CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The research techniques employed in the study are outlined in this chapter. They include a discussion on the selection of measures, the questionnaire design, sample design, data collection and data analysis.

Selection of measures (Section 3.2) are divided into three measurements i.e. selection criteria measurement, psychographic profile measurement and purchase behaviour measurement. In the selection criteria and psychographic profile measurements, respondents were asked to rate the importance of each selection criteria and opinion statement based on five point Likert scales. On the other hand, nominal scale and ordinal scale are used to measure purchasing behaviour.

Section 3.3 discusses the questionnaire design. This questionnaire is divided into four sections. First section (Section A) is designed to determine the selection criteria for sauces. Section B attempts to identify the purchasing behaviour. Section C gives opinion statement of psychographic research and the last section (Section D) covers question on the respondents' background.

The sample design is described in Section 3.4. All respondents are selected from Klang, Selangor. The selected respondents in this study are those who had purchased at least one of the three sauces, Chilli Sauce, Tomato Ketchup and Oyster Sauce. The following section, discusses the data collection. Two methods are employed in this survey, personal interview and self-administered questionnaire.

The final section (Section 3.6) discusses techniques used in analyzing the results of the survey. Statistical Package for Social Sciences (SPSS) is used to analyze the data.

3.2 SELECTION OF MEASURES

This study aims to identify the consumers selection criteria for sauces, their specific psychographic profiles as well as some aspects of the respondents purchasing behaviour.

Product attributes differ widely in their importance to consumers. It is determined by how closely attributes are tied to a consumer's self-concept (Mowen, 1987). In this study, we look at the possible selection criteria made by consumers. Each respondents are asked to rate the importance of each criteria based on a five point scales from the "not important at all" to "very important". Chi-square tests are executed to find out if there are differences in the level of importance of the selection criteria among ethnic groups.

Every consumer has his/her own lifestyle or psychographic. The approaches to distinguish psychographic profile is by using questions called attitudes, interest and opinion (AIO) statement. In this survey, 16 AIO statements are used. Respondents are asked to rate their opinion based on five-point Likert scale with 1 indicating "strongly disagree" and 5, "strongly agree".

In addition, consumer buying behaviour is also analyzed. The analysis is based on information on their frequency of purchases, quantity and average size of purchase each time, the sources influence their purchases and store preferences. A nominal scale is used to measure the above mentioned purchasing behaviour except

for the frequency of purchases. An ordinal scale is used to measure the frequency of purchases. Nominal scale is the numbers or letters assigned to objects serve as labels for identification or classification, such as number 1 on the store preferences represents hypermarket and minimarket /provision shop is number 4. An ordinal scale arranges objects or alternatives according to their magnitude in an ordered relationship. In the frequency of purchases example, we assign 1 to very often, 2 to often, and 3 to sometimes, we can say that 1 was before 2, and 2 was before 3.

3.3 DESIGN OF QUESTIONNAIRE

Before the actual survey is carried out, a pilot test was conducted on ten respondents to gain insight into the questionnaire as well as the development of questionnaire design. This pilot survey will be treated as a preliminary and exploratory vehicle that shapes the form and contents of the final set of questions (DeBruicker and Ward, 1980). Pre-tested feedback was gathered on the clarity of instruction and statements and on how the questionnaire could be improved. The final questionnaire is developed based on these feedbacks and is available in three languages: English, Bahasa Malaysia and Mandarin.

The questionnaire is divided into four sections. First section consists of consumer selection criteria and each respondent is required to rate the level of importance between "1=Not Important At All" and "5=Very Important" for Chilli Sauce, Tomato Ketchup and Oyster Sauace. Respondents are also asked about the brand they know and currently using, the most preferred brand and the reason for selecting a particular brand and sources influencing their purchases.

Section two is designed to analyze consumer purchase behaviour. Questions asked are the frequency of their purchases, brands they are currently using and brands they have used before and store patronage preferences.

