

# Factors Affecting the Adoption of Technology in Logistics Service Provider A Case Study in Thailand

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**Abstract**—The purpose of this independent study was to study demographic factors and information technology factors in 3 factors in Technology Readiness, Improvement of Information Technology skills and information technology acceptance that affects the quality of service of logistics service provider business. Questionnaires were used as the research tool to collect data. The quantitative empirical Research was conducted using an online questionnaire instrument, and Multiple regression techniques were used to test the proposed model. Based on 189 samples from respondents working for logistics service provider companies in Thailand. Data were analyzed using descriptive statistics, including percentage, mean, and standard deviation, and inferential statistics, including Simple Regression Analysis and Multiple Regression analysis. At the statistical significance level of 0.05, The results found that most of the employees were females, 25-29 years old, from Customs Clearance Department. The levels of information technology factors include Technology Readiness, Improvement of Information Technology skills, and information technology acceptance was at a high level in all aspects. The hypothesis results found that all of Information Technology Factors affect the quality-of-service logistics service provider.

**Keywords:** Information technology acceptance, quality of service, logistics service provider

## I. INTRODUCTION

At present, information and communication technology has been developing rapidly and played an essential role in the business. Various organizations are using information technology to create an advantage in competition with others. The progress of economic and industrial in the logistics technology also really involve. Current businesses pay attention to efficient management tools and adjust under an economic system without rapidly changing borders. The optimization operation and maintaining customer satisfaction outside and inside the organization need to have integrated activities and information to

strengthen business services. The goal of success in service operations is customer satisfaction, giving customers a good feeling and being impressed with the service received. Make the client back to the service regularly. However, step into the logistics 4.0 more impulse to a logistics service business to create Technology, Innovation, and solutions covering logistics operations. In Thailand, we have many logistics service providers (LSP). LSP is a company that services transport in everything from transport documents, letters, and the container, express and logistics, services such as distribution service, air freight, Sea freight and others. Consequently, the researcher is interested in studying the Information Technology factors affecting the quality of service of Logistics service providers to determine the effectiveness of information technology in business logistics in customer service on the part of the warehouses. Freight services, Clearance services, and information technology services to the logistics efficiency even more.

### A. Objective of the study

To examine the effect of three Information technology factors, including Technology Readiness, Improvement of Information Technology skills, Information Technology Acceptance and Quality of service of Logistics service provider business.

### B. Research Hypothesis

1. There is a significant effect of Technology Readiness and Effectiveness of Logistics service provider business operations.
2. There is a significant effect of Improvement of Information Technology skills and Effectiveness of the operations of Logistics service provider business.
3. There is a significant effect of Information Technology Acceptance and Effectiveness of the operations of Logistics service provider business
4. There is a significant effect of Technology Readiness and Quality of service on Logistics service provider business.
5. There is a significant effect of Improvement of Information Technology skills and Quality of service of Logistics service provider business.

6. There is a significant effect of Information Technology Acceptance and Quality of service of Logistics service provider business.

7. There is a significant Effectiveness of the operations and Quality of service of the logistics service provider business.

8. The significant effect of the operations is the moderator variable effect of Technology Readiness and Quality of service of Logistics service provider business.

9. The significant Effectiveness of the operations is the moderator variable effect of the Improvement of Information Technology Skills and the Quality of service of the logistics service provider business.

10. There is a sign that the effectiveness of the operations is moderator variable effect of Information Technology Acceptance and Quality of service of Logistics service provider business

### C. Research Framework

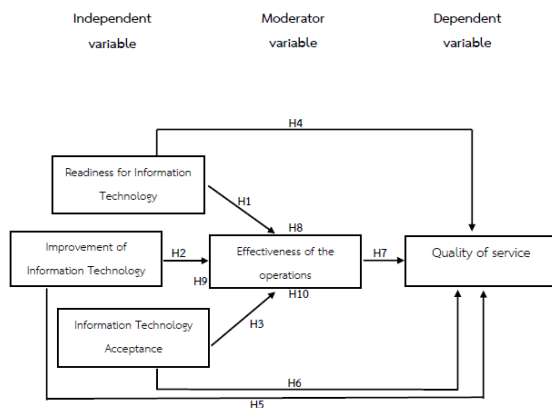


Figure 1 Research framework

## II. LITERATURE REVIEW

### A. Information technology concepts and theories

From the meaning of information technology, the researcher concluded that Information technology refers to various techniques used to assist in data storage, query processing and exchanges—information both inside and outside the organization for maximum efficiency and effectiveness in the process.

