CHAPTER 4   DATA ANALYSIS AND FINDINGS

4.1   Introduction

This chapter presents the findings of this study, which were obtained from the various analyses. The chapter starts with the respondents' profile and is supported by demographic data. For the preliminary analyses section, normality tests were performed to ensure sample normality, subsequently, descriptive analyses were executed for each item and variable. Furthermore, two inferential analyses were performed, Pearson's correlation and multiple regression. The bivariate analysis examines the relationship between the independent variables and the dependent variable, whereas the multiple regression analysis provides an indication of its predictor and criterion.

4.2   Respondents' Profile

The respondents' demographic data is described in this section. A detailed overview of the demographic profiles of the respondents is presented in **Table 4.1**.

Based on the sample collected through the distribution of questionnaires, female respondents slightly outnumber male respondents, accounting for 51 percent as against 49 percent, respectively. The majority of the respondents are from the age group of 25 to 30 years (44.3%) and 24 years and below (26%), 19.3 percent were from the 31 to 35 years group and minimal respondents fell within the range of 36 years and above.

From the ethnic groups, the Chinese occupied the highest percentage (64%), followed by Indian (17%), Malay (13.7%), and others (5.3%). The majority of the respondents have first degree as their highest educational qualification achieved (59.3%).

In terms of mobile service consumption, most of the respondents owned one mobile service line (76%), followed by two mobile service lines (19%), the remaining owned three or more than three mobile service lines. The majority of the respondents are currently subscribed to Maxis, representing 53.3 percent (Maxis plans consist of Hotlink, Youth Plan and Post-paid). This is consistent with the market share of the three established mobile service providers in Malaysia, whereby Maxis enjoy the largest market share with 11.7 million subscribers based on an approximate 28 million population in Malaysia with close to 100 percent mobile penetration rate (Yeap, 2009 - Special Focus: Maxis, Astro battling for market share, *The Edge*). A total of 32.7 percent of respondents subscribed to DiGi (Prepaid, Prepaid Campus and Post-paid), which was followed by Celcom (14%).

The majority of the respondents are experienced mobile service subscribers or users with a subscription to their existing mobile service provider for more than six years (43%), followed by 3 to 4 years of subscription (20.3%), 5 to 6 years (14.7%), 1 to 2 years subscription occupied 14.3 percent and 7.7 percent subscribed to their mobile service provider for less than 1 year. Based on the sample criterion set in this study, mobile subscribers who have been attached to a mobile service provider for more than three months are considered as experienced users or customers based on the evaluation churn cycle of the telecommunication industry.

Table 4.1: The Demographic Profiles of the Respondents (*N*=300)

			Frequency, *n*	Percentage, %
Gender	Male		147	49.0
	Female		153	51.0
		Total	300	100
Age	24 years and below		78	26.0
	25 - 30 years		133	44.3
	31 - 35 years		26	19.3
	36 - 40 years		7	7.3
	41 years and above		5	3.0
		Total	300	100
Ethnic Group	Malay		41	13.7
	Indian		51	17.0
	Chinese		192	64.0
	Other		16	5.3
		Total	300	100
Higher Qualification	Primary		0	0
	Secondary		4	1.3
	Certificate/Diploma		79	26.3
	First Degree		178	59.3
	Postgraduate		39	13.0
		Total	300	100
Salary	RM2,000 or less		66	22.0
	RM2,001– RM4,000		97	32.3
	RM4,001- RM6,000		78	26.0
	RM6,001- RM8,000		31	10.3
	More than RM8,000		28	9.3
		Total	300	100
No. of mobile lines owned	1 line		228	76.0
	2 lines		57	19.0
	3 lines		13	4.3
	More than 3 lines		2	0.7
		Total	300	100
Mobile Plan Used	Maxis Hotlink		53	17.7
	Maxis Youth Plan		10	3.3
	Maxis Postpaid		97	32.2
	Celcom Xpax		12	4.0
	Celcom XOX/UOX		7	2.3
	Celcom Postpaid		23	7.7
	DiGi Prepaid		26	8.7
	DiGi Prepaid Campus		16	5.3
	DiGi Postpaid		56	18.7
		Total	300	100