In the third section, respondents are asked to indicate the extend of their opinion based on five-point Likert scale of 16 AIO statements, where 1 is referred to as "strongly disagree" and 5 as "strongly agree".

Information on demographic characteristics of the respondents are listed in the last section of the questionnaire, which include sex, race, age, marital status, number of children, education level, household income and occupation of the respondents.

3.4 SAMPLE DESIGN

Sample selected in this study is confined to the local residents in Klang. Non-probability sampling procedure is adopted in this survey as this survey serves only as an exploratory study of consumer buying behaviour in the Malaysian environment. The use of purposive sampling procedure is sufficient for this survey.

The sample units consisted of students' family member (those who make the decision to buy sauces) and teachers. There are 378 respondents, comprising 46.8 percent Chinese, 38.9 percent Malays, 14 percent Indians and 0.3 percent of other ethnic descent.

Klang is chosen because of its demographically mixed population where 38% of the population is Malay, 36% Chinese, 19% Indians and 6% others as shown in Table 3.1. Four schools are chosen in different area of Klang. They are Sekolah Menengah Tinggi Klang, Sekolah Menengah Tengku Ampuan Rahimah, Sekolah

Menengah (Persendirian) Kwang Hwa and Sekolah Menengah Methodist. 100 questionnaires were distributed to each school. The target sample size for this survey is 400 but only 378 completed questionnaires are acquired (94.5%).

TABLE 3.1

DISTRIBUTION OF POPULATION IN KLANG FOR THE YEAR 1998

ETHNIC GROUP	AREA	MPK		AREA OUTSIDE MPK		LPAA 1998	
		Number	%	Number	%	Number	%
MALAYS	Number	87,189	29.9	76,066	56.4	163,255	38.2
	%	53.4		46.6			
CHINESE	Number	136,489	46.7	19,001	14.1	155,490	36.4
	%	87.8		12.2			
INDIANS	Number	59,249	20.3	21,951	16.3	81,200	19.0
	%	73.0		27.0			
OTHERS	Number	9,152	3.1	17,774	13.2	26,926	6.3
	%	34.0		66.0			
TOTAL	Number	292,079	100.0	134,792	100.0	426,871	100.0
1998	%	68.4		31.6		100.0	

Source: Klang Structures Plan Study 1998

(MPK – Majlis Perbandaran Klang /Klang Town Council)

(LPAA – Local Planning Authority Area)

3.5 DATA COLLECTION

Two methods of data collection were considered, telephone interview and personal interview. Although the former is cheaper and faster, but due to limited

time and the nature of the questionnaire, this method is dropped. A good rule of thumb is to plan telephone interviews to be approximately 10 minutes long (Zikmund, 1997). However, it took about half an hour to complete this questionnaire. Out of ten respondents interviewed, only one respondent was able to answer all questions. Thus, it is decided that telephone interview is replaced by self-administered questionnaires.

Personal interview was also conducted. Due to limited time and budget constraints, the survey was carried out by Form 5 and Form 6 students, using their family member (those who make the decision to buy sauces) as a respondent. The students are given adequate training and supervision to produce quality work. Students have been used in the past research and have the following advantages: students acquainted with and known to the interviewers (family member for this study) (Wolfe, 1942).

3.6 DATA ANALYSIS TECHNIQUES

Statistical analyses are carried out using the Statistical Package for Social Sciences (SPSS). The discussion on data analyses are divided into five sections in this report.

The first part of the analysis provides a summary of the general demographic characteristics of the respondents. In addition, a demographic comparison of the non-regular and regular buyer is also discussed. The definition of regular buyer is given in section 4.2.1. Frequency distributions are used to describe the data and the Chi-square test is used to test for significance demographic differences between the two groups of buyer.