### B. Information technology concepts and theories

[21] the term Information Technology (often referred to as IT is widely used. Almost every industry sees the importance of information technology. Until it is said that today's world is the world of the IT era, information technology will consist of "technology" and "information" that each word has the following meanings.

Technology is the application of scientific knowledge for production, creating operation methods, and including devices that do not occur naturally. At present, humans

have adopted different technologies. Many used to facilitate countless daily activities

Information is the result of the processing of raw data. By collecting raw data from various sources through processing, whether it is grouping data, sorting data, calculating, and summarizing afterwards, may bring information that can be presented in the form of a report

Suitable for further use, good information will benefit human life. Whether it is life, news, academic and business knowledge

### C. Concepts and theories of information technology development

[4] explained that the availability of information technology means the information technology system used to collect information and then bring the information that has been processed and results into information consisting of hardware, software, personnel, including network systems. The organization's network will allow employees to work efficiently and quickly, resulting in work efficiency.

### D. Concepts and theories of information technology systems

[47]. Information technology and the changing fabric of the organization Science, 18(5), 749-762. has defined the acceptance of Innovation means the decision to bring Innovation because Innovation is the right way and is more beneficial than accepting the modernization of the person as a process. Starting from the experience of change, being persuaded to allow Innovation, deciding to accept or reject the decision and confirming that practice, this process may take a slow or fast depending on the essential factors that are the person and the nature of Innovation.

### E. Concepts and theories of performance effectiveness

[16]. said that "effectiveness" according to the Royal Institute Dictionary, BE 2525, Royal Institute (2003) gave the meaning that the success or outcome that "Effectiveness". The opinions of different scholars Can be divided into two characteristics, which are the first, focus on operational efficiency, and is said to be one way to judge the value of the project, can be done. By comparing the results from the project with the objectives of the plan set forth, Covering the success of the effect is based on suitability. These objectives are in line with the needs of the target population, situations, and trends. In the case favorable to the operation and the project's success, the planning should include the reasonableness of the concepts and theories used in the management and process of resources, such as personnel, materials, equipment, tools and budget. (Feasibility) The work plan that is feasible within (Sufficiency and appropriateness of resources) and should have external possibilities (The trend of the expected results) for the suitability of the operation should consist of effective personnel management and budget and with the implementation of the plan as well. The second aspect gives importance to success.

### F. Concepts and theories of service quality

The word "quality" (Quality) means something caused by customer recognition in comparison with the benchmark and can respond to customer needs Causing satisfaction Which has given the meaning of the word quality Which is the same way as in the following example

Dickens [14] said: Quality is a feature of excellence. Without defects and can answer the need or benefit with customers

### G. Technology Acceptance Model

(Technology Acceptance Model or TAM) is the theory that the converter dust and applied from the theory of the action according to the principle of cause and effect or TRA of [17], which is the theory that explains the understanding and prediction of human behavior. The model technology acceptance (TAM) describes the factors. The influencing of the user computer technology. It is based on the attitude of users.

Moreover, the difference between the technology acceptance model (TAM) and action theory with the reason (TAM) is the action theory of cause. Results (TRA) will focus on the explanation of the purpose of their attention to behavior. However, the technology acceptance model (TAM) measures consumers' attitudes toward technology adoption factors. Moreover, the factors that cause the actual use.

