CHAPTER 4

RESEARCH RESULTS

4.1 INTRODUCTION

This chapter describes the analyses of the data collected from the undergraduate students of a private university in Malaysia. A total of 600 valid and usable data were analysed using various analytical techniques. It starts with the elaboration of the response rate. Then it is followed by a descriptive analysis of the demographic characteristics of the respondents. Thereafter the reliability and correlation assessments of the variables are discussed. Finally, the results of the multiple regression analysis are presented.

4.2 RESPONSE RATE

A total number of 380 hardcopy questionnaires were circulated to undergraduate students during their classes. At the same time, an online link questionnaire was also blasted to all the undergraduate students. Students of foundation studies, master degree and PhD were excluded from this study. With assistance and efforts from respective faculty Deans and staff of the university, a total number of 632 responses have been collected: 365 were hardcopy responses and 267 were through online responses. Out of a total number of 632, 600 responses were used after deduced those incomplete and invalid responses.

4.3 DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

In this section, descriptive analysis was used to explain the demographics of the respondents such as gender, race, age, faculty of study, educational year

in the current course, total year in the university, parent's highest education and parent's monthly gross income. They are shown in frequency and percentage in Table 4.1.

Table 4.1 Demographic Characteristics of the Respondents (N=600)

Item	Characteristics	Frequency	Percent
Gender	Male	263	43.8
	Female	337	56.2
Race	Malay	3	0.5
	Chinese	568	94.7
	Indian	28	4.7
	Others	1	0.2
Age Group	Less than 20	140	23.3
	20-22	374	62.4
	23-24	76	12.7
	25-26	8	1.3
	27-28	0	0.0
	> 30	2	0.3
Campus	Perak Campus (Main)	366	61.0
	Klang Valley Campuses		
	- *Sungai Long Campus*	97	16.2
	- *Petaling Jaya Campus*	33	5.5
	- *Kuala Lumpur Campus*	104	17.3
Educational year in the current course	1st year	265	44.2
	2nd year	184	30.7
	3rd year	120	20.0
	4th year	30	5.0
	5th year	0	0.0
	6th year and above	1	0.2
Total year in the university	1 year	157	26.2
	2 years	182	30.3
	3 years	187	31.2
	4 years	73	12.2
	5 years	0	0.0
	6 years and above	1	0.2
Parent's highest education	High School	400	66.7
	Diploma	65	10.8
	Bachelor Degree	77	12.8
	Master Degree	11	1.8
	Doctoral Degree	7	1.2
	Others	40	6.7
Parent's monthly gross income	Less than RM 2000	216	36.0
	RM 2001 – RM 3500	214	35.7
	RM 3501 – RM 5000	91	15.2
	RM 5001 – RM 7000	41	6.8
	RM 7001 – RM 10,000	20	3.3
	More than RM 10,000	18	3.0

Of the total sample, 43.8% were male and 56.2% were female. The majority respondents were Chinese (94.7%). The respondents' ages were between 19

and 24 years old (98.4%) with most of them in between year 1 to year 3 of their study in the university. The students in year 1 of their study were 44.2%, whereas students in year 2 and year 3 were 30.7% and 20.0% respectively.

Some of the students started at foundation level and subsequently continued on to pursue the degree programmes at the university. The students who were in their second year, third year and fourth year of study in the university were 30.3%, 31.2% and 12.2% respectively. That is means the respondents have enough experiences with the services provided by the university and they are appropriate to give feedback in this study.

As the Perak Campus is a main campus, it has the highest population of students compared to the other three campuses. Respondents from Perak Campus were 61.0%. Meanwhile, respondents from three campuses in Klang Valley are as follows: Kuala Lumpur campus (17.3%); Sungai Long Campus (16.2%); and Petaling Jaya Campus (5.5%).

More than half of the respondents' parents graduated from high school, 66.7%; 10.8% with diploma; 12.8% with bachelor's degrees; 3.0% completed their postgraduate studies and 6.7% for others, which refers to those had completed just primary education.

