning and policy make it possible to achieve goals and to promote the application of technology to increase operational efficiency (Hiranphaet et al., 2020). Creating a quality level of logistics services to ensure customer satisfaction. Although knowing the factors are important to the service quality, a clear approach can be established. However, the development of interrelated factors or good practices as examples for development would result in the improvement of service quality. Therefore, in the future, the application of Decision-Making Trial and Evaluation Laboratory (DEMAEL) technique to determine the influence of factors will be an important part in selecting factors for development, know the direction of the level of quality of logistics services or use Data Envelopment Analysis (DEA) to measure and evaluate good operational patterns. After that, it was used as a case study to develop a quality model for providing logistics services. Anywise, these guidelines are very useful for managing and enhancing the quality of logistics services in order to promote the organization's development and good competitiveness in the future.

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