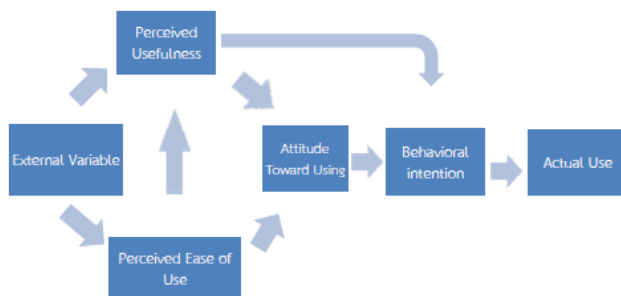


Figure 2 Technology Acceptance Model (Davis et al. (1989))

## III. RESEARCH METHODOLOGY

To study information technology factors affecting the quality of services of the logistics business. The researchers were conducted as follows:

### A. Type of Research

Information technology factors affect the quality of services of logistics service provider business. The researchers used quantitative Research from survey research and chose to collect data using a questionnaire (closed end)

### B. Population and Sampling

The targeted population was an internal employee of LSP, with 189 samples. Calculate by Sample Size Determination of [46] and use simple random sampling.

The instruments used in the study

The researcher used the questionnaire to collect data; the step follows as

1. The study from document journal theory and literature that involve with Information Technology factors affecting Quality of Service of Logistic service provider business for determine the scope of a questionnaire and to be a guideline for creating a questionnaire to relate with objective and appropriate with theory

2. Create a questionnaire by a study from other researchers' questionnaire that involves our Research and brings some part to adjust and apply with this Research.

3. Bring the questionnaire offer to the research adviser by his decoration to check the questionnaire's accuracy and suitability.

4. Checking instruments Quality by evaluating the reliability of questionnaire follow

- Bring a questionnaire to try out with a similar sample group in 30 samples

- Check completeness of questionnaire and code to statistical software

- Evaluate the reliability of the questionnaire by Cronbach to find Alpha Coefficient get reliability at 0.97

### C. Data Collection

- Primary Data Collection, the researcher used the questionnaire as a research instrument for data collection due to the primary data. One hundred eighty-nine questionnaires were copied and distributed to LSP. All questionnaires were used to ask the internal employee of the LSP.

- The questionnaire was divided into four parts. When the questionnaires were filled in, the researcher asked the responder for a favor to send them back to the researcher.

Secondary Data Collection Due to the secondary data, the researcher collected required information such as journals, documents, magazines, the Internet, and other sources relating to the study of the Information Technology factors affecting efficiency in services of the logistics business. This is an essential concept because someone else's data for other purposes would help fulfil the points.

- complete coding questionnaire to statistical software for analysis and evaluation data

### D. Data Analysis

Descriptive statistics, including percentage, mean, and standard deviation and inferential statistics, evaluated the respondents' demographic information. The measures of central tendency were used to analyze the demographic information of the respondents, to evaluate the raw data of employees

Simple Regression Analysis was used to determine three Information Technology factors, the effectiveness of the effect of the operations to the quality of service of the

effecting pairs of independent and dependent variables. This Regression method is used to test the relationships between variables in Hypothesis 1-7.

Multiple Regression Analysis was used to determine the effectiveness of the operations that are a moderator variable between Information Technology factors affecting the quality of service of the effecting pairs of independent and dependent variables. This Regression method is used to test the relationships between variables in Hypothesis 8-

The computer program SPSS (originally, Statistical Package for the Social Sciences) was used for statistical analysis. SPSS was also used for sorting, merging files, and manipulating data.

#### IV. RESULT

The results found that most of the employees were females' percentage is 57.1, 25-29 years old percentage is 34.9, Department of CCD (Customs Clearance Department) percentage is 60.3. The levels of information technology factors were at a high level in all aspects. By Technology Readiness mean is 3.8851, Improvement of Information Technology skills mean is 3.9841 and information technology acceptance mean is 3.9749 Effectiveness of the operations factors was in the high level in all aspects mean is 4.04 and quality of service was in the high level in all aspects mean is 4.12

