

## **CHAPTER 5**

### **RESEARCH RESULTS**

#### **5.1 INTRODUCTION**

In this chapter, we look at the psychographic dimension in sauces selection using factor analysis in order to identify a relatively small number of factors that can be used to represent relationships among sets of many interrelated variables. The following section will discuss about discriminant analysis. The purpose of discriminant analysis is to identify interrelationships that may exist between the demographic and psychographic dimension variables that will distinguish between non-regular and regular buyer.

In section 5.4, we study six aspects of purchase behaviour of the respondents. We investigate the frequency of purchase, quantity purchase, store patronage preference, usual practice in purchase of sauces, information sources influencing purchases of sauces and advertisement influence on purchases of sauces.

#### **5.2 PSYCHOGRAPHIC DIMENSION IN SELECTION OF SAUCES**

In this section, psychographics is used to identify different market segment based on consumers' personality characteristics and life-styles. Factors analysis is performed on 16 AIO (activities, interest, and opinions) statements to represent relationships among sets of variables parsimoniously. The goal of factor analysis is to identify a relatively small number of factors that can be used to represent relationships among sets of many interrelated variables in selection of sauces. The

General purpose of factor analysis is to summarize the information contained in a large number of variables into a smaller number of factors. If a researcher has a set of variables that are interrelated in a complex fashion, then factor analysis may be used to untangle the linear relationships into their separate patterns (Zikmund, 1997).

Respondents were asked to indicate the extent to which they agree or disagree with each of the 16 AIO statements in the questionnaire. The 16 AIO statements (psychographic variables) are shown in Table 5.1. SPSS programme is used to run Factor Analysis as describe in Chapter 3.

**TABLE 5.1**  
**SYCHOGRAPHIC VARIABLES**

ALES	Always look for product on sales
NYBRD	Can't get usual brand, will get any brand
ATURL	Prefer natural food
UTRIN	Concerned with nutrition of food
EALTH	Health is most important asset
ALORI	Watch calories carefully
HCKPR	Check prices before buying
ARENT	Follow parents' beliefs
UALITY	Buy products with known quality
MSTOR	Usually buy things from the same store
EWPRO	Like to try new and different products
OMPRI	Usually compare price before buying
IGHPRI	Buy quality product even though higher price
EWBRD	Often buy new brand
RANDE	Usually buy branded product
MBRAN	Use same brand

### 5.2.1 EXAMINING THE CORRELATION MATRIX

The correlation matrix for the 16 AIO statements (psychographic variables) is shown in Table 5.2. Since one of the goals of the factor analysis is to obtain factors that help explain these correlations, the variables must be related to each other for the factor model to be appropriate. If the correlations between variables are small, it is unlikely that they share common factors. Table 5.2 shows that 10 variables (SALES, NATURL, NUTRIN, HEALTH, CALORI, CHCKPR, QUALITY, COMPRI, HIGHPRI and BRANDE) coefficients are greater than 0.3 in absolute value i.e. have a correlation with at least one of the other variables in the set.

TABLE 5.2 CORRELATION MATRIX OF 16 PSYCHOGRAPHIC VARIABLES

	SALES	ANYBRD	NATURL	NUTRIN	HEALTH	CALORI	CHCKPR	PARENT	QUALITY	SMSTOR	NEWPRO	COMPRI	HIGHPRI	NEWBRD	BRANDE	SMBRAN
SALES	1.000															
ANYBRD	0.152	1.000														
NATURL	0.120	0.043	1.000													
NUTRIN	0.182	-0.115	0.480	1.000												
HEALTH	0.046	-0.081	0.330	0.493	1.000											
CALORI	0.188	-0.094	0.304	0.379	0.377	1.000										
CHCKPR	0.284	0.059	0.149	0.127	0.098	0.261	1.000									
PARENT	-0.110	0.001	-0.109	-0.009	-0.056	0.085	0.149	1.000								
QUALITY	0.060	0.066	0.178	0.255	0.085	0.049	0.048	0.128	1.000							
SMSTOR	-0.031	-0.020	0.019	0.043	-0.070	-0.093	-0.012	0.135	0.107	1.000						
NEWPRO	0.137	0.210	0.004	-0.007	-0.043	-0.074	-0.004	-0.131	0.053	-0.219	1.000					
COMPRI	0.433	0.067	0.134	0.143	0.091	0.196	0.503	0.107	0.089	-0.110	0.043	1.000				
HIGHPRI	0.055	-0.166	0.197	0.298	0.187	0.106	0.100	0.021	0.390	-0.058	0.079	0.120	1.000			
NEWBRD	0.125	0.258	-0.165	-0.062	-0.104	-0.090	0.022	0.093	-0.075	0.109	0.295	0.060	-0.070	1.000		
BRANDE	0.020	0.028	0.053	0.104	-0.058	0.023	0.038	0.032	0.246	0.150	0.118	-0.065	0.326	0.236	1.000	
SMBRAN	0.017	-0.216	0.073	0.226	0.128	0.126	-0.004	0.011	0.198	0.283	-0.199	-0.047	0.235	-0.094	0.050	1.000

The Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy in an index for comparing the magnitudes of the observed coefficients to the magnitudes of the partial correlation coefficients (Norusis, 1993). Kaiser (1974) characterizes 0.90's as marvelous, 0.80's as meritorious, 0.70's as middling, 0.60's as mediocre, 0.50's as miserable, and below 0.50 as unacceptable. Since the value of the overall KMO statistics shown in Table 5.3 (from SPSS) is 0.65, we can comfortably proceed with the factor analysis.