On the income level of the respondents' parents, 36.0% of respondents' parents were monthly income below RM2000; 35.7% were reported that their parents' monthly income were RM2001–RM3500, followed by 15.2% with

monthly income between RM 3501–RM 5000; 6.8% with monthly income between RM 5001–RM 7000 and 3.3% with monthly income between RM 7001–RM 10,000. Only 3.0% of the respondents' parents had a monthly income more than RM10000.

In summary, the majority of respondents were between 20 and 22 years old. They were Chinese female in their first, second or third year of study. They had been studying in this university for more than two years (as most of them started from their foundation studies in this university). Their parents graduated from high school with monthly income of less than RM2000.

4.4 RELIABILITY ASSESSMENT

The Cronbach's alpha coefficient is generally used to measure the internal consistency of a scale which is the most cited measure of reliability for a multi-item scale (Sekaran, 1992). The value is relatively influenced by the number of items in a survey. The overwhelming Cronbach values are above 0.7 (DeVellis 2003; Nunnally, 1978), although Alexandris et. al., (2002) proposed that items with alpha value less than 0.60 can also be accepted.

In this study, a reliability evaluation was performed to assess the internal consistency for each of the five dimensions of service quality and other constructs (corporate image, student satisfaction and positive word-of-mouth) in the research framework. The outcomes of the reliability assessment of the variables are shown in Table 4.2.

Table 4.2
Cronbach Alpha Value for Each of the Five Dimensions of Service Quality and Its Total Service Quality, and Other Variables

Variables	Cronbach Alpha	Cronbach Alpha (Previous Studies)	Mean	Skewness
Total Service Quality	0.95	0.91	5.66	-0.135
(a) Tangibles	0.78	0.64	6.06	-0.230
(b) Reliability	0.85	0.87	5.41	0.025
(c) Responsive	0.78	0.77	5.41	-0.015
(d) Assurance	0.83	0.81	5.81	-0.347
(e) Empathy	0.84	0.80	5.39	-0.042
Corporate Image	0.90	-	5.91	-0.290
Student Satisfaction	-	-	5.79	-0.399
Positive Word-of-Mouth	0.93	-	5.98	-0.346
(N of Cases = 600)				

The alpha values for all measured variables are in an acceptable range which is more than 0.7 (DeVellis 2003; Nunnally, 1978). Alpha values above 0.7 are viewed as up to standard. However, alpha values 0.8 are desirable (Pallant, J., 2007). In this study, the alpha values for all variables are in range of 0.78 to 0.95. Thus, the scale in this study has very good internal consistency reliability.

The alpha values for each of the five dimensions of service quality are resulted as follows: tangibles (0.78), reliability (0.85), responsiveness (0.78), assurance (0.83) and empathy (0.84). The alpha values for all the dimensions are more or less the same with values indicate in the previous studies column (Ham, 2003), except for the value for the tangible (0.78) in this study which is slightly higher than value in the previous studies (0.64) (Ham, 2003). The total service quality has shown a preferable internal consistency with the alpha value of 0.95.

The alpha value (0.90) of corporate image shows strong internal consistency.

The main reference (Brown and Mazzarol 2009) didn't indicate the alpha value for corporate image. However, they did mention that the reliability for the scale was assessed using Cronbach's Alpha test (Cronbach, 1951) prior to further analysis on the research model by using structural equation modeling (SEM) known as partial least squares (PLS). The Cronbach's Alpha test had confirmed the internal consistency of the corporate image.

Reliability test is not needed for student satisfaction derived from (Ham 2003) because only one item was asked. Meanwhile, the positive word-of-mouth, which is also adopted from Ham (2003), has high alpha value (0.93), an indication of strong internal consistency. But, the alpha value of this scale was not indicated by Ham (2003).

The results of skewness for all the independent and dependent variables as well as the five dimensions of service quality shown in Table 4.2 explain that there is no serious departure from normality. Therefore, the parametric statistical technique can be used for further analysis.

