

CHAPTER III

RESEARCH METHODOLOGY

This chapter presents details of research methodology, which consists of major topics such as, research framework, conceptual framework, variables of the study, hypothesis statement, population, sample size, research instrument, data collecting, data analysis, and statistic used in the study. The details of each topic are as following.

3.1 Research Framework

In this part of the study, the researcher focuses on the framework of the research. The researcher will relate the theories and the literature review to develop the conceptual framework of the research. The results of this study will be presented in the way that referred to theoretical model of the study.

3.2 Conceptual Framework

The conceptual framework illustrates the relation between industrial category which are automotive industry and consumer product industry and the factor used to select 4PL provider. Obviously, the independent variable of this study is the industrial category. The dependent variable is the 4PL's selecting factor. The research's conceptual framework is developed from theories, related literature and previous study. Figure 3.1 portrayed conceptual framework for this study.

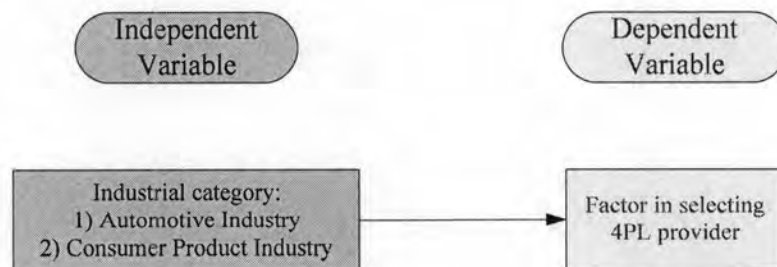


Figure 3.1: Conceptual Framework

3.3 Hypothesis Statement

After the identification of specific variables, the network of association among the variables needs to be elaborated so that relevant hypothesis can be developed and subsequently tested. Based on the result of the tests in hypothesis, the extent to which the problem can be solved through the findings of the research becomes evident. The researcher classified research hypotheses as below:

Ho: There is no difference of factor in selecting 4PL provider between automotive and consumer product industry

Ha: There is difference of factor in selecting 4PL provider between automotive and consumer product industry

3.4 Measurement scales

The researchers can specify measurement scale for each variable in this study as follows;

Table 3.1 Measurement scale for variables of the study

Studied variables	Measurement scales
1.Independent variable: Industrial category	Nominal scale
2. Dependent variable: Factor in selecting 4PL provider	Ordinal scale

The data of the dependent variable in this study (Factor in selecting 4PL provider) are collected through the questionnaire with rating scales questions.

3.5 Research Method Used

3.5.1 Descriptive Analysis

Descriptive analysis is used to describe the percentage, distribution, and frequency distribution of the demographic factors. As Zikmund (2000) propose that

descriptive analysis is applied to transform the raw data into a form that will make them easy to understand and interpret; rearranging, ordering, and manipulation data to generate descriptive information.

The most common statistical technique for tabulating data was percent distributions, means, and standard deviations. Percent distribution indicated the percent of customers who answer each of the available response options of each surveyed item. Mean scores measured the similarity in customer responses, but they do not indicate how response varies. The standard deviation measured the variance in responses. The more largely the standard deviation, the more dispersed the customer response to the item.

3.5.2 Hypothesis test

T-test for independent samples is employed in this study, in order to test the significant difference between two independent population's means, viewed here, as the companies in automotive industry and consumer product industry and also test in significance difference between each pair of factor which resulted form questionnaire survey. Aczel, 1999, stated that the t-test for independent sample is the most common test for the difference between two population's means μ_1 and μ_2 . By which the null hypothesis states that the two means are equal, and the two – tailed alternative states that the two population means are not equal will be applied for difference population mean between two industries.

$$H_0: \mu_1 = \mu_2$$

$$H_a: \mu_1 \neq \mu_2$$

by $\mu_1 =$ Automotive Industry

and $\mu_2 =$ Consumer Product Industry

Independent Sample t – test is used to determine the differences between automotive industry and consumer product industry toward factors in selecting 4PL. The null hypothesis will be rejected when significance or p-value is less than or equal to α 0.05 significance level.

