CHAPTER 3
RESEARCH METHODOLOGY

This chapter presents the methodological approach of the study. It begins with discussion on research design of the study which is mainly quantitative approach. Then, the study discusses about the research instrument, scales and measurements, sampling method and questionnaire design.

3.1 Research design

After identifying the variables in problem situation and develops the conceptual model (see Chapter 2), the next step is to design the research in a way that the requisite data can be gathered and analyzed to arrive at a solution. A proper planned research design is important in order to ensure the accuracy, confidence and generalizability of the study.

The sampling design chosen for this study is random sampling for all the shoppers at two shopping malls (shopping mall X and Y) located at Klang Valley. The research strategy is quantitative approach, which is moving towards as positivism paradigm. Positivism is an approach to social research that seeks to apply the natural science model of research to investigations of social phenomena and explanations of the social world (Denscombe, 2003).

The reason of using only quantitative approach in this study is to segment the consumers based on their shopping behaviour in the shopping malls. The survey instruments are derived from well established journals and previous literatures. Besides, the survey involves with only primary data obtained directly from the respondents.
3.2 Research instrument

A structured questionnaire is used as the main instrument in this survey. This questionnaire is a pre-formulated written set of questions to which respondents record their answers and usually within rather closely defined alternative. Questionnaire method is chosen because it is an efficient data collection mechanism where the researcher knows exactly what is required and how to measure the variables of interest. Besides, this method of data collection offers some advantages such as quick response rate, cheap, easy to organize and well structured.

The questionnaire is used to collect information on the consumer decision making style, shopping mall loyalty, shopping value, perceived shopping mall image and socio-demographic variable.

3.2.1 Scale

The questionnaire consisted of eleven sections which total 99 items of questions. The categorical variables are measured based on a five-point Likert-type scale, ranging from “strongly disagree”, “disagree”, “neutral” and “agree” to “strongly agree”. Subjects are asked to express agreement or disagreement of a five-point scale. Each degree of agreement is given a numerical value from one to nine. Thus a total numerical value can be calculated from all the responses.

All the scales used in the questionnaire are carefully selected from the previous established scales in the same context. However, the scales have been re-modified according to the local context. Table 3.1 presents the summary of research instruments, sources and the questionnaire format.
Table 3.1: Summary of section of questionnaire, types of variables, and sources

<table>
<thead>
<tr>
<th>Section of Questionnaire</th>
<th>Variables</th>
<th>Sources</th>
</tr>
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<tbody>
<tr>
<td>Question 1:</td>
<td>Consumer Decision Making Style</td>
<td>Lysonski et al. (1995)</td>
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<tr>
<td>Question 2:</td>
<td>Shopping Mall Loyalty</td>
<td>Adopted from Chaudhuri and Holbrook (2001)</td>
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<td>Question 3:</td>
<td>Shopping Values</td>
<td>Barbin et al. (1994)</td>
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<tr>
<td>Question 4:</td>
<td>Shopping Values</td>
<td>Bloch et al. (1994) and Zafar et al. (2005)</td>
</tr>
<tr>
<td>Question 5:</td>
<td>Consumer perception</td>
<td>Ruiz et al. (2004)</td>
</tr>
<tr>
<td>Question 6:</td>
<td>Open ended question on:</td>
<td>Author</td>
</tr>
<tr>
<td></td>
<td>a. Favourite shopping mall</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Things shopper like about the shopping mall</td>
<td></td>
</tr>
<tr>
<td>Question 7:</td>
<td>Atmospheric variables, Non economic factors</td>
<td>Ruiz et al. (2004)</td>
</tr>
<tr>
<td>Question 8:</td>
<td>Satisfaction with life Scale (SWLS)</td>
<td>Diener, Emmons, Larsen &amp; Griffin (1985)</td>
</tr>
<tr>
<td>Question 9:</td>
<td>Self Esteem Scale</td>
<td>Rosengerg (1965)</td>
</tr>
<tr>
<td>Question 10 &amp; 11:</td>
<td>Socio-demographic</td>
<td>Author</td>
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### 3.3 Questionnaire design

Question 1 of the questionnaire was composed of questions to determine the consumer decision making style. The questionnaire was adapted from Lysonsky et al. (1995), total 88 items are developed and they represent the seven predictors of consumers’ decision making style to visit the shopping malls.