The second part of the analysis describes the relationship between brand heard before and actual brand purchased, brand preferred and actual brand purchased as well as past purchases and actual purchases. Two method are used, Spearman's Rank Coefficient test and Nonparametric Statistics. Spearman's Rank Coefficient test is employed because it is simple to use and easy to apply. Moreover, it has been proven to be as powerful as its classical counterpart - the Pearson (product-moment) correlation method and even more when the normality assumption is violated (Berenson and Levine, 1992). The Spearman coefficient of rank correlation may be obtained using the following steps:

1. Replace the n values of X by their ranks R_x by giving the rank of 1 to the smallest X and the rank of n to the largest. If two or more X values are tied, they are each assigned the average rank of the rank positions they otherwise would have been assigned individually had ties not occurred.
2. Replace the n values of Y by their ranks R_y as in step 1.
3. For each of the n subjects, obtain a set of rank difference scores

$$d_{Ri} = R_{xi} - R_{yi}$$

where I = 1,2, ...,n.

4. Obtain

$\sum_{I=1}^{n} d^2_R$, the sum of each the squared rank difference scores.

5. The spearman coefficient of rank coefficient of rank correlation, r_s, is given by the following formula:

$$r_s = 1 - \frac{6\sum_{I=1}^{n} d^2_{RI}}{n(n^2 - 1)}$$

6. To obtain the Z value,

$$Z = r_s \ (n\text{-}1 \ )^{1/2}$$

Nonparametric statistics methods used in the analysis of brand knowledge and actual purchase because we make no assumptions about the distribution. The major distinction between parametric statistics and nonparametric statistics lies in the underlying assumptions about the distribution of the populations. Parametric statistics use interval-scaled or ratio-scaled data and assume populations are normally distributed (Zikmund, 1997). Among the various statistical methods based on ranks, the Spearman rank correlation procedure was the earliest to be developed and for more than three-quarters of century this procedure has continued to be widely used for studying the association between two-variables-primarily because of its simplicity and its power (Berenson and Levine, 1992).

The third part of the analysis describes the use of the mean scores and standard deviations in determining the importance of each attribute in influencing the respondents' choice of sauces. The student t-test is used to test the significant differences in the ranking of selection criteria between ethnic groups and also between non-regular and regular buyer. The Cronbach's coefficient alpha is employed to test for the reliability of the attributes.

The fourth area of interest in the analysis is the development of the psychographic profiles of the respondents using Factor Analysis. The Principal Components Analysis with Varimax Rotation is utilized to regroup the 16 AIO statements into meaningful factors. Only those factors with eigenvalues of one and above are retained for further statistical analysis. The Cronbach's coefficient alpha is also employed to test the reliability of the factors.

Factor analysis usually proceeds in four steps.

1. In the first step, the correlation matrix for all variables is computed, as shown in Table 5.2. Variables that do not appear to be related to other variables can be identified from the matrix and associated statistics. The appropriateness of the factor model can also be evaluated. In this study, we are using extraction method.
2. In the second step, the number of factors necessary to represent the data and method for calculating them must be determined. We also a scertain how well the chosen model fits the data.
3. In the third step, we perform a rotation which focuses on transforming the factors to make them more interpretable.
4. In the fourth step, scores for each factor is computed for each case.

Discriminant analysis is used to find linear combinations of the psychographic and demographic variables that distinguished between non-regular and regular buyer. Stepwise discriminant method is employed to sequentially select the best discriminating variable at each step and eliminating those which are weak in discriminating between the two groups of buyers. In stepwise method, the first

variable included in the analysis has the largest acceptable value for the selection criterion. After the first variable is entered, the value of the criterion is reevaluated for all variables which are not in the model, and the variable with the largest acceptable criterion value is entered next. At this point, the variable entered first is reevaluated to determine whether it meets the removal criterion. If it does, it is removed from the model. Variables are removed until none of them remain meet the removal criterion. This method terminates when no more variables meet entry or removal criterion.

Tables are used to measure the respondents' purchase behaviour or practices by ethnic groups.