**TABLE 5.3**  
**TEST STATISTICS FOR KMO AND SPHERICITY**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.649
Bartlett's Test of Sphericity	
Approx. Chi-Square	1089.212
df	120.000
Sig.	0.000

### 5.2.2 FACTOR EXTRACTION

The goal of factor extraction is to reduce the 16 variables to smaller number of variables that will determine the factors needed to represent the data. It is helpful to examine the percentage of total variance explained by each. The total variance is the sum of the variance of each variable. Table 5.4 contains the initial statistics for each factor. The total variance explained by each factor is listed in the column labeled *Eigenvalue*. The next column contains the percentage of the total variance attribute to each factor. The last column indicates the percentage of variance attributable to that factor and those that precede it in the table. This percentage is also known as cumulative percentage. Note that although variable names and factors are displayed on the same line, there is no correspondence between the lines in the

two halves of the table. The first two columns provide information about the individual variables, while the last four columns describe the factor.

From Table 5.4 shows that six factors accounted for 63.2% of the variance of the 16 psychographic variables. The remaining ten factors account for only 36.8% of the variance. One criterion suggests that only factors that account for variances greater than 1 (eigenvalue greater than 1) should be included (Norusis, 1993). Thus a model with six factors may be adequate to represent the data.

**TABLE 5.4 INITIAL STATISTICS**

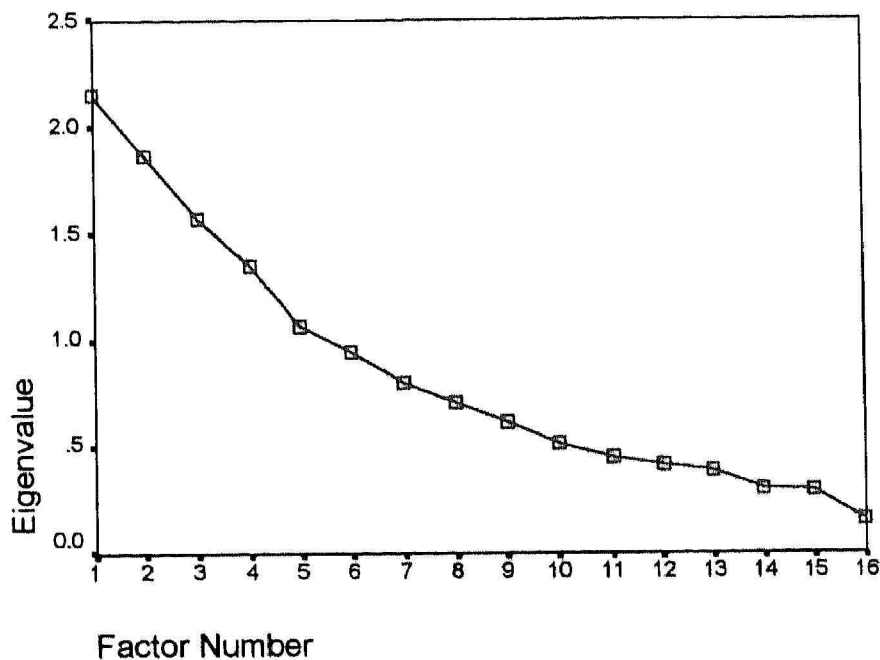
Extraction 1 for Analysis 1, Principal-Components Analysis (PC)

Variable	Communality	* Factor	Eigenvalue	% of Variance	Cumulative %
SALES	1.00000	* 1	<b>2.84131</b>	17.8	17.8
ANYBRD	1.00000	* 2	<b>1.98232</b>	12.4	30.1
NATURL	1.00000	* 3	<b>1.68596</b>	10.5	40.7
NUTRIN	1.00000	* 4	<b>1.44563</b>	9.0	49.7
HEALTH	1.00000	* 5	<b>1.12981</b>	7.1	56.8
CALORI	1.00000	* 6	<b>1.03378</b>	6.5	63.2
CHCKPR	1.00000	* 7	0.95963	6.0	69.2
PARENT	1.00000	* 8	0.79600	5.0	74.2
QUALITY	1.00000	* 9	0.66883	4.2	78.4
SMSTOR	1.00000	* 10	0.62656	3.9	82.3
NEWPRO	1.00000	* 11	0.61333	3.8	86.1
COMPRI	1.00000	* 12	0.53956	3.4	89.5
HIGHPRI	1.00000	* 13	0.46773	2.9	92.4
NEWBRD	1.00000	* 14	0.43621	2.7	95.2
BRANDE	1.00000	* 15	0.39915	2.5	97.7
SMBRAN	1.00000	* 16	0.37420	2.3	100.0

Figure 5.1 is a plot of the total variance associated with each factor. The plot shows a distinct break between the steep slope of the large factors and the gradual trailing off (scree) of the rest of the factors. From the scree plot, it shows that scree

begins at the 6<sup>th</sup> factor, where 6 is the true number of factors. This implies that a model consisting 6 factors is sufficient to explain the data.

**FIGURE 5.1 SCREE PLOT**



To judge how well the six-factor model describes the original variables, we can compute the proportion of the variance of each variable explained by the six-factor model. The proportion of variance explained by the common factors is called the communality of the variables. The communalities for the variables are shown in Table 5.5, together with the percentage of variance accounted for each of the retained factors. This table is called Final Statistics, since it shows the communalities and factors statistics after the desired number of factors has been extracted. The highest total percentage of variance is the PARENT (follow parents'

beliefs) which accounted for about 82% and followed by SMSTOR (usually buy things from the same store), which accounted for about 77%. The lowest percentage is ANYBRD (can't get usual brand, will get any brand) accounted for only 49%. All of the variables show strong linear associations, thus none of the variables will be removed from this analysis.