			Frequency, *n*	Percentage, %
Years of Subscription with Existing Mobile Service Provider	Less than 1 year		23	7.7
	1-2 years		43	14.3
	3-4 years		61	20.3
	5-6 years		44	14.7
	More than 6 years	Total	129	43.0
			300	100
Mobile Expenses in a Month	RM50 or less		51	17.0
	RM51 – RM100		126	42.0
	RM101 – RM150		68	22.7
	RM151 – RM200		31	10.3
	More than RM200		24	8.0
		Total	300	100

4.3   Preliminary Analyses

In this section, several analyses are performed as part of the process of inspection of the data collected for this study. The nature of variables in this study are explored through statistical techniques to address the research questions of this study

4.3.1 Normality Test

Normality is described by a symmetrical bell shaped curve that has the greatest frequency of scores in the middle, with smaller frequencies towards the extremes (Pallant, 2007). In this study, after the normality tests were conducted, no extreme outliers were found in the findings, all fell within the acceptable range. Hence the total sample size of *N*= 300 remained. The normalized findings are presented in **Table 4.2**.

4.3.2 Descriptive Statistics

The normality of the sample is construed from the values of the Skewness and Kurtosis tests. According to Sekaran (2003), values that fall within the range of -2 to +2 for the

Skewness test, and -3 to +3 for the Kurtosis test are considered within the normal range. Therefore, the normality of the sample is appropriate. Details of the normality test findings are shown in **Table 4.2**

Table 4.2: Statistical normality tests for scale data from the sample ($N=300$)

	Service Quality	Brand Image	Brand Trust	Price	Customer Value	Customer Loyalty
Mean	6.45	7.17	7.02	6.12	6.52	6.09
5% Trimmed Mean	6.40	7.26	7.05	6.15	6.48	6.08
Median	6.20	7.90	7.25	6.37	6.42	6.00
Variance	1.16	3.31	1.73	2.40	2.11	1.15
Std. Deviation	1.07	1.81	1.31	1.55	1.45	1.07
Minimum	3.05	1.60	2.25	1.00	1.43	2.80
Maximum	10.00	10.00	10.00	10.00	10.00	10.00
Range	6.95	8.40	7.75	9.00	8.57	7.20
Skewness	0.76	-0.70	-0.67	-0.45	0.25	0.26
Kurtosis	1.56	-0.47	-1.09	1.13	0.38	0.95

The overall results show that the distribution of the sample is normal. Thus, the sample is acceptable and can be regarded as normal distribution through the random sample from the population. The residual between the observed value and predicted value must be relatively small to be fitted into the model, thereby indicating that the sample is representative of the population.

4.4   Descriptive Analysis

The means of 42 items, tested according to each variable, are presented in **Table 4.3**. All items have a mean score above 3.00. This is an indication that the majority of the

respondents agreed with the items' statements based on each variable and considered those items as major antecedents of customer loyalty towards mobile service providers.

Table 4.3: Summary of the means of items according to variable ($N =300$)

Variables		Importance	
		Mean	*S.D.*
Service Quality (IV$_1$)			
SQ1	The service provider provides quality network coverage	4.60	1.079
SQ2	The provider provides quality value-added services (i.e. 3G, GPRS, WAP, etc)	4.69	1.179
SQ3	The appearance of service provider's physical facilities are visually appealing	4.57	1.109
SQ4	The service provider delivers its promise on time	4.37	1.216
SQ5	When customers have a problem, the service provider shows a sincere interest in solving it	4.54	1.272
SQ6	The service provider is dependable	4.55	1.241
SQ7	The service provider deliver its services at the times it promises to do so	4.49	1.247
SQ8	The service provider keeps its records accurately	4.62	1.181
SQ9	Transactions with the service provider are error-free and always right at the first time	4.40	1.327
SQ10	The service provider informs customers exactly when the service will be performed	4.52	1.289
SQ11	I receive prompt service from customer service staff	4.46	1.296
SQ12	Customer service staff are always willing to help customers	4.66	1.221
SQ13	Customer service staff respond to customer requests promptly	4.60	1.245
SQ14	I can trust customer service staff	4.47	1.289
SQ15	I feel safe in my transactions with customer service staff	4.49	1.217
SQ16	Customer service staff are consistently courteous to customers	4.70	1.155
SQ17	Customer service staff have adequate knowledge and support to solve customers' enquiries and problems	4.52	1.258
SQ18	The service provider gives me individual attention	4.45	1.243
SQ19	The service provider has the customers' best interests at heart	4.35	1.192
SQ20	Customer service staff understand my needs	4.33	1.211
SQ21	The service provider has my best interest at heart	4.33	1.225
SQ22	The service provider has operating hours and locations convenient to all its customers	4.71	1.328