Question 2 of the questionnaire was composed of questions on the brand loyalty variable to determine the responses of the shoppers in relation to their shopping malls loyalty. The items are adapted and modified from Chaudhuri et al. (2001). The questionnaire is produced in its original form with some modification according to the study context.
Questionnaire in question 3 was composed of questions as the utilitarian shopping value to determine the shopper shopping value in visiting the mall. The items are adapted and modified to suit this study from Barbin et al. (1994).

Question 4 of the questionnaire was composed of questions to determine the variable of flow motivation of the shopper in visiting the mall. This item was adopted from Bloch et al. (1994) and Zafar et al. (2005).

Question 5 of the questionnaire was composed of questions as the shopper perceived shopping mall image to determine the shopper perception of products, quality of service and pricing offer by the shopping mall. This section consisted of six questions and was adopted from Ruiz et al. (2004).

Question 6 of the questionnaire was composed of two open ended questions which required the shopper to fill up. This section was designed to investigate the respondent favourite shopping mall and its’ distinct characteristic of that attract his/her interest.

Question 7 of the questionnaire was composed of questions as the shopper perceived shopping mall image to determine the shopper perception of mall atmospheric variables and non economic variables. The mall atmospheric variable consisted of mall odour, background music and interior decoration. This section consisted of thirteen questions which adopted and modified to suit this study from Ruiz et al. (2004).

Question 8 and 9 of the questionnaire were composed of questions as the shopper self satisfaction and self esteem to determine the shopper basic need. This question on self satisfaction scale was adopted from Diener et al, (1985) whereas self esteem scale was adopted from Rosenberg (1965).
In the last two sections, Section 10 and 11 of the questionnaire were composed of questions to understand on the characteristics of the respondents. From here, the study determines respondent’s hobbies, gender, ethnic group, marital status, age (years), monthly family income, education level and employment status.

3.4 Sampling method

The sampling procedure that adopted in this research was simple random sampling method. The simple random sampling method is chosen because every element in the population (shoppers at the shopping malls) has a known and equal chance of being selected as the sample. It is most likely that the distribution patterns of the characteristics that are interested in investigating in the population are also likewise distributed in the subjects drawn from the sample.

According to Sekaran (2003), simple random sampling has the lease bias and offered the most generalization. In order for this study to become more representative, it is important that the right method is chosen. A total of 210 shoppers were approached for completing the questionnaire. Beside, the survey only considered the Malaysian shoppers and all the foreigners are excluded. At the end of the interview period, 200 useable questionnaires were collected.

The target sample is customers or shoppers who visit the shopping malls located at Klang Valley. Klang Valley is selected as it has the highest concentration of shopping malls in Malaysia. The typical shopping malls selected were two shopping malls; X and Y located in Klang Valley. Simple random sampling is used as every element in the population has a known and equal chance of being selected as a subject.
The shoppers were asked to fill in the questionnaire that had been prepared early and the questionnaires were distributed by the researcher himself at the selected shopping malls as mentioned above. Responding to this survey is voluntary. Data are collected directly from the survey respondents. The data collected took place in January and February 2009 on the latest shopping behaviour of the respondents. The goal of the data collection was to produce an actual and overall database on the shopping behaviour of Malaysia shopper.

3.5 Data analysis

The questionnaire was a self-administrated survey carried out by the researcher himself. It is analyzed using the SPSS Windows Version 13.0. Data is first screened and cleaned in order to check on the outliers and missing value. Besides, data analysis techniques that are used in this study consist of exploratory data analysis, factor analysis and cluster analysis.

3.5.1 Exploratory Data Analysis (EDA)

Exploratory data analysis is the first step in this research. The objective is to learn as much as possible about the data. It simplifies this goal by providing a perspective and sets of tools to search for clues and patterns. Several useful techniques are used in this study to display data which are essential to any examination of data. Frequency table, percentages and means were calculated for each question/statement to provide a general profile the shoppers.
3.5.2 Factor analysis

Factor analysis, as it is applied in marketing research, refers to a class of statistical techniques, whose purpose usually consists of data reduction and summarization. Used in this way, the objectives is to reduce a large number of observed variables to similar sets of underlying factors that preserve as well as possible the essential nature of the original variable.

The important assumption in factor analysis is that factors do indeed underlie the variables, and that the variables completely and adequately represent these factors. In practice, this means that the number and scope of the variables to be analyzed should be as inclusive as possible, in that, among them, each factor is measured at least once and hopefully several times from different perspectives.