**TABLE 5.5 COMMUNALITY OF VARIABLES**

Final Statistics:

Variable	Communality	* Factor	Eigenvalue	% of Variance	Cumulative %
		*			
SALES	0.69590	* 1	2.84131	17.8	17.8
ANYBRD	0.49351	* 2	1.98232	12.4	30.1
NATURL	0.53009	* 3	1.68596	10.5	40.7
NUTRIN	0.68347	* 4	1.44563	9.0	49.7
HEALTH	0.62036	* 5	1.12981	7.1	56.8
CALORI	0.54270	* 6	1.03378	6.5	63.2
CHCKPR	0.62462	*			
PARENT	0.81456	*			
QUALITY	0.50563	*			
SMSTOR	0.76686	*			
NEWPRO	0.60789	*			
COMPRI	0.72912	*			
HIGHPRI	0.72617	*			
NEWBRD	0.61810	*			
BRANDE	0.55723	*			
SMBRAN	0.60259	*			

Extraction Method: Principal Component Analysis.

After the initial factors, the next step is to obtain the rotated factors. The purpose of rotation is to achieve a simple structure where loadings are easier to interpret. This means that we would like each factor to have non-zero loadings for only some of the variables. We would also like each variable to have non-zero loadings for only a few factors, preferably one. This permits the factors to be



differentiated from each other. If several factors have high loadings on the same variables, it is difficult to ascertain how the factors differ.

The results of the rotated factor matrix is shown in Table 5.6. Interpretation of the meaning of each factor was simplified when each item was found to have only one loading on one factor. As an example, SALES was found to have only one loading (highest value) on one factor i.e. Factor 2. ANYBRD was found to have only one loading on one factor i.e. Factor 4 and so on as shown in Table 5.7.

**TABLE 5.6 ROTATED COMPONENT MATRIX**

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
SALES	0.09546	<b>0.69973</b>	0.01703	0.21211	0.09566	-0.37781
ANYBRD	-0.00723	0.10042	-0.11586	<b>0.67969</b>	-0.08561	-0.02519
NATURL	<b>0.69555</b>	0.07508	0.11185	0.01768	0.03304	-0.16357
NUTRIN	<b>0.76694</b>	0.08190	0.25671	-0.02715	0.13281	-0.06546
HEALTH	<b>0.78032</b>	-0.03035	-0.00199	-0.08726	-0.05354	0.00755
CALORI	<b>0.65364</b>	0.25395	-0.03817	-0.09147	-0.03092	0.20045
CHCKPR	0.12884	<b>0.74142</b>	0.03750	0.00745	-0.01860	0.23774
PARENT	-0.04438	0.09691	0.09718	0.04727	0.07259	<b>0.88671</b>
QUALITY	0.12301	0.06731	<b>0.68469</b>	-0.01951	0.10451	0.07656
SMSTOR	-0.04404	-0.07954	0.02908	0.16933	<b>0.84664</b>	0.11081
NEWPRO	-0.03214	0.00649	0.25792	<b>0.50076</b>	-0.45979	-0.27950
COMPRI	0.08043	<b>0.83987</b>	0.04055	0.01340	-0.10681	0.06350
HIGHPRI	0.16079	0.09944	<b>0.79137</b>	-0.23298	-0.08689	-0.04831
NEWBRD	-0.11974	0.03423	0.06996	<b>0.76240</b>	0.09004	0.09126
BRANDE	-0.02254	-0.09309	<b>0.65634</b>	0.31460	0.12127	0.05998
SMBRAN	0.12979	0.02327	0.26348	-0.31009	<b>0.63445</b>	-0.13077
Extraction Method: Principal Component Analysis.						
Rotation Method: Varimax with Kaiser Normalization.						
a. Rotation converged in 6 iterations.						

Table 5.6 shows that Factor 1 consisted of 4 variables (HEALTH, NUTRIN, NATURL and CALORI) which explaining about 18% (from Table 5.5) of the total variance. Factor 2, 3 and 4 had 3 variables, each of which accounted for about 12%, 11% and 9% of the total variance, respectively (from Table 5.5). There were two

variables in Factor 5 explaining 7% of the overall variance. Factor 6 had one variable with the percentage of explained variance of 7%. Table 5.7 shows the factors loadings for each of the items in the respective psychographic dimensions.

TABLE 5.7

## FACTOR LOADINGS OF SPECIFIC PSYCHOGRAPHIC VARIABLES

Variable	Description of the variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
HEALTH	Health is most important asset	0.78					
NUTRIN	Concerned with nutrition of food	0.77					
NATURL	Prefer natural food	0.70					
CALORI	Watch calories carefully	0.65					
COMPRI	Usually compare price before buying		0.84				
CHCKPR	Check prices before buying		0.74				
SALES	Always look for product on sales		0.70				
HIGHPRI	Buy quality product even though higher price			0.79			
QUALITY	Buy products with known quality			0.68			
BRANDE	Usually buy branded product			0.66			
NEWBRD	Often buy new brand				0.76		
ANYBRD	Can't get usual brand, get any brand				0.68		
NEWPRO	Like to try new and different products				0.50		
SMSTOR	Usually buy things from the same store					0.85	
SMBRAN	Use same brand					0.63	
PARENT	Follow parents' beliefs						0.89

For each of the six factors that represented the underlying items, groups were intuitively assigned based on Table 5.7. Table 5.8 provides a list of such groups which were used to describe the respective psychographic dimensions of respondents with regard to their apparel preference.