Variables	Importance	
	Mean	*S.D.*

Brand Image (IV$_2$)

BI1	The service provider is always thinking outside of the box and is innovative	7.04	1.946
BI2	The service provider is warm and engaging	6.99	1.846
BI3	The service provider is daring and imaginative	7.04	2.135
BI4	The service provider is visionary and forward looking	7.41	2.132
BI5	The service provider is up to date and contemporary	7.40	1.916

Brand Trust (IV$_3$)

BT1	Reliability	6.99	1.462
BT2	Competency	7.07	1.477
BT3	Integrity	7.00	1.492
BT4	Responsiveness	7.03	1.670

Price (IV$_4$)

SC1	The service provider offers better and attractive product/service prices	6.23	1.805
SC2	The service provider offers more value-added services as compared to other service providers	6.32	1.723
SC3	The service provider's product/service is always value for money	6.27	2.851

Customer Value (MV)

CV1	Overall, the service provided by the service provider is valuable	4.67	1.080
CV2	The service quality I receive from the service provider is worth my money, time and effort	4.46	1.175

Customer Loyalty (DV$_1$)

CL1	I intend to continue using the service provided by the service provider	6.77	1.763
CL2	I say positive things about the operator to other people	6.35	1.743
CL3	I recommend the operator to my friends and relatives	5.93	1.860
CL4	I consider switching away from the service provider	4.58	2.165
CL5	I consider the provider as my primary mobile service provider	6.87	1.741

A summary of the computed means of all the items according to variables is shown in **Table 4.4.** The overall score for each variable was obtained by averaging the response to the appropriate items.

Table 4.4: Summary of the means of computed items according to variable (*N*= 300)

Variable	Importance	
	Mean	S.D
Service Quality	6.73	1.29
Brand Image	6.26	1.77
Brand Trust	6.70	1.57
Price	5.90	1.94
Customer Value	6.88	1.62
Customer Loyalty	6.18	1.33

The means of all the computed items are above 3.00. This result reveals that the respondents consider that all the factors listed above consist of some degree of importance concerning their loyalty with their mobile service provider.

4.5   Validity Test

The objective of the validity test is to determine whether the questions in the questionnaire are tapping into the right concept (Sekaran, 2003). Pallant (2007) cited that there are two main issues to consider in deciding whether a particular data set of a sample is appropriate for factor analysis: sample size and the strength of the relationship among the items or variables. Tabachnick and Fidell (2007) suggested that it is comforting to collect at least 300 cases for factor analysis. In this study, the sample size is 300, which aligns with the suggested sample size. Hence, the data set for this sample is acceptable for factor analysis.

The validity test is conducted through factor analysis. Factor analysis is performed to validate the appropriateness of the measureable items used in this study. Two statistical measures were also performed to determine the ability to perform factor analysis

– the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, and Bartlett's test of Sphericity. Bartlett's test of Sphericity should be significant (p< 0.05) in order for the factor analysis to be considered appropriate, while the minimum value for good factor analysis is 0.60 for the Kaiser-Meyer-Olkin (KMO) index (Pallant, 2007). In this section, two factor analyses were carried out separately for the independent variables and the dependent variable.

4.5.1   Independent Variables

The results of the KMO and Bartlett's Test for independent variable are demonstrated in **Table 4.5**. The KMO value is 0.93, exceeding the value of 0.60 (Kaiser, 1970, 1974) and Bartlett's Test of Sphericity (Bartlett, 1954) is statistically significant ($p < 0.00$), supporting the factorability of the correlation matrix.

