

Chapter 4

Methodology

The purpose of this chapter is to present the research methodology of this study. The research design, including selecting industries, population and sample size, instruments, the measurements, the data collection method and the data analysis are explained in this chapter.

Research Design

Selecting Industries In choosing the industries to suit the purposes of this research, the selection criteria are based on trade performance and export potential. The industries selected for this study must meet these following three criteria:

1. The selected industries have been ranked in the top 10 in terms of export value of their products for the last three years (1995-1997).
2. The selected industries have been considered as sunrise industries according to the Master Plan for Industrial Development of Thailand (TDRI, 1997).
3. The selected industries have been considered as an export-focused sector in the export promotional plan of the Ministry of Commerce.

The four chosen industries which meet with these three criteria are food processing, gems and jewelry, garments, and electronic and electrical products and parts. To avoid biases inclusion of firms that are required to export by parent company policies, subsidiary companies are excluded.

To ensure that companies in each industry are displaying strong exporting effort, a list of companies considered to have major export activities is obtained from Thailand's Selected Exporters List, Year 1997-1998, of the Department of Export Promotion, Ministry of Commerce.

Sampling and the Sample Size The sampling frame for this study is the exporting companies in Thailand's Selected Exporters List, Year 1997-1998. The population of this study is 1,578 exporting companies located in Thailand. A stratified random sampling is used to select 60 companies from each of the four industries. The total sample size is 240 companies. Table 4.1 shows the population and the sample size.

Table 4.1 The Population and the Sample Size

Industry	Population	Sample Size
1. Electronic and electrical products	161	60
2. Food processing	512	60
3. Garments	467	60
4. Gems and jewelry	<u>438</u>	<u>60</u>
Total	<u>1,578</u>	<u>240</u>

Note: A sample size is determined according to the recommendation of Stevens (1986). Factor analysis should have five subjects per variable and multiple regression needs to have 15 subjects per one predictor. Both of these statistical methods need a sample size of not less than 100.

Instruments Data are collected through a questionnaire designed to fit the objectives of the study. The questionnaire consists of a series of questions and is divided into four main parts. They are company's profile, the respondent's response on marketing innovation activities in their company, the respondent's response on their company's export performance and the respondent's response on the level of environment that affect their company. The questionnaire is shown in Appendix B.

To ensure the content validity and reliability, the questionnaire development process includes the following steps.

1. Extensive review of academic literature, text and research articles to capture the measures of each key variables identified in the theoretical model.
2. Twelve in-depth field interviews conducted with export executives. In these interviews, the executives were probed regarding the key contribution of

marketing innovation, the preliminary operationalization of the constructs, and suggestions for developing marketing innovation in exporting companies.

3. A draft questionnaire is constructed using the results of the extensive review and twelve in-depth field interviews. A construct validity of the questionnaire is checked by advisers.

4. A small scale questionnaire is pre-tested by randomly selecting two firms from each of four industries. This process is to ensure the interpretability of the questionnaire items. Furthermore, the analysis of the pre-test results is beneficial because it can identify the key informant whose primary responsibility is the firm's export marketing.

Based on the results of personal in-depth interviews and questionnaire pre-tests, some modifications are made to the research instrument to make sure that respondents understand all questions in the questionnaires.

Measurement

The Marketing Innovation Model

Marketing innovation is measured by using three constructs. They are new product, new working process, and new market. The constructs in marketing innovation model (as seen in Figure 3.1 page 50) are measured as follows:

New Product A new product is measured by using four-item statements. Each item is scored on a six-point scale ranging from "strongly disagree" to "strongly agree". Respondents are asked to rate their agree/disagree levels regarding a company's new product based on these four statements. Sample items on this scale are: "This new product is highly innovative-totally new to the market"; and "This new product has higher quality than competing products such as tighter specifications, stronger, lasted longer, or more reliable".

New Working Process New process is measured by using five items. Each item is scored on a six-point rating scale ranging from "none" to "substantial". Respondents are asked to rate the extent to which their companies engaged in new

management processes during the last five years. Sample items on this scale are “use of computers”, “applying for ISO” and “downsizing”.