Factor 1, respondents whom are associated with paid more attention on health issues. They prefer natural food without artificial ingredients. This group of people may not like fast food and seldom eat out. They are very concerned with the nutrition of the food and always watch their calories carefully. We label them as

“Health Conscious”. On the other hand, those who are associated with Factor 2 always look for product on sales. They were inclined to compare prices before buying. They spent a lot time checking prices to make sure that they get the cheapest product. These respondents are called “Bargain Shopper”.

**TABLE 5.8 SPECIFIC PSYCHOGRAPHIC DIMENSIONS**

Factor	Psychographic Dimensions
1	Health Conscious
2	Bargain Shopper
3	Quality Minded
4	Brand Trier
5	Loyalist
6	Follower

Factor 3 gives priority to quality and the respondents willing to pay more for it. These respondents are labeled as “Quality Minded”. Factor 4 consisted of those who are more innovative, enjoy trying new and different things and like to take chances. We call them “Brand Trier”. Factor 5 represents those who are loyal to a brand or even a shop. They will not simply change to other brand even though other brand is having a promotion. They are called “Loyalist”. Factor 6 represents those who follow parent’s attitude or belief and they are called the “Follower”.

### 5.2.3 RELIABILITY OF THE SIX PSYCHOGRAPHIC DIMENSIONS

In this section, we test the reliability of the six psychographic dimensions. Cronbach’s coefficient alpha is employed in this analysis. Cronbach’s coefficient alpha can be viewed as the correlation between test or scale and all other possible

tests or scales containing the same number of variables, which could be constructed from a hypothetical universe of variables that measure the characteristic of interest. In Table 5.9, the Cronbach's coefficient alpha test on the component variables of each factor revealed alpha scores that ranged from 0.4252 to 0.6979.

**TABLE 5.9 RELIABILITY COEFFICIENTS**

FACTOR	ALPHA SCORES	NUMBERS OF VARIABLES
1	0.6979	4
2	0.6657	3
3	0.5759	3
4	0.4883	3
5	0.4252	2
6	-	1

For alpha scores to be significant, Nunnally (1978) proposed alpha value of between 0.5 to 0.6 to be used for exploratory studies. However, Peter (1979) refuted his suggestion by saying that it should not be taken as an absolute standard for market research. In this study, Factor 6 was disregarded in further analysis since the number of variable is one and alpha test cannot be carried out. The remaining five interpretable factors such as "Health Conscious", "Bargain Shopper", "Quality Minded", "Brand Trier" and "Loyalist" accounted for about 57% of the total explained variance (Table 5.5). We can conclude that sauces buyers in this study are divided into five segments, namely "Health Conscious", "Bargain Shopper", "Quality Minded", "Brand Trier" and "Loyalist" and marketer can plan their sales strategy according to their target buyer.

### 5.3 DISCRIMINANT ANALYSIS

In the earlier analysis (Chapter 4), the Chi-Square test is utilized to identify significantly differences in demographic characteristic (Section 4.2.1) between non-regular and regular buyer and Factor Analysis (Section 5.2) is performed on 16 AIO statements to identify number of factors in selecting of sauces in terms of psychographic dimension. However, it does not acknowledge the interrelationships that may exist between the demographic and psychographic dimension variables that will distinguish between non-regular and regular buyer. Thus Linear Discriminant Analysis is applied to identify interrelationships between these variables since all the variables could be analysed simultaneously.

Discriminant Analysis multiplies each independent variable by its corresponding weight and then adds them together as shown by the equation below (Hair et al., 1992):

$$Z = W_1 X_1 + W_2 X_2 + W_3 X_3 + \dots + W_n X_n$$

Whereby:

Z = Buyer's discriminant score

W = Discriminant Weights

X = Independent variables (Ethnic Group, Education Level, Occupation, Monthly Household Income, "Health Conscious", "Bargain Shopper", "Quality Minded", "Brand Trier", "Loyalist" and "Follower")

Dependent = Type of buyer (non-regular and regular)

An important purpose of discriminant analysis is to perform a classification function. The object of classification in our case is to predict which buyer is belong

to non-regular and regular, and to group them together. To determine if discriminant analysis can be used as a good predictor, information provided in the “confusion matrix” is utilized. From the SPSS output, Table 5.10 shows the numbers of correct and incorrect classifications for each group. This table is known as confusion matrix. The results show that there are 134 cases in non-regular buyer group, 81 (60%) are predicted correctly to be members of non-regular buyers, while 53 (40%) are assigned incorrectly to regular buyers. Similarly, 153 out of 241 (64%) of regular buyers are identified correctly, and 88 (37%) are misclassified. The overall percentage of cases classified correctly is 62% (234 out of 375).

**TABLE 5.10**  
**CONFUSION MATRIX**

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP	
		NON-REGULAR BUYER	REGULAR BUYER
NON-REGULAR BUYER	134 (100%)	81 (60.4%)	53 (39.6%)
REGULAR BUYER	241 (100%)	88 (36.5%)	153 (63.5%)
TOTAL	375 (100%)	169 (100%)	206 (100%)

Percentage correctly classified: 62.4

As mentioned by Norusis, the percentage of cases classified correctly is one of the effectiveness of the discriminant function. Another indicator of effectiveness of the function is the actual discriminant scores in the groups. A “good” discriminant function is one that has much between-groups (regular and non-

regular) variability when compared to within-groups variability (independent variables). In fact, the coefficients of the discriminant function are chosen so that the ratio of between-groups sum of squares to the within-groups sum of squares is as large as possible (Norusis, 1993).