Table 4.5: KMO and Bartlett's Test for Independent Variables

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.939
Bartlett's Test of Sphericity	Approx. Chi-Square	6398.888
	df	595
	Sig.	.000

4.5.2 Dependent Variables

The results of the KMO and Bartlett's Test for dependent variable are shown in **Table 4.6.** The Kaiser-Meyer-Olkin value is 0.87, exceeding the minimum value of 0.60 and Bartlett's Test of Sphericity reached statistically significant, supporting the factorability of the correlation matrix.

Table 4.6: KMO and Bartlett's Test for Dependent Variables

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.871
Bartlett's Test of Sphericity	Approx. Chi-Square	1094.810
	df	15
	Sig.	.000

4.6 Reliability Test

The reliability test is concerned with whether a scale indicates that it is free from random error. In addition, the reliability of a measure indicates the extent to which it is without bias in ensuring consistent measurement across time and various items in the instruments. The reliability of the scales instrument used in this study was tested through the Cronbach's alpha coefficient test.

In this study, Cronbach's alpha coefficient for each variable was used to measure the internal consistency of the scales adopted in the survey. The Cronbach's alpha value of each variable is presented in **Table 4.7**.

Table 4.7: Cronbach's alpha value of variables

	Variables	Number of item	Cronbach's Alpha Value
IV	Service Quality	22	0.92
IV	Brand Image	5	0.94
IV	Brand Trust	4	0.88
IV	Price	4	0.84
MV	Customer Value	2	0.77
DV	Customer Loyalty	5	0.50

According to Nunnally (1978) and DeVellis (2003) a minimum level of 0.70 for the scale of variable is considered as being high reliability. **Table 4.7** shows that all the

variables are highly reliable except "Customer loyalty". This revealed a Cronbach's value of 0.50, which is lower than the minimum level of 0.70. In this case, the corrected item-total correlation was reviewed to provide an indication of the degree to which the item correlates with the total score. Based on **Table 4.8**, the low value item that is less than 0.30 in the scale of variable (stated as -0.52) is "CL4: I consider switching away from the service provider".

Table 4.8: Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CL1	23.73	17.00	.608	.216
CL2	24.15	16.32	.682	163
CL3	24.56	15.29	.700	.123
CL4	25.91	38.40	-.526	.894
CL5	23.63	17.24	.600	.226

After CL4 was removed from the scale, the final Cronbach's alpha obtained for "Customer Loyalty" indicates 0.89, which is highly reliable with a well-validated scale, Consequently, five items from the DV were reduced to four items as shown in **Table 4.9**. Therefore, all the variables tested are highly reliable.

Table 4.9: Cronbach's alpha value of variables

	Variables	Number of items	Cronbach's Alpha Value
IV	Service Quality	22	0.94
IV	Brand Image	5	0.94
IV	Brand Trust	4	0.93
IV	Price	4	0.87
MV	Customer Value	2	0.86
DV	Customer Loyalty	4	0.89

In short, the findings of the reliability tests support the appropriateness of the instruments used throughout this study and the concept tested is suitable in the area of study. Therefore, the outcome of the instruments is suitable for a higher level of analyses.

4.7 Correlation Analysis

In this section, Pearson's correlation is employed to examine the relationship between the independent variables (IVs) and the dependent variable (DV). To test the relationship, in this section, the mediator in this study is treated as a dependent variable. Correlation coefficients are able to provide a numerical overview of the direction and strength of the linear relationship between the IVs and DVs. Pearson's correlation coefficients (r) range from -1 to +1 for the indication of positive or negative correlation. According to Pallant (2007), the size of the absolute value formulates information on the strength of the relationship. The findings of the correlations between the independent variables and the dependent variables are summarized and presented in **Table 4.10**.

Table 4.10:

The correlation between the independent variables and the dependent variables ($N=300$)

		Dependent Variables	
		Customer Value, DV_1	Customer Loyalty, DV_2
Service Quality, IV_1	Pearson Correlation	0.67**	0.63**
	Sig. (2-tailed)	.000	.000
Brand Image, IV_2	Pearson Correlation	0.66**	0.64**
	Sig. (2-tailed)	.000	.000
Brand Trust, IV_3	Pearson Correlation	0.79**	0.77**
	Sig. (2-tailed)	.000	.000
Price, IV_4	Pearson Correlation	0.80**	0.74**
	Sig. (2-tailed)	.000	.000

* Correlation is significant at the 0.01 level (2 tailed).