Further more, the null hypothesis states that the two means are equal, and one – tailed alternation states that means in factor a is more than mean in factor b will be applied for difference population mean in each pair of factor.

$$H_0: \mu_a = \mu_b$$

$$H_a: \mu_a > \mu_b$$

by $\mu_a = \text{Factor A}$

and $\mu_b = \text{Factor B}$

Independent Sample t – test is used to determine the differences between each pair of factor selected by automotive industry and consumer product industry.

3.6 Target population

Population is a complete group of entities sharing some common set of characteristics. Zikmund (2000) defined that the target population is a specific completed group relevant to research project.

The target populations of this research study are divided into two groups. The former is automotive companies and the latter is consumer product firms. In order to enhance the validity of the result of the study and lessen the difference in size of the companies, the researcher scopes the population of the study to firms whose annual revenue are ranging from 1 billion to 200 billions baht. They are the majority of the automotive companies and consumer product firms as presented by Thai Chamber of Commerce (2005).

Table 3.2 Population number of automotive and consumer product industry.

Type of industry	Number of population
Automotive company	24
Consumer Product company	69

3.7 Determining Sample Size

Since there are small numbers of the population, thus, the researcher decides to collect data from total number of population.

3.8 Research Instruments

Questionnaire

In this study, the researcher will firstly conduct survey by using self-administered questionnaire as a research instrument to collect data for this research which are all information will be used to be an answer in research question.

The questionnaire consisted of three parts that can be expressed as follows:

Part 1: The respondent's general information

This part involves general information of the samples (automotive companies and consumer good companies), which consists of type of industry, capital investment, logistics activities used and type of outsourcing used. The questions in this part will be in forms of close –ended multiple choices questions.

Part 2: The factor in selecting 4PL provider

This part comprises questions about the attitude of the respondents toward factor in selecting 4PL provider. The respondents will be asked to express their attitude toward each factor in form of rating scale as details below:

- 5 = Most important
- 4 = Very Important
- 3 = Moderate important
- 2 = Less important
- 1 = Least important

Furthermore, respondents can add their opinion which not be given in the list by using the provided space.

Part 3: Expected Benefits and Obstacles Identification

In this part, the respondents will be requested to express their perception toward expected benefits and obstacles in using 4PL service. The question will be in rating scale under percentage form, starting from 0% to 100%. In addition, researcher will provide a space for the respondents to add more answers but were not in the list.

Pretest

Zikmund (2000) mentioned that pretests are trial runs with a group of respondents for the purpose of detecting problem in the questionnaire instructions or design. Pre-testing of this research will be applied with the data collection tool in order to test the reliability of the questionnaire by distributing copies of the questionnaire to the randomly selected respondents who have outsourcing logistics service provider.

The researcher will conduct a pretest with 20 respondents (10 respondents per industry) considered as target population. Mistake were corrected and adjusted in terms of sequencing, wording and structuring in order to prevent the communication bias between the researcher and respondents.

To assess the reliability of the questionnaire, calculation of Cronbach Alpha is utilized in this study. According to SPSS program, the result calculated by the Cronbach Alpha scores. According to Cronbach (1951) if a value of reliability estimate is 0.7 or over, it considered that the instrument is reliable. Therefore, this questionnaire can be used as the instrument for this research.

Depth Interview

After conduct questionnaire survey, the result will be run and concluded. In order to gain more depth information, the researcher will conduct *depth interview* by selecting two professional in each industry (automotive and consumer product) and another two professional from 4PL The researcher will request six professionals to

express their opinion toward all factors, expected benefits and obstacles resulted from questionnaire survey and also their additional idea towards these subjects that would be more applicable to Thai's industry.

3.9 Collection of data/ Gathering Procedures

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 respondents totally 93 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 and open-ended response question, and rating scale. The results will be processed through SPSS 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 web sites that were relevant to the study consequently they helped the researcher to understand the concept of 4PL service.

3.10 Statistical Treatment of Data

The Statistic Package for Social Science Version 13 (SPSS) is used for this research. There are two appropriate statistic techniques: Descriptive Analysis is used to analyze the characteristic of the respondents from the questions in part 1. While inferential statistic, such as independent sample t-test is used to test the research hypotheses from question in part 2 and 3.