The eigenvalue in Table 5.11 is the ratio of the between-groups to within-groups sums of squares. Thus, large eigenvalue is associated with “good” function. However, since the result shows that eigenvalue is small, it is not a good function.

The canonical correlation is a measure of the degree of association between the discriminant scores and the groups. It is equivalent to eta from the one-way analysis of variance, in which the discriminant score is the dependent variable and group is the independent variable. Eta is the ratio of between-groups sum of squares to total sum of squares and represents the proportion of the total variance attributable to differences among the groups. Thus in this study, it shows small degree of association between the discriminant scores and the groups i.e. 0.274. In the two-group situation, the canonical correlation is the Pearson correlation coefficient between the discriminant score and the group variable, which coded 0 and 1.

Small values of Wilks’ lambda are associated with functions that have variability between groups and little variability within groups. A lambda of 1 occurs when the mean of discriminant scores is the same in all groups and there is no between-groups variability (Norusis, 1993).

A test of null hypotheses that in the populations from which the samples are drawn there is no difference between the group means can be based on Wilks’

lambda. Lambda is transformed to a variable that has approximately a Chi-Square distribution. Table 5.11 shows that a lambda of 0.925 is transformed to a chi-square value of 28.852 with 5 degrees of freedom. The observed significance level is 0.000. Thus, it appears that non-regular and regular buyer do not have the same mean on the discriminant function. As mentioned by Norusis (1993), it is important to remember that even though Wilks' lambda may be statistically significant, it provides little information about the effectiveness of the discriminant function in classification. It only provides a test of the null hypothesis that the population means are equal. Small differences may be statistically significant but still do not permit good discriminant among groups.

**TABLE 5.11**  
**OVERALL DISCRIMINANT ANALYSIS RESULTS BETWEEN NON-REGULAR AND REGULAR BUYER**

DISCRIMINANT FUNCTION	EIGENVALUE	CANONICAL CORRELATION	WILK'S LAMBDA	CHI-SQUARE	DF	SIGNIFICANCE
1	0.081	0.274	0.925	28.852	5	0.000

Next, we will look into stepwise discriminant method. Table 5.12 shows the reduced set of variables from a total 5 out of 10 variables. The set of variables consist of Ethnic Group, Education Level, Occupation and Monthly Household Income, which are demographic variables. On the other hand, "Health Conscious", "Bargain Shopper", "Quality Minded", "Brand Trier", "Loyalist" and "Follower" are psychographic dimensions.



Table 5.12 also shows that the most important factor in discriminating between non-regular and regular buyer is "Brand Trier". Race is the next most important discriminating variable. The third to enter the analysis was the "Bargain Shopper" and subsequently followed by "Quality Minded" and Education Level.

**TABLE 5.12**  
**STEPWISE DISCRIMINANT ANALYSIS**  
**SUMMARY RESULTS**

STEP	ENTERED	WILK'S LAMBDA	SIGNIFICANCE
1	Brand Trier	0.978	0.004
2	Race	0.962	0.001
3	Bargain Shopper	0.948	0.000
4	Quality Minded	0.936	0.000
5	Education Level	0.925	0.000

Table 5.13 contains the standardized discriminant function coefficients. We can write the discriminant function as follows:-

$$Z = 0.63X_1 + 0.442X_2 + 0.411X_3 - 0.522X_4 - 0.575X_5$$

**TABLE 5.13**  
**STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS**

	Function 1
Ethnic Groups ( $X_1$ )	0.630
Educational Level ( $X_2$ )	0.442
Bargain Shopper ( $X_3$ )	0.411
Quality Minded ( $X_4$ )	-0.522
Brand Trier ( $X_5$ )	-0.575

By looking at the groups of variables that have coefficients of different signs, we can determine which variables result in large and small function values. "Quality Minded" and "Brand Trier" decrease the function value as they have negative sign. Large function values are associated with regular buyer, while small function values are associated with non-regular buyer. Since we define  $Z$  as follows:-

$Z=0$  : 50-50 probability is regular buyer or non-regular buyer.

$Z<0$  : If  $Z$  is negative, there is less than a 50 percent probability is non-regular buyer.

$Z>0$  : If  $Z$  is positive, the probability is regular buyer is greater than 50 percent.

#### **5.4 PURCHASE BEHAVIOUR ANALYSIS**

Consumer behaviour is an existing and challenging subject. Shopping and buying grocery products is part of an overall life pattern of individuals. In this study, seven aspects of purchase behaviour of respondents, which have market implications, are selected. They are namely: the frequency purchase of sauces, quantity purchase on average each time, size of bottle purchase, store patronage preferences, usual practice in purchase, information sources influencing purchases and advertisement influence on purchase.

##### **5.4.1 FREQUENCY OF PURCHASE**

In this section, we investigate the frequency of sauces purchased by the respondents. Respondents are asked how often they purchase the three types of

saucers. Table 5.14 shows that majority of the 378 respondents indicated that they made their purchases once a month. Less than 50% of the respondents purchase Chilli Sauce, Oyster Sauce and Tomato Ketchup once a month.

We find that the three ethnic groups frequently purchase the sauces once a month. Percentage of Indian in this category is higher as compared to Malay and Chinese for both Tomato Ketchup and Chilli Sauce. However more Chinese (48%) than Malay (42%) and Indians & Others (41%) bought Oyster Sauce on a monthly basis. This may be related to Chinese cooking which they use a lot of Oyster Sauce.