4.5 CORRELATION BETWEEN VARIABLES

Correlation is a technique used to analyse the relationship between two variables in a linear fashion (Pallant, J., 2001). The outcomes of this study were be interpreted according to the recommendation proposed by Cohen (1988) whereby a correlation coefficient for range from 0.10 to 0.29 is considered as a weak correlation; 0.30 to 0.49 is considered as a medium correlation; and 0.50 to 1.0 is considered as a strong correlation (Pallant, J.,

2007). In this study, the results of the correlation between the variables are shown in Table 4.3. With the sample size of 600, the service quality mean score is 5.66 and student satisfaction mean score is 5.78 on a likert scale of 1 to 10 (1 = very dissatisfied; 10 = very satisfied). This means that the overall student satisfaction is considered moderate with the moderate service quality provided by the university.

Table 4.3
Correlation between the Variables

Variable	Student Satisfaction	Positive Word-of-Mouth	Mean	Standard Deviation
Service Quality	0.829**	-	5.66	1.38
Corporate Image	0.736**	-	5.91	1.17
Student Satisfaction	-	0.826**	5.78	1.78
Positive Word-of-Mouth	0.826**	-	5.98	1.88
Sample size (N) = 600				

** Correlation is significant at the 0.01 level (2-tailed), **p = 0.00.

The correlation coefficient between service quality and student satisfaction is r = 0.829. The strength of correlation of 0.829 is considered very significantly strong with a positive direction between the two variables. The positive direction shows that when the perceived service quality is high, student satisfaction will also be high. The value of R^2 = 0.69, this means 69% of the variance in student satisfaction is explained by service quality.

The mean score for corporate image is 5.91. It is a little bit higher than the score of student perception on service quality (5.66) provided by the university. However, the score for perception of the corporate image is also considered in the range of moderate. There is a very significantly strong relationship between corporate image and student satisfaction with r = 0.736 (p = 0.00)

indicates a positive direction between these two variables. The better the corporate image of the university, the higher degree of student satisfaction could be observed. The value of $R^2 = 0.54$; this means 54% of the variance in student satisfaction is explained by corporate image.

The mean of positive word-of-mouth is 5.98, which is also in the range of moderate. This means that students were not strongly or aggressively promoting their university to their friends or public when they were asked to share their opinion or views of service and image of their university. Also, the correlation for student satisfaction and positive word-of-mouth is 0.826 ($p = 0.00$). Therefore, there is a strong significant relation with a positive direction between these two variables. When student satisfaction is high, the willingness of student to provide positive word-of-mouth is also high. The value of $R^2 = 0.68$ whereby 68% of the variance in positive word-of-mouth is explained by student satisfaction.

4.6 MULTIPLE REGRESSION ASSESMENT

4.6.1 Five Dimensions of Service Quality

In this section, multiple regression analysis was used to identify the most influence dimension of service quality on student satisfaction. Referring to Table 4.4, results show that all the five dimensions explained 53.0% of the variance in student satisfaction with the model indicating significant predictors ($F=133.929$, $p= 0.000$). The standardized betas of the regression coefficients for tangible (0.259) is the most influence dimension to student satisfaction, followed by empathy (0.208), responsive (0.160), assurance (0.120), whereas

reliability (0.089) is the lowest effect to student satisfaction as compared with other dimensions.

Table 4.4
Multiple Regression Analysis: Five Dimensions of Service Quality
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.728[a]	.530	.526	1.2253

a. Predictors: (Constant), T_Empathy, T_Tangible, T_Reliability, T_Assurance, T_Responsive

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1005.420	5	201.084	133.929	.000[a]
	Residual	891.845	594	1.501		
	Total	1897.265	599			

a. Predictors: (Constant), T_Empathy, T_Tangible, T_Reliability, T_Assurance, T_Responsive
b. Dependent Variable: Overall Satisfaction

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.288	.222		1.297	.195
	T_Tangible	.293	.045	.259	6.526	.000
	T_Reliability	.107	.061	.089	1.756	.080
	T_Responsive	.194	.063	.160	3.071	.002
	T_Assurance	.134	.055	.120	2.442	.015
	T_Empathy	.244	.061	.208	4.027	.000

a. Dependent Variable: Overall Satisfaction

4.6.2 Hypotheses Testing For Variables

In this study, a total of 5 hypotheses were proposed. The relationships of the hypotheses were analysed using multiple regression test.