New Market New market is measured by using seven items. Each item is scored on a six-point rating scale ranging from “none” to “substantial”. Respondents are asked to rate the extent to which their companies engaged in new marketing activities during the last five years. Sample items on this scale are “degree of access to new market” and “degree of new packaging”.

The Proposed Full Model of Export Performance

The proposed full model of export performance is composed of 5 constructs. They are export performance, marketing innovation, firm resources, firm characteristics and environment. The measurement of each construct is explain as follows.

Export Performance Export performance is measured using a multiple-item scale based on Cavusgil and Zou (1994). Export performance is measured as the executive or export manager’s assessment of the initial strategic objectives of company, sales growth of the company in each year (1993-1997), export profit in each year (1993-1997) and overall performance. Due to the financial crisis in mid-1997 in Southeast Asian countries, performances of exporting companies in the year 1997 are excluded from testing in the LISREL model.

Marketing Innovation Marketing innovation is measured as mentioned above.

Firm Characteristics Firm characteristics are measured by using eight items: number of full-time employees, number of years the firm had been in international operation, profit attitude of executives, number of export product lines, and business management (with three sub-items). Each item is scored on a five-point rating scale ranging from “most important” to “least important”. Respondents are asked to rate their company characteristics in each item. Sample items on this scale

are “commitment of executives to exporting” and “perception of executives toward profit”. Business management is measured using three sub-items: “perception of executives toward developing and maintaining networks”, “simple organizational structure” and “centralized decision-making”.

Firm Resources Firm resources is measured by using seven items, each item scored on a five-point rating scale ranging from “most important” to “least important”. The respondents are asked to rate the significance of company resources. Sample items on this scale are “marketing knowledge”, “staff time” and “technology”.

Environment Environment is measured using 9 items. Each item is scored on a semantical seven-point rating scale ranging from “worse” to “better”. Respondents are asked to rate their perception toward the condition of each environmental variable during the years 1995-1997. Sample items of this scale are “politics”, “economy” and “society”.

Data Collection Method

Due to the low to medium response rate ranging from 2.3 per cent to 34.0 per cent from previous studies of export performance (Bilkey, 1987; Grosse and Zimm, 1991; Walters and Samiee, 1990), this study uses multiple techniques to ensure that the response in terms of usable questionnaires should reach 240. Techniques used in this study are: (1) doubling the list of sampling from 240 to 480 companies; (2) asking for cooperation in collecting data from organizations and associations in Thailand; (3) using personal references to contact individual exporters; (4) presenting a certificate of appreciation from the Joint Doctoral Program in Business Administration (JDBA) and providing the executive summary to respondents after the completion of the study; and (5) following-up the questionnaire response through telephone and mails.

Respondents are executive managers (president, general manager, export manager, marketing manager), who are responsible for exporting or marketing activities.

The field survey is conducted in two stages: pre-test and mailed questionnaire. These two stages of collecting the data are explained as follows:

The first stage Prior to the collection of data, personal in-depth interviews are employed with eight executive managers who are responsible for exporting or marketing activities in four selected industries (two companies for each industry) and with four high authorities in each four industries. Personal interviews enabled the discussion of export ventures in the total context of company characteristics, policies, companies' marketing innovation, performance and suggestions for improving performance in terms of marketing innovation strategy (see name listed and summary in Appendix C). The results from this stage are used to check the construct and content validity of the developed questionnaire.

The second stage Before collecting the data, personal contacts from the researcher as well as letters from the Secretariat of the Joint Doctoral Program in Business Administration asking for cooperation in collecting data (Appendix D), have been sent to the directors/presidents of the following organizations:

1. The Thai Chamber of Commerce
2. The Federation of Thai Industries
3. Department of Export Promotion, Ministry of Commerce
4. Thai Gems and Jewelry Traders' Association
5. Thai Frozen Foods Association
6. Thai Food Processors' Association
7. Thai Garment Manufacturers' Association

The Thai Gems and Jewelry Traders' Association, Thai Garment Manufacturers' Association and Federation of Thai Industries cooperated in distributing questionnaires to their committees and to members who are qualified as respondents in this study. To ensure an adequate response rate, two successive mailings are done. The first mailing contains a cover letter explaining the objectives of this research, the questionnaire, the request form and a self-addressed stamped envelope (Appendix D). Three weeks later, a follow-up questionnaire and cover letter are sent to those who do not answer by a given time. The incentives for participants are the certificate of appreciation from the Joint Doctoral Program in Business

Administration, and an executive summary upon the completion of the study if respondents fill their names and address in the request form or attached their name cards (see sample of certificate in an Appendix E).