TABLE 5.14

## FREQUENCY OF PURCHASE BETWEEN ETHNICS

	CHILLI SAUCE				TOMATO KETCHUP				OYSTER SAUCE			
	Malay	Chinese	Indians & Others	All	Malay	Chinese	Indians & Others	All	Malay	Chinese	Indians & Others	All
Very Often (once or more a week)	10 (6.8)	1 (0.6)	0 (0.0)	11 (2.9)	6 (4.1)	1 (0.6)	0 (0.0)	7 (1.9)	0 (0.0)	2 (1.2)	0 (0.0)	2 (0.6)
Often (once every two weeks)	50 (34.0)	19 (10.7)	7 (13.0)	76 (20.1)	32 (21.8)	17 (9.6)	4 (7.4)	53 (14.0)	10 (8.7)	19 (11.1)	0 (0.0)	29 (9.4)
Sometimes (once a month)	67 (45.6)	88 (49.7)	28 (51.9)	183 (48.4)	66 (44.9)	77 (43.5)	27 (50.0)	170 (45.0)	48 (41.7)	82 (48.0)	9 (40.9)	139 (45.1)
Rarely (once in three months or more)	20 (13.6)	69 (39.0)	19 (35.2)	108 (28.6)	43 (29.3)	82 (46.3)	23 (42.6)	148 (39.2)	57 (49.6)	68 (39.8)	13 (59.1)	138 (44.8)
Total	147 (100)	177 (100)	54 (100)	378 (100)	147 (100)	177 (100)	54 (100)	378 (100)	115 (100)	171 (100)	22 (100)	308 (100)

### 5.4.2 QUANTITY AND THE AVERAGE SIZE OF PURCHASE

In this section, we would like to find out the quantity and size purchase each time on average for three types of sauces. Table 5.15 shows quantity purchase each time on average for three types of sauces between ethnic groups. Respondent tends to purchase one bottle each time on average for three types of sauces. For the comparison between ethnic, Malay, Chinese and Indians & Others tend to purchase one bottle on average.

**TABLE 5.15**

**QUANTITY PURCHASE EACH TIME ON AVERAGE BETWEEN ETHNICS**

Bottle	CHILLI SAUCE				TOMATO KETCHUP				OYSTER SAUCE			
	Malay	Chinese	Indians & Others	All	Malay	Chinese	Indians & Others	All	Malay	Chinese	Indians & Others	All
1	84 (57.1)	141 (79.7)	44 (81.5)	<b>269</b> <b>(71.2)</b>	114 (77.6)	148 (83.6)	47 (87.0)	<b>309</b> <b>(81.7)</b>	109 (94.8)	151 (88.3)	22 (100.0)	<b>282</b> <b>(91.6)</b>
2	53 (36.1)	32 (18.1)	10 (18.5)	<b>95</b> <b>(25.1)</b>	30 (20.4)	26 (14.7)	7 (13.0)	<b>63</b> <b>(16.7)</b>	6 (5.2)	18 (10.5)	0 (0.0)	<b>24</b> <b>(7.8)</b>
3	6 (4.1)	4 (2.3)	0 (0.0)	<b>10</b> <b>(2.8)</b>	3 (2.0)	3 (1.7)	0 (0.0)	<b>6</b> <b>(1.6)</b>	0 (0.0)	2 (1.2)	0 (0.0)	<b>2</b> <b>(0.6)</b>
4	4 (2.7)	0 (0.0)	0 (0.0)	<b>4</b> <b>(1.1)</b>	0 (0.0)	0 (0.0)	0 (0.0)	<b>0</b> <b>(0.0)</b>	0 (0.0)	0 (0.0)	0 (0.0)	<b>0</b> <b>(0.0)</b>
Total	147 (100)	177 (100)	54 (100)	<b>378</b> <b>(100)</b>	147 (100)	177 (100)	54 (100)	<b>378</b> <b>(100)</b>	115 (100)	171 (100)	22 (100)	<b>308</b> <b>(100)</b>

Table 5.16 shows the size of purchase each time for three types of sauces between ethnic groups. The Malays buy small bottle for all the three types of sauces. The percentage of Malay respondents who bought small bottle for Chilli Sauce, Tomato Ketchup and Oyster Sauce are 53%, 61% and 64% respectively. For

Chinese, they bought big bottle for all the three types of sauces ie 66% Chilli Sauce, 63% Tomato Ketchup and 74% Oyster Sauce. Majority of Indians & Others respondents buy big bottle for Chilli Sauce (57%) and small bottle for Tomato Ketchup (54%) but selection size for Oyster Sauce is equal for both big and small. Chi-Square tests are executed to find out if there are differences in the average size of purchase for three types of sauces between ethnic groups. Results from SPSS in Table 5.16 reveal that there are significance differences in the average size of purchase for three types of sauces between ethnic groups at 0.05 level of significant.

**TABLE 5.16****THE AVERAGE SIZE OF PURCHASE BETWEEN ETHNICS**

SIZE	CHILLI SAUCE				TOMATO KETCHUP				OYSTER SAUCE			
	Malay	Chinese	Indians & Others	All	Malay	Chinese	Indians & Others	All	Malay	Chinese	Indians & Others	All
Small	78 (53.1)	61 (34.5)	23 (42.6)	162 (42.9)	90 (61.2)	66 (37.3)	29 (53.7)	185 (48.9)	73 (63.5)	44 (25.7)	11 (50.0)	128 (41.6)
Big	69 (46.9)	116 (65.5)	31 (57.4)	216 (57.1)	57 (38.8)	111 (62.7)	25 (46.3)	193 (51.1)	42 (36.5)	127 (74.3)	11 (50.0)	180 (58.4)
Total	147 (100)	177 (100)	54 (100)	378 (100)	147 (100)	177 (100)	54 (100)	378 (100)	115 (100)	171 (100)	22 (100)	308 (100)
Chi-Square Test												
P Value	0.003*				0.000*				0.000*			

### 5.4.3 STORE PATRONAGE PREFERENCES

In this section, we would like to find out store patronage preferences for three ethnic groups. The comparison is made between Hypermarket, Supermarket, Mini Market /Provision Shop and Morning market /Pasar Malam for the three ethnics. Table 5.17 gives a summary of the store patronage preferences for the three ethnic groups. Majority of the respondents indicated that they prefer to shop at supermarket for sauces. Supermarkets are popular may be because of their product quality, wide selection of goods, shop displays and comfortable physical environment.