Review, Research, test features that data appropriate to the technical analysis of the Path analysis By Pearson correlation test model (Pearson's Correlation Coefficient). Among the variables to find the matrix relationship between variables for each pair. To avoid relationships between variables that are high until the problem occurs, share straight (Multicollinearity) to form a multiple regression analysis by independent variables that are highly related, with the correlation coefficient higher than 75 or 80. in both. Positive and negative ( $r > \pm .75$  or?  $R \pm .80$ ), cut the independent variables correlated with these variables. Suchart Prasit States Yasin (2543 (2000)), then the researcher was leading the Pearson correlation coefficient between variables, a form that has been analyzed in conjunction with the valuation matrix. The relationship between the variables for each couple to avoid the problems that arise from the relationship between the variables is too high—the issue of sharing multiple linear variables (Multicollinearity). By considering the value of durability test operators (Tolerance) and value (Variance inflation factors) of VIF each variable, because of the straight joint problems, many variables will not occur if the amount of durability than 0.1 [19]. Creative array values and medication are not more than 10 VIF [2].

TABLE I: VIF VALUE

Factors	The development of Information technology capability	Acceptance of Information technology	Operation effectiveness	The quality of service	VIF
The availability of Information technology	0.708**	0.700**	0.597**	0.641**	2.276
The development of Information technology capability		0.787**	0.681**	0.693**	3.201
Acceptance of Information technology			0.698**	0.694**	3.262
Operation effectiveness				0.729**	2.172

\*P<0.05, \*\*P<0.01

The table showed a coefficient of 0.597 to 0.787, considering the relationship between the Press thousand independent variables themselves. The result found that the relationship was significant at the 0.01 level, and the VIF of variables ranged from 2.172 to 3.262, which is less than ten shows. No problem, the United Press International Seminar of the independent variables. (Multicollinearity) (Belsley, 1991, cited in Sanchai Kitiya Noonan, 2552), researchers took data from analytical Has a simple regression to show the influence of the independent variable on the dependent variable

Hypothesis 1 There is a significant effect of availability Technology effectiveness of the logistics service provider business. Hypothesis testing found a significant effect on availability Technology Readiness and the Effectiveness of the Logistics service provider business operations. That involves a research hypothesis at significance at 0.01 and adjusting R squared at 0.35 that conform to the Research of Praveen Khiewvichit 2015. He found; There is a significant effect of Technology. a. Information technology system. Both hardware software, including networking, aims to operate or work practices, which, as a result, will make people operate more efficiently.

Hypothesis 2 There is a significant effect of the development of Information Technology skills Effectiveness of Logistics service provider business. Hypothesis testing found a significant effect of Development of Information Technology skills and Effectiveness of the operations of Logistics service provider business. That involves with research hypothesis at significance 0.01 and adjust R squared at 0.46 and conform to the Research of Praveen Khiewvichit 2015 he found There is a significant effect of Improvement of Information Technology skills and Effectiveness of the operations of Logistics service provider business. There are plans to develop new skills and knowledge. Information technology personnel to develop knowledge. The ability of information technology increased. To be used in practical applications. Therefore, human resource development is significant in helping organizations achieve their goals to achieve the organization's goals.

Hypothesis 3 There is a significant effect adaption of Information Technology has on the effectiveness of the logistics service provider business. Hypothesis testing found a significant effect of adoption of Information Technology has effects on the logistics service provider business operations. That involves with research hypothesis at significance at 0.01 and adjust R squared is 20.48 and conform to the theory of [11] [38] [15] [37] Summarizing the importance of personal development as follows. Users believe that the Technology used to be easy to use can operate without effort — the perceived ease of use influences attitudes towards use. Moreover, many studies found that the perceived ease of use influences the perceived benefits in some studies. This Research discovered that the perceived ease of use—a direct influence on the user's use.

Hypothesis 4 There is a significant effect of Technology Readiness and Quality of service on Logistics service provider business. Hypothesis testing found a significant effect of Technology Readiness and Quality of service on Logistics service provider business. That involves with research hypothesis at significance at 0.01 and adjusting R squared at 0.40 and conformed to the theory of [5] Found that the availability of information and communications technology is the device's condition. Also, operating system information technology is all full. Able to use the device. So, when the information and communications technology is available, the operating system needs a manager or can use the device and operating system. To perform a quick, accurate and operational efficiency even more.