Service Quality (IV₁)

There is a significant, strong and positive correlation between Service Quality and Customer Value and Customer Loyalty (r =0.00, r =0.00, respectively, $p < .01$). In testing the relationship between variables, 0.70 is strong, within the range of 0.30 to 0.60 is considered moderate and less than 0.30 would be weak. The relationship between the variables is stated as 0.67 and 0.63, respectively, which further reinforces the relatively strong relationship between the IV and the DVs. This correlation indicates that the higher the service quality, the higher the customer value and that it leads to greater customer loyalty.

Brand Image (IV₂)

There is a significant, strong and positive correlation between Brand Image and Customer Value and Customer Loyalty (r =0.00, r =0.00 respectively, $p < .01$). The relationship between the variables is stated as 0.66 and 0.64, respectively, which further reinforces the relatively strong relationship between the IV and DVs. This correlation indicates that the more positive the brand image is towards the mobile service provider, the higher the customer value for greater customer loyalty.

Brand Trust (IV₃)

There is a significant, strong and positive correlation between Brand Trust and Customer Value and Customer Loyalty (r =0.00, r =0.00, respectively, $p < .01$). The relationship between the variables is stated as 0.79 and 0.77, respectively, which further reinforces the very strong relationship between the IV and two DVs. This correlation suggests that the

higher the brand trust towards the mobile service provider, the higher the customer value, which leads to greater customer loyalty.

Price (IV$_4$)

There is a significant, strong and positive correlation between Price and Customer Value and Customer Loyalty (r =0.00, r =0.00, respectively, p < .01). The relationship between the variables, stated as 0.80 and 0.74, respectively, further reinforces the very strong relationship between the IV and two DVs.

Table 4.11: The correlation between Customer Value and Customer Loyalty (N=300)

		Customer Loyalty
Customer Value, IV	Pearson Correlation	.783**
	Sig. (2-tailed)	.000

** Correlation is significant at the 0.01 level (2 tailed).

To further reinforce the relationship between the mediator, Customer Value and the dependent variable, Customer Loyalty, a separate correlation test was performed with the result shown in **Table 4.11.** There is a significant, strong and positive correlation between Customer Value and Customer Loyalty (r =0.00, p < .01). This correlation indicates that the higher the customer value, the higher the customer loyalty towards the mobile service provider.

4.8 Multiple Regression Analysis

A multiple regression analysis was performed in this section to identify the predictor and its contribution towards the criterion. It aims to determine the prediction of a single dependent variable from a group of independent variables.

To ensure the appropriateness of the outputs from the regression analysis, the assumptions of multiple regression must be closely adhered to. In this case, the normality, linearity, homoscedasticity, multicollinearity, autocorrelation and multivariate outlier, all refer to the various aspects of the distribution of scores and the nature of the underlying relationship between the variables. These assumptions were tested by checking the Normal Probability Plot (P-P) of the Regression Standard Residual, Scatter Plot, and other analyses that supplement the regression analysis. Furthermore, the sample of normality is further demonstrated in a Normal P-P of the Regression Standard Residual, as shown in **Figure 4.1** below.
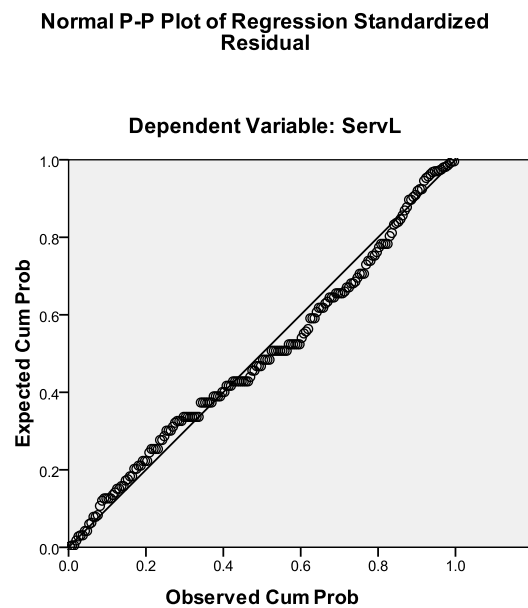