In sum, developed questionnaires that are collected by hand and by mail have been sent to 480 exporting firms that meet the selection criteria outlined previously.

Validity and Reliability

The content validity is checked through the interview of 12 top management of exporting company. The reliability of the measures is assessed by using the feedback provided by another 12 top-level and middle level managers such as vice president, managing director, export manager, marketing manager and 5 academics in marketing field. Subsequently measurement purification analyses are performed on the data collected in the survey. The statistical examination of these data includes exploratory factor analyses confirmatory analyses, path analyses as well as calculation of frequency, means, variances, correlation matrices, adjusted item-to-total correlation, and coefficient alphas.

Data Analysis

Due to the exploratory and causal nature of this study, the Linear Structural Relationship Model (LISREL) is used to examine the hypothetical relationships among factors. Three benefits accrue via this method of statistical analysis. First, given the paucity of empirical studies to date employing the Aaby and Slater model in the Thai context, a proposed full model contains that the marketing innovation construct are best tested by using the Linear Structural Relationship Model (LISREL). These statistics results can explain the direction or probable causal paths among the variables tested. Secondly, the Linear Structural Relationship Model simultaneously allows for testing the relationship between each dyadic or pair-wise relationship among the variables. Finally, validation of the constructs of export performance, firm characteristics, firm resources, marketing innovation, and environment can be established using this statistical method.

The analysis is divided into three phases:

Phase One Preliminary analysis is employed using SPSS. All data are shown in per cent, mean, standard deviation and correlation.

Phase Two Second-order factor analysis is used in verifying the conceptual model of marketing innovation (as seen in Figure 3.1, p.50). The results shows the significant variables that can best explain the marketing innovation factor.

Phase Three After verifying the marketing innovation factor, LISREL is employed to test all eight hypotheses and the relationships among factors in "The Full Model of Export Performance" (as seen in Figure 3.2, p. 52). Three stages for testing the model are as follows:

- a) Testing the conventional model with three constructs: firm characteristics, firm resources and export performance in order to verify whether or not this model fits in Thai context.
- b) Testing the modified conventional model with the same constructs as (a) and adding the marketing innovation construct in the model. This stage will examine whether or not the proposed model fits the data.
- c) Testing the full model of export performance with the same constructs as (b) and adding environmental variables to a model. This stage will examine the goodness of fit of this full model, whether or not this proposed full model is the best fit compared to the model in stage (b).

Each model testing result will be shown in terms of model fit (χ^2) and proportion of variance explained (or R^2).

Criteria in Selecting and Adjusting the Fit Model

There are four basic criteria in testing the fit of the LISREL model: chi-square statistic (χ^2), p -value, standardize residual value and goodness of fit. According to the standard chi-square test, a small value of χ^2 relative to the degree of freedom indicates a satisfactory fit, while a large value relative to the degree of freedom suggests that the model does not fit to the data. Hence, some relationship exists among variables. To explore further how a model fits, Haberman (1978) has suggested that the residual analysis and the analysis of linear combinations of

frequencies be employed. Adjusted residuals provide indications of which observed frequency is larger or smaller than the expected frequency in the model. Each adjusted residual has the expected value of 0 and variance of 1. As N becomes larger, the distribution of an adjusted residual is the same as the standardized normal distribution $N(0,1)$. Overall, the fit is good if the Pearson chi-square and the likelihood ratio chi-square are non-significant and all adjusted residuals are well below 2 in magnitude (Haberman, 1978; Wiratchai, 1995).

Summary

The objectives of this chapter are twofold. The primary objective is to explain the research design: sampling design, instrumental design and analysis design. The secondary objective is to operationally define the variables in the two proposed models: Marketing Innovation Model and the Full Model of Export Performance. The criteria in selecting and adjusting the fitted model is explained. The presentation of results is fully discussed in Chapter 5.

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