Hypothesis 5 There is a significant effect of Improvement of Information Technology skills and Quality of service of Logistics service provider business. Hypothesis testing found a significant effect of Improvement of Information Technology skills and Quality of service of Logistics service provider business. That involves with research hypothesis at significance at 0.01 and adjusting R squared is 0.47 and conform to the theory of [28]. The importance of personal development is as follows. Human resource development plays an essential role in empowering people—operational efficiency. Therefore, staff morale is satisfied in practice. There is a responsibility to be more active.

Moreover, performing willingly full capability enables performance to achieve the organization's aims — causing the initiative to develop new jobs. Affecting the organization's management, the organization is always up to date. Keep pace with changes and can lead to changes in various aspects as well.

Hypothesis 6 There is a significant effect of Information Technology Acceptance and Quality of service of Logistics service provider business. Hypothesis testing found a significant effect of Information Technology Acceptance and Quality of service of Logistics service provider business. That involves a research hypothesis at significance 0.01 and adjusting R squared at 0.47, conforming to the Research of [36]. She found the ease of use has resulted in the decision to

purchase e-book consumers in Bangkok. It is statistically significant because the book categorizes e-books to make it easier to search for information using a jiffy. Use or have searched for information about books 24 hours and flexible in use.

Hypothesis 7 There is a significant effect on the operations and quality of service of the logistics service provider business. From hypothesis testing found that Technology Acceptance and Online Consumer Behavior Affecting E-Books' Purchase Decisions of Customers in Bangkok That involve with research hypothesis at sig 0.01 and adjust R<sup>2</sup> is 0.52 and conform to the theory of [32]. The study discussed the service quality dimensions; it shows that providing excellent customer service must have a good process. The study on the quality dimension that internal customers often featured include Availability of Support, Responsiveness of Support, Timeliness of, Completeness of Support and Pleasantness of Support Conclusion and Recommendation

TABLE II. SUMMARY OF HYPOTHESIS TESTING

Hypothesis of the study	Hypothesis testing	Result
Hypothesis 1 There is a significant effect of availability Technology effectiveness of the logistics service provider business	$\beta=0.597$ , Value<0.0001	Accept
Hypothesis 2 There is a significant effect of the development of Information Technology skills Effectiveness of Logistics service provider business	$\beta=0.681$ , Value<0.0001	Accept
Hypothesis 3 There is a significant effect adaption of Information Technology has on the effectiveness of the logistics service provider business	$\beta=0.681$ , Value<0.0001	Accept
Hypothesis 4 There is a significant effect of Technology Readiness and Quality of service on Logistics service provider business	$\beta=0.698$ , Value<0.0001	Accept
Hypothesis 5 There is a significant effect of Improvement of Information Technology skills and Quality of service of Logistics service provider business	$\beta=0.641$ , Value<0.0001	Accept
Hypothesis 6 There is a significant effect of Information Technology Acceptance and Quality of service of Logistics service provider business	$\beta=0.693$ , Value<0.0001	Accept
Hypothesis 7 There is a significant effect on the operations and quality of service of the logistics service provider business	$\beta=0.694$ , Value<0.0001	Accept

## V. SUMMARY AND FUTURE RESERACH

The results of this study can further explain the phenomena. Information technology and other factors that affect the quality of the service provider or other relevant factors. The Research has strongly suggested issues for further Research as follows

1. To encourage the study population samples or other groups such as employees who provide other services, such as business, finance, banking, selling products online or the airline business. To study the line of conflict or referring criteria evaluation factors in Information Technology and the achievement of the theory test. That

affects the quality of service or not. Because each agency Each organization shall have the function of these terms and conditions or rules, the rate varies.

2. This study gives employees the leading logistics provider as an assessor and a sense of self-awareness. It may result in a bias in respondents. Therefore, to study further maybe that performs command or customers as respondents to assess the quality of the phone service provider for more information

3. Recommended the retention of customers served. To assess the value of service.in logistics service provider business The results were compared with the results of the evaluation of performance, quality of service providers.

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