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: ServL

Figure 4.1: Normal P-P Plot of regression standardized residual for dependent variables

From the Normal P-P plot, all the points are positioned in a reasonably straight diagonal line from bottom left to top right. Although, there are some points that skew right off from the straight diagonal line, overall, there is no indication of a major deviation from normality. Therefore, the normality result is appropriate and acceptable.

In addition, the scatter plot of the residual in **Figure 4.2** shows that the residuals are roughly distributed rectangularly. The findings demonstrate that the predictors (independent variables) are linearly related to the residual of the criterion (dependent variables). Therefore, the homoscedasticity of the sample for this study is ensured. In addition, there is no sign of obvious outliers as no score has a standardized residual of more than 3.3 or less than -3.3. Although, one potential outlier (red circle) is detected, it is within the -3.3, and, therefore, it is acceptable.
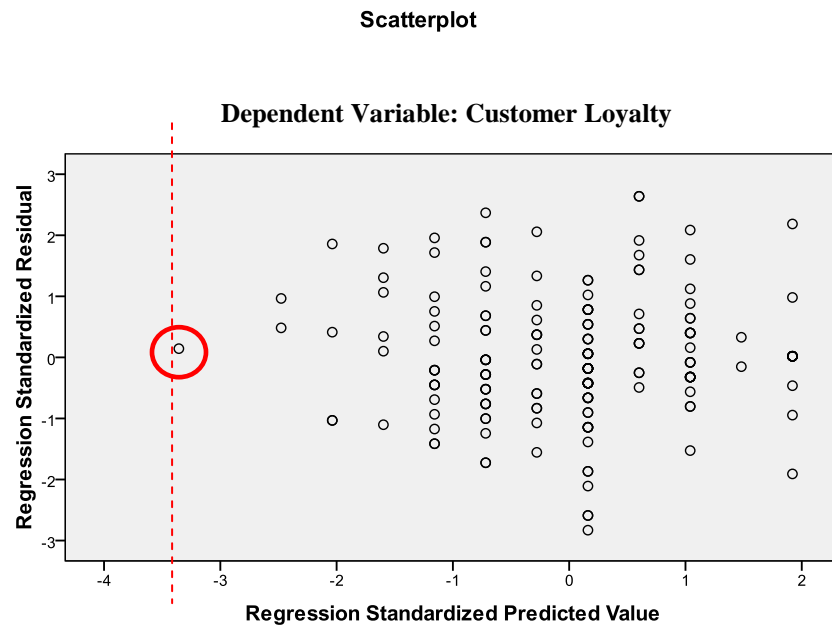
Scatterplot

Dependent Variable: Customer Loyalty

Figure 4.2: The scatter plot of residuals for observed value and predicted value

Furthermore, in the collinearity statistic tests all three predictors have tolerance values greater than 0.10, and variance inflection factor (VIF) values less than 10. This reveals that there is no multicollinearity between the variables. The Durbin-Watson value in this analysis is 1.88, which falls within the range of 1.5 to 2.5, showing that there is no autocorrelation in the residual. In conclusion, all the assumptions were complied

with throughout the regression analysis. Hence, the appropriateness of these findings is

ensured.

The multiple regression analysis was performed with all the assumptions

complied with. The results of the multiple regression are presented in **Table 4.12** to

Table 4.15.