H1: Service quality positively influences student satisfaction;

H2: Corporate image positively influences student satisfaction.

Table 4.5
Multiple Regression Analysis: Service Quality and Corporate Image to Student Satisfaction

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.837[a]	.701	.700	.9752	.701	699.091	2	597	.000

a. Predictors: (Constant), TOTAL_CI, TOTAL_SQ

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1329.564	2	664.782	699.091	.000[a]
	Residual	567.701	597	.951		
	Total	1897.265	599			

c. Predictors: (Constant), TOTAL_CI, TOTAL_SQ
d. Dependent Variable: Overall Satisfaction

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.885	.205		-4.309	.000
	TOTAL_SQ	.869	.049	.672	17.852	.000
	TOTAL_CI	.298	.057	.195	5.192	.000

a. Dependent Variable: Overall Satisfaction

As shown in Table 4.5, both independent variables explained 70.1% of the variance in student satisfaction with the model indicating significant predictors (F=699.091, p= 0.000). The regression coefficients of both independent variables show that they have significant effect ($p < 0.01$) on the mediator of student satisfaction. Therefore, it can be concluded that the results support H1 and H2. The findings of this test also show that the service quality (0.672) is the stronger influencing factor on the student satisfaction as compared to the corporate image (0.195).

H3: Student satisfaction positively influences positive word-of-mouth

Table 4.6
Multiple Regression Analysis: Student Satisfaction to Positive Word-of-Mouth

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.826[a]	.682	.681	1.0625	.682	1281.777	1	598	.000

a. Predictors: (Constant), Overall Satisfaction

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1446.950	1	1446.950	1281.777	.000[a]
	Residual	675.060	598	1.129		
	Total	2122.010	599			

a. Predictors: (Constant), Overall Satisfaction

b. Dependent Variable: Total PWOM

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.926	.148		6.275	.000
	Overall Satisfaction	.873	.024	.826	35.802	.000

a. Dependent Variable: Total PWOM

The Table 4.6 shows that the independent variable (student satisfaction) explained 68.2% of the variance in positive word-of-mouth with the model indicating significant predictors ($F = 1281.777$, $p = 0.000$). The regression coefficient of independent variable (student satisfaction) shows a significant effect ($p < 0.01$) on dependant variable (positive word-of-mouth). Hence, H3 is supported in this study.

4.6.3 Testing the Mediator

In this study, two hypotheses consider student satisfaction as a mediating variable in the relationship between the independent variables (service quality and corporate image) and the dependent variable (positive word-of-mouth). The two hypotheses are as follows:

H4a: Student satisfaction significantly mediates the relationship between service quality and positive word-of-mouth

H4b: Student satisfaction significantly mediates the relationship between corporate image and positive word-of-mouth

To test the mediation of student satisfaction on the relationship between independent variables (service quality and corporate image) and dependent variable (positive word-of-mouth), the below steps were followed:

(a) That the independent variables significantly influence the dependent variable;

(b) That the independent variables significantly influence the mediator;

(c) That the mediator significantly influences dependent variable (with the predictor accounted for); and

(d) Lastly, verification is done to check the direct effect of independent variables and dependent variable in step (a) and step (c). For complete mediation, the Beta at step (c) must be 0 or insignificant effect of independent variables on dependent variable. For partial mediation, the Beta at step (c) must be less than step (a).

(Baron and Kenny, 1986; MacKinnon, et al., 2002; G. Pierce, 2003; Grayson N. Holmbeck, 2006; David Howell, 2006)

Table 4.7
Multiple Regression Analysis: Service Quality and Corporate Image to Positive Word-of-Mouth

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.767[a]	.589	.587	1.2092	.589	427.178	2	597	.000

a. Predictors: (Constant), TOTAL_CI, TOTAL_SQ

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1249.143	2	624.572	427.178	.000[a]
	Residual	872.866	597	1.462		
	Total	2122.010	599			

a. Predictors: (Constant), TOTAL_CI, TOTAL_SQ
b. Dependent Variable: Total PWOM

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.657	.255		-2.579	.010
	TOTAL_SQ	.759	.060	.555	12.580	.000
	TOTAL_CI	.397	.071	.246	5.581	.000

a. Dependent Variable: Total PWOM

Referring to the result shown in Table 4.7, both independent variables (service quality and corporate image) together explained 58.9% of the variance in positive word-of-mouth with the model indicating significant predictors ($F = 427.178$, $p = 0.000$). The regression coefficients of both independent variables show that they have significant effect ($p < 0.01$) on the prediction of positive word-of-mouth. The step 1 has been fulfilled.