70% of the Malays, 59% of the Chinese and 65% of the Indians & Others prefer to purchase their sauces at small mini-market or provision shop as most of these shops are located near the housing area. It is convenient especially for housewives who do not drive. Hypermarket was the third preference. This may be due to the limited hypermarket in Klang valley and none of them is located in Klang.

Chi-Square tests are executed to find out if there are differences in the store patronage preferences between ethnic groups. The result shows that there is significant difference between ethnic group for Hypermarket only at 0.05 level of significant.

**TABLE 5.17****STORE PATRONAGE PREFERENCES BETWEEN ETHNICS**

STORE TYPE		Malay	Chinese	Indian & Other	All	Chi-Square Test
						P Value
Hypermarket	Yes	83 (56.5)	66 (37.3)	30 (55.6)	179 (47.4)	
	No	64 (43.5)	111 (62.7)	24 (44.4)	199 (52.6)	
Total		147 (100)	177 (100)	54 (100)	378 (100)	0.001*
Supermarket	Yes	108 (73.5)	133 (75.1)	41 (75.9)	282 (74.6)	
	No	39 (26.5)	44 (24.9)	13 (24.1)	96 (25.4)	
Total		147 (100)	177 (100)	54 (100)	378 (100)	0.915
Mini-Market /Provision Shop	Yes	103 (70.1)	105 (59.3)	36 (66.7)	244 (64.6)	
	No	44 (29.9)	72 (40.7)	18 (33.3)	134 (35.4)	
Total		147 (100)	177 (100)	54 (100)	378 (100)	0.124
Morning Market /Pasar Malam	Yes	12 (8.2)	10 (5.6)	4 (7.4)	26 (6.9)	
	No	135 (91.5)	167 (94.4)	50 (92.6)	352 (93.1)	
Total		147 (100)	177 (100)	54 (100)	378 (100)	0.664

\* Significant at  $P \leq 0.05$

#### 5.4.4 USUAL PRACTICE IN PURCHASES OF SAUCES

It is interesting to find out what is the usual practice among the respondents when purchasing sauces. Respondents are asked about their usual practice and they are only allowed to choose one answer from the four choices, “get any brand that is available and easily reach or accessible”, “look or ask for a specific brand”, “get any brand that is on promotion”, and “look for cheaper brand”. Figure in Table 5.18 shows that majority of the respondents indicated that they always look or ask for specific brand. The highest percentage was Malays (67%), followed by Indians & Others (57%) and Chinese (44%). This result indicates that once the consumer adapted to one brand, it is very difficult for them to change to another brand.

From the same table, we find that about 42% of Chinese, 32% of Indians & Others and 29% of Malays get any brand that is available or accessible. Only small percentage of the respondent get any brand that is on promotion. Most of the respondents did not look for cheaper brand.



TABLE 5.18

## USUAL PRACTICE IN PURCHASE OF SAUCES BETWEEN ETHNICS

	Ethnic Group			All
	Malay	Chinese	Indians & Others	
Get any brand that is available or accessible	43 (29.3)	75 (42.4)	17 (31.5)	135 (35.7)
Ask for specific brand	98 (66.7)	78 (44.1)	31 (57.4)	207 (54.8)
Get any brand that is on promotion	6 (14.1)	14 (7.9)	4 (7.4)	24 (6.3)
Look for cheaper brand	0 (0.0)	10 (5.6)	2 (3.7)	12 (3.2)
Total	147 (100.0)	177 (100.0)	54 (100.0)	378 (100.0)

A separate question is asked to find out whether the respondents buy other brand because it is on promotion. The results (Table 5.19) show that majority of the respondents are not willing to buy other brand even though the brand is on promotion. This is consistent with earlier findings (Table 5.18) that majority of the respondents always look or ask for specific brand.

Chi-Square test is conducted to test if there is a difference in the promotion influence on purchases of sauces between ethnic groups. Result shows that there is significant different between ethnic groups at 0.05 level of significant.

TABLE 5.19

## PROMOTION INFLUENCE ON PURCHASE OF SAUCES BETWEEN ETHNICS

Bought other brand because it is on promotion	Ethnic Group			All
	Malay	Chinese	Indians & Others	
No	106 (72.1)	98 (55.4)	47 (87.0)	251 (66.4)
Yes	41 (27.9)	79 (44.6)	7 (13.0)	127 (33.6)
Total	147 (100.0)	177 (100.0)	54 (100.0)	378 (100.0)
Chi-Square Test : P Value = 0.000 Significant at $P \leq 0.05$				

## 5.4.5 INFORMATION SOURCES INFLUENCING PURCHASES OF SAUCES

Consumers have a tendency to rely on the opinions and experiences of others as valuable inputs where forming their own product beliefs and attitudes (Engel et al., 1973). In this survey four possible sources of information which influenced purchases decision are listed in Table 5.20. There are family members /friends, sales personnel, attractive product display and samples.

Table 5.20 shows information sources influencing purchases of sauces. 68% of the respondents said that family members or friends had been the major source of information for the purchase of sauces. This is followed by other source of

information such as the samples given (55%), attractive product display (31%) and sales personnel (13%).

