

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter outlines the methodology employed in the study. The study was carried out by using the survey approach. This section provides a description of the study's objectives, the design of the research instrument, the sampling procedure, the data collection procedures, how the main constructs addressed in this study were measured, and the data analysis techniques undertaken to produce the results.

3.1 Objectives of Study

On a broad scope, the overall objectives of the study are:

- (i) To examine the eight composite critical success factors (CSFs) of information system (IS).
- (ii) To analyse the relationships among the composite CSFs and IS success in order to evaluate which factors have a direct/ indirect impact on IS success.
- (iii) To develop a model of IS success based on the basic structure of relationships among the composite CSFs considered in this study.

3.2 Research Instrument

The survey instrument was a four-page questionnaire, including a cover page to explain the research objectives. The questions relevant to this paper consisted of two sections. In the first section, personal and demographic data of the respondents were collected. This section contained two questions, i.e. division in the organization and the working experience. The first question intends to check

whether the respondents were come from the correct sample. The other question aims to gather data about the respondents' background in IT

In the second section, the questionnaire sought to measure respondents' perceptions on the importance of a list of CSFs towards successful implementation of IS in their organization. These CSFs are synthesized and derived from prior research and literature. [Doll & Torkzadeh (1988), Magal (1991), Magal et al (1988), Mirani & King (1994), Bergeron et al (1990), Leitheiser & Wetherbe (1991), Oglesby (1987), Carr et al (1993), Cheney et al (1986)]. (See Appendix 1)

This second section consisted of forty-six items that covered a total of eight composite CSFs. Of these forty-six items, seven items measured "quality of user-developed applications"; four items measured "user self-sufficiency" and seven items measured "organizational commitment". Besides, another seven items used to investigate the "quality of staff"; five items for "variety of services" and six for "quality of services". Apart from these, the remaining five items examined "facilitation of EUC" and the last five items for "IS role definition".

Participants responded to all items mentioned above on 5-point Likert scales ranging from a "1" (Not Important) to "5" (Very Important).

The completed questionnaire was pre-tested through a pilot survey using MBA coursemates. The objective of the pilot survey was to test the contents and clarity of the questionnaire. Based on the feedback obtained from these respondents, the final version of the questionnaire was developed.

3.3 Sampling Procedure

The study was confined to the headquarters of Hong Leong Bank, Kuala Lumpur. Since this is a pilot study, the target respondents were the executive staffs from both Credit Management Division (CMD) and Credit Card Centre (CCC). Quota sampling was employed to ensure a representative proportion of respondents was collected from each department. The study sets a 40 per cent quota for each department.

The study utilized the convenience sampling method to obtain the target respondents most conveniently available. Although the captive sample may be unrepresentative and perhaps unwilling, it helps to obtain adequate number of completed questionnaires quickly and economically. Besides, convenience samples are also best utilized for this pilot study where additional research will subsequently be conducted with probability sample (Zikmund, 2000).

3.4 Data Collection Method

In terms of the data collection techniques, the study utilized the self-administered questionnaire approach. The survey was conducted over a two-week period. The potential respondents were approached during their rest time with the help of a friend who is also working in Hong Leong Headquarters. First, he would briefly explain the purpose of the survey and then further clarify some terms used in the survey to avoid ambiguity. If the respondents agreed to participate in this study, the questionnaire would be given to them. The questionnaires would be collected from the respondents after they had completed it.

3.5 Data Analysis Techniques

The analyses of the collected data were performed using the statistical package called Statistical Package for Social Science (SPSS) Windows Version 10.0. The raw data was entered into the SPSS package with necessary questions coded accordingly.

The following analysis techniques were used in the study to analyze the data.

3.5.1 Reliability Test

Reliability refers to the extent to which a scale produces consistent results if measurements are made repeatedly. Reliability also can be defined as the extent to which measures are free from random error, X_R . If $X_R = 0$, the measure is perfectly reliable (Malhotra, 1999).

As the research variables comprised of many items, a test need to be done to check if these items were consistent in the same manner. Thus, the internal consistency reliability method was used to access the homogeneity of a set of items in the study. The coefficient alpha or *Cronbach's alpha* was employed to compute the average of all possible split-half coefficients resulting from different ways of splitting the scale items (Malhotra, 1999).

This *Cronbach's alpha* varies from 0 to 1, and coefficient of 0.8 or higher are desirable but reliability coefficient above 0.6 are typically considered satisfactory for this research since (Nunnally, 1978). So, the items were only reliable if *Cronbach's alpha* is greater than 0.6 and would be used for subsequent analysis (Nunnally, 1978).

3.5.2 Factor Analysis

Factor analysis is a general name denoting a class of procedures primarily used for data reduction and summarization. In this study, there are large number of variables, most of which are correlated and which must be reduced to a manageable level (Malhotra, 1999).

Factor analysis was used in this study for two primary functions:

- (i) To identify underlying dimensions or factors that explains the correlation among a set of variables.
- (ii) To identify or select surrogate variable that was closely related to the associated factor, involving singling out some of the original variables for use in subsequent analysis.

This allows study to conduct subsequent analysis and interpret the results in terms of original variables rather than factor scores. By examining the factor matrix, the variable with the highest loading on that factor was selected for each factor. That variable could then be used as a surrogate variable for the associated factor (Malhotra, 1999).

In this study, principal components analysis was used where the total variance in the data is considered. Principal components analysis is recommended when the primary concern is to determine the minimum number of factors that will account for maximum variance in the data for use in subsequent analysis. (Malhotra, 1999). When necessary, the variables were rotated accordingly to the orthogonal (*Varimax*) criterion to minimize the number of variables with high loading on a factor, thereby enhancing the interpretability of the factors. (Malhotra, 1999).

Only factors with eigenvalues greater than 1.0 were retained, because due to standardization, each variable has a variance of 1.0. Besides, factors with

loading of more than 0.5 were accepted as they were considered very significant. (Nunnally, 1978)

3.5.3 Regression Analysis

Regression technique was used to determine whether there is a linear regression of these predictor variables (CSFs) with the criterion variable (IS success). The main objectives of this analysis are:

- (i) To determine whether significant relationships exist between the dependent variables (IS success) and the independent variables (CSFs).
- (ii) To access the relative contribution of the various independent variables (CSFs) that account for the prediction of the criterion variable (IS success).

One of the regression methods, the stepwise regression was performed on the data. In this approach, the order in which the predictors entered or removed from the regression equation one at a time in order to select a smaller subset of predictors that account for most of the variation in the criterion variable. (Malhotra, 1999)