In this study, factor analysis was employed as a basis for forming of similarity shopping behaviour. The responses were captured and summarized in a spreadsheet utilizing Microsoft Excel. The collected data were then coded into SPSS data file for further analysis. Responses to the questionnaires were firstly subjected to a principal component factor analysis with VARIMAX orthogonal rotation. The main purpose of using this analysis was to reduce the large number of variables (seventeen behaviour factors) into fewer underlying and meaningful factors in order to define the new principal behaviour factor. The basic assumption here was that the underlying factor could be considered a good fit to the data. The principle factors of shopping behaviour with eigenvalue greater than one were extracted. Each factor was named based on salient themes among the items. Cronbach’s alpha coefficient of inter-item correlation, a measure of internal reliability, was sets at .50 or above as the acceptable parameter for internal consistency among the items in each factor grouping.
3.5.3 Pearson’s Correlation Coefficient

After identified the behaviour factors, the next step was to look at any correlation between these factors. Pearson’s correlation was used to determine the degree of linear association between any two of the image variables. It is calculated between all summation scores to explore the simple bivariate relationships between variable. The probability level of 0.05 was used as a criterion for tests of significant. The coefficients also reveal the magnitude and direction of relationship between two variables.

3.5.4 Cluster Analysis

Cluster analysis, also called segmentation analysis or taxonomy analysis, seeks to identify homogeneous subgroups of cases in a population. That is cluster analysis is used when the researcher does not know the number of groups in advance but wishes to establish groups and then analyze group membership. Cluster analysis implements this by seeking to identify a set of groups which both minimize within-group variation and maximize between-group variation. Later, group id value will be saved as case variable and used in other procedures such as cross-tabulation. SPSS offers three general approaches to cluster analysis:

Hierarchical clustering allowed users to select a definition of distance, then select a liking method for forming clusters, then determine how many clusters best suit the data. Hierarchical clustering is the most straight forward methods. It can be either agglomerative or divisive. Hierarchical clustering generates representation of clusters in icicle plots and dendograms. This method is appropriate for smaller samples (typically <250) as it required to compute all possible distance. Therefore, when the
sample size is large, the algorithm will be very slow to reach a solution. To form cluster using a hierarchical cluster analysis, we must select:

- A criterion for determining similarity or distance between cases
- A criterion for determining which clusters are merged at successive steps
- The number of clusters we need to represent our data.

K-means clustering has the researcher specify the number of cluster in advance, and then the algorithm calculates how to assign cases to the K clusters. Unlike Hierarchical clustering, K-means clustering is much less computer-intensive and therefore preferred when datasets are large (ex., >1000). K-means cluster analysis uses Euclidean distance. Therefore, the desired number of clusters, K must specify in advance. The K-means procedure also appears to be more robust than any of the hierarchical methods with respect to the presence of outliers, error perturbations of the distance measures, and the choice of a distance metric (Punj and Steward, 1983). K-means clustering generates an ANOVA table showing mean-square error.

Two-step clustering creates pre-clusters, and then it clusters the pre-clusters using hierarchical method. Two-step cluster analysis is often preferred for large databases, since hierarchical and k-means clustering do not scale efficiently when sample size is very large. As it handles categorical as well as continuous data, the two step procedure is also the one chosen when categorical variables with three or more levels are involved. While there is no option to cluster variable rather than cases, one can output variablewise plots by cluster as well as clusterwise plots by variable.

For this research, first hierarchical clustering method was used to generate dendograms to identify number of clusters, and then using k-means clustering method for to explore the possible segment based on the principal factors of shopper behaviour.
3.5.5 AVOVA (Analysis of Variance)

Analysis of variance (ANOVA) was undertaken to assess the internal validity of the cluster results. Since the shopper behaviour variable were used to perform the cluster analysis, there should exist some significant different among the clusters. A 0.05 level of significance was employed in the statistical assessments.

3.5.6 Chi-Square Tests

The Chi-square statistic was used to determine whether distribution differences were significant or due to change variations. The Chi-square statistics were used to determine whether there were any statically significant differences among the clusters in terms of shopping behaviour and demographic characteristic. The results of the analysis should reveal whether the shopper behaviour profile and demographic variables differed significantly between the clusters.