Family members or friends as sources of information had the greater influence on all the purchase decisions of which the Indians & Others has the highest percentage (78%), followed by the Chinese (68%) and lastly for Malays (63%). Providing samples to consumers has greater influence among the Malays (60%) to buy the product, as compared to the Chinese (57%) and Indians & Others (37%).

**TABLE 5.20**

**INFORMATION SOURCES INFLUENCING PURCHASES OF SAUCES**

INFORMATION SOURCES		Malays	Chinese	Indians & Others	All
Family members /Friends	No	54 (36.7)	57 (32.2)	12 (22.2)	123 (32.5)
	Yes	93 (63.3)	120 (67.8)	42 (77.8)	255 (67.5)
	Total	147 (100)	177 (100)	54 (100)	378 (100)
Sales Personnels	No	126 (85.7)	152 (85.9)	52 (96.3)	330 (87.3)
	Yes	21 (14.3)	25 (14.1)	2 (3.7)	48 (12.7)
	Total	147 (100)	177 (100)	54 (100)	378 (100)
Attractive Product Display	No	96 (65.3)	118 (66.7)	48 (88.9)	262 (69.3)
	Yes	51 (34.7)	59 (33.3)	6 (11.1)	116 (30.7)
	Total	147 (100)	177 (100)	54 (100)	378 (100)
Samples	No	59 (40.1)	76 (42.9)	34 (63.0)	169 (44.7)
	Yes	88 (59.9)	101 (57.1)	20 (37.0)	209 (55.3)
	Total	147 (100)	177 (100)	54 (100)	378 (100)

#### 5.4.6 ADVERTISEMENT INFLUENCE ON PURCHASES OF SAUCES

Advertising is a major industry in our nation. Almost every firm advertises, as do many nonprofit institutions. Although it sounds obvious, we should remember that everyone who advertises does so believing that he or she will benefit more by putting these dollars into advertising than by putting them to other uses. Thus it appears that advertising must be highly influential in terms of impacts on consumer behaviour.

It is interesting to find out whether advertising has influence in the purchases of sauces (Table 5.21). Majority of the respondents (60%) indicated that advertisement has less influence on their purchases. Out of these, 70% Indians & Others, 63% Malays and 55% Chinese find that advertisement did not play a big role when purchasing the sauces. Chi-Square test is executed to find out if there is a difference in the advertisement influence on purchases of sauces between ethnic groups. The results show that there is no different in the advertisement influence on the purchases of sauces between ethnic groups at 0.05 level of significant.

**TABLE 5.21**

#### **ADVERTISEMENT INFLUENCE ON PURCHASES OF SAUCES BETWEEN ETHNICS**

		Malays	Chinese	Indians & Others	All	Chi-Square Test P Value
Advertisement	No	92 (62.6)	98 (55.4)	38 (70.4)	<b>228 (60.3)</b>	
	Yes	55 (37.4)	79 (44.6)	16 (29.6)	<b>150 (39.7)</b>	
Total		147 (100)	177 (100)	54 (100)	<b>378 (100)</b>	0.110

\*Significant at  $P \leq 0.05$

Table 5.22 shows the types of advertisement influencing purchases of sauces. TV or radio commercial have the most influence on the purchases of sauces. Then it is followed by TV cooking program (64%), newspaper (36%), magazines (31%) and poster /flyer /pamphlet (21%).

**TABLE 5.22**

**TYPE OF ADVERTISEMENT INFLUENCE ON PURCHASES OF SAUCES  
BETWEEN ETHNICS**

		Malays	Chinese	Indians & Others	All
TV Cooking Program	No	8 (14.5)	36 (45.6)	10 (62.5)	<b>54 (36)</b>
	Yes	47 (85.5)	43 (54.4)	6 (37.5)	<b>96 (64)</b>
Total		55 (100)	79 (100)	16 (100)	<b>150 (100)</b>
TV /Radio Commercial	No	6 (10.9)	35 (44.3)	7 (43.8)	<b>48 (32.0)</b>
	Yes	49 (89.1)	44 (55.7)	9 (56.3)	<b>102 (68.0)</b>
Total		55 (100)	79 (100)	16 (100)	<b>150 (100)</b>
Newspaper	No	28 (50.9)	63 (79.7)	5 (31.3)	<b>96 (64.0)</b>
	Yes	27 (49.1)	16 (20.3)	11 (68.8)	<b>54 (36.0)</b>
Total		55 (100)	79 (100)	16 (100)	<b>150 (100)</b>
Magazines	No	28 (50.9)	65 (82.3)	10 (62.5)	<b>103 (68.7)</b>
	Yes	27 (49.1)	14 (17.7)	6 (37.5)	<b>47 (31.3)</b>
Total		55 (100)	79 (100)	16 (100)	<b>150 (100)</b>
Poster /Flyer /Pamphlet	No	38 (69.1)	72 (91.1)	9 (56.3)	<b>119 (79.3)</b>
	Yes	17 (30.9)	7 (8.9)	7 (43.8)	<b>31 (20.7)</b>
Total		55 (100)	79 (100)	16 (100)	<b>150 (100)</b>

TV or radio commercial influenced 89% of Malay respondents in purchasing the sauces, followed by 56% of Chinese. TV cooking program plays the second important part in influencing the Malays (86%), followed by the Chinese (54%). On the other hand, newspaper played the most important part in influencing the Indians & Others in their purchases with the percentage of 69%, as compared to TV /radio commercial (56%) and poster /flyer /pamphlet (44%).