Table 4.8
Multiple Regression Analysis: Service Quality and Corporate Image to Student Satisfaction

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.837[a]	.701	.700	.9752	.701	699.091	2	597	.000

a. Predictors: (Constant), TOTAL_CI, TOTAL_SQ

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1329.564	2	664.782	699.091	.000[a]
	Residual	567.701	597	.951		
	Total	1897.265	599			

a. Predictors: (Constant), TOTAL_CI, TOTAL_SQ
b. Dependent Variable: Overall Satisfaction

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.885	.205		-4.309	.000
	TOTAL_SQ	.869	.049	.672	17.852	.000
	TOTAL_CI	.298	.057	.195	5.192	.000

a. Dependent Variable: Overall Satisfaction

Table 4.8 reveals that both independent variables (service quality and corporate image) together explained 70.1% of the variance in student satisfaction with the model indicating significant predictors ($F = 699.091$, $p = 0.000$). The regression coefficients of both independent variables show that they have significant effect ($p < 0.01$) on the mediator of student satisfaction. The step 2 has been fulfilled.

Table 4.9
Multiple Regression Analysis: Service Quality, Corporate Image and Student Satisfaction to Positive Word-of-Mouth

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.838[a]	.702	.701	1.0296	.702	468.605	3	596	.000

a. Predictors: (Constant), Overall Satisfaction, TOTAL_CI, TOTAL_SQ

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1490.224	3	496.741	468.605	.000[a]
	Residual	631.786	596	1.060		
	Total	2122.010	599			

a. Predictors: (Constant), Overall Satisfaction, TOTAL_CI, TOTAL_SQ
b. Dependent Variable: Total PWOM

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.080	.220		-.364	.716
	TOTAL_SQ	.193	.064	.141	3.033	.003
	TOTAL_CI	.203	.062	.126	3.276	.001
	Overall Satisfaction	.652	.043	.616	15.081	.000

a. Dependent Variable: Total PWOM

Referring to the Table 4.9, independent variables together explained 70.2% of the variance in positive word-of-mouth with the model indicating significant predictors (F = 468.605, p = 0.000). The results at regression coefficients show that the Beta values (0.193 and 0.203) for both independent variables in step 3 are less than Beta values in step 1 (0.759 and 0.397). Hence, it has provided the evidence that overall satisfaction provides a moderate mediation effect between the independent variables (service quality and corporate image) and the dependant variable (positive word-of-mouth). In sum, the

multiple regression results show a support for the mediation hypothesis, H4a and H4b.

4.7 CONCLUSION

600 sets of usable and valid feedback were used to run the analysis in this study. The data were obtained from undergraduate students; a majority of them were between 20-22 years old; first year and second year students who had been at the university for 2 to 3 years with some of them started from foundation studies subsequently pursuing their degree study. They were female Chinese with parent's who graduated from high school and had a monthly income of less than RM2, 000.

All the constructs were tested by the reliability assessment and confirmed to have strong internal consistency for each of the scale. The results fell in the acceptable range, which is more than 0.70 (DeVellis 2003; Nunnally, 1978).

Correlation analysis was performed to test the strength of correlation between two variables. In this study, all the variables are having a strong relationship with a positive direction between two variables. The outcomes indicate in the acceptable range, 0.50 to 1.0, which is considered as a strong correlation (Pallant, J., 2007).

Multiple Regression analysis was carried out to test the relationships stated in the hypotheses. The results showed that all the proposed hypotheses (H1, H2, H3, H4a and H4b) in this study had been supported.