Table 4.12: Multiple correlation of independent variables with dependent variable

Model Summary^d

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.801^a	.642	.640	.97521	.642	318.67	1	178	.000	
2	.862^b	.743	.740	.82830	.101	69.736	1	177	.000	
3	.868^c	.754	.750	.81257	.011	7.921	1	176	.005	1.881

a. Predictors: (Constant), Price

b. Predictors: (Constant), Price, Brand Trust

c. Predictors: (Constant), Price, Brand Trust, Service Quality

d: Dependent Variable: Customer Value

Table 4.13: Multiple correlation of independent variables (Customer Value) with
dependent variable (Customer Loyalty)

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.783^a	.613	.611	.83054	.613	282.342	1	178	.000	1.940

a. Predictors: (Constant), Customer Value

b. Dependent Variable: Customer Loyalty

There are multiple correlations ($R = 0.86$) of three significant predictors with the

criterion (dependent variable), as demonstrated in **Table 4.12**. From the model, the

factors that influence customer value are service quality, brand trust, and price. The three factors have a significant effect size, which explains 75 percent of the variability towards the customer value that influences the loyalty. Furthermore, the adjusted R^2 shows that in the population, the three factors account for 75 percent of the variance contributing to higher customer value.

On the same note, the multiple correlations that tested for customer value and customer loyalty are presented in **Table 4.13** with the significant predictor ($R = 0.78$). This indicates that customer value contributes to customer loyalty in this study. Customer value states a significant effect size of 61 percent variability towards customer loyalty. The adjusted R^2 reported that 61 percent of the variance in respondents agree that customer value is one of the factors that contribute to customer loyalty.

Table 4.14: Significance of Independent variables

ANOVA[d]

	Model	Sum of Squares	Df	Mean Square	F	Sig.
3	Regression	356.139	3	118.713	179.794	.000[c]
	Residual	116.208	176	.660		
	Total	472.347	179			

a. Predictors: (Constant), Price

b. Predictors: (Constant), Price, Brand Trust

c. Predictors: (Constant), Price, Brand Trust, Service Quality

d. Dependent Variable: Customer Value

Table 4.15: Significance of Independent variables (Customer Value)

ANOVA[b]

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	194.759	1	194.759	282.342	.000[a]
	Residual	122.784	178	.690		
	Total	317.543	179			

a. Predictors: (Constant), Customer Value

b. Dependent Variable: Customer Loyalty

Only a 25% of the variance of the criterion is unaccounted for. **Table 4.14** reveals that this regression is significant ($F_{3,176} = 179.79$, $p<.01$). In addition, customer value was tested as an independent variable, as shown in **Table 4.15**. This indicates a significant regression for customer value ($F_{1,178} = 282.34$, $p<.01$).

Table 4.16: Regression coefficients and significance of the independent variables

Coefficients[a]

	Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
3	(Constant)	.850	.327		2.600	.010		
	Price	.380	.045	.454	8.414	.000	.480	2.083
	Brand Trust	.374	.064	.363	5.834	.000	.361	2.771
	Service Quality	.190	.068	.151	2.814	.005	.483	2.070

a. Dependent Variable: Customer Value

Table 4.17: Regression coefficients and significance of the independent variable
(Customer Value)

Coefficients[a]

	Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.764	.270		6.529	.000		
	Customer Value	.917	.055	.783	16.803	.000	1.000	1.000

a. Dependent Variable: Customer Loyalty

Three significant predictors out of four independent variables are positively related to the criterion in the regression, as shown in **Table 4.16**. Price has the highest regression coefficient at 0.38, followed by brand trust 0.37, and service quality, 0.19. Effects from other predictors are insignificant in this set of combinations, and those factors are not included in the multiple regression equation. The multiple regression equation is as follows:

$$DV = 0.85 + 0.38IV_4 + 0.37\ IV_3 + 0.19IV_1$$

Where,

DV = Customer Value

IV_1 = Service Quality

IV_3 = Brand Trust

IV_4 = Price

4.9 Sobel Test

According to Goodman (1960), Baron and Kenny (1986), MacKinnon *et al.* (1995), the Sobel test is developed to examine whether a mediator carries the influence of an independent variable to a dependent variable. The test provides an indication of whether

the indirect effect of the IV on the DV via the mediator is significantly different from zero. In this study, this test is employed by using the web-based online calculator with the input value of coefficient and standard errors of the coefficients between the path of the IV-Mediator and Mediator-DV.

Table 4.18: Sobel, Aroian and Goodman Test for Mediating Effect

	Coefficients	Std. Error
IVs → MV	0.86	0.068
MV → DV	0.78	0.055
	Test statistic	Sig.
Sobel Test	9.438	0.00
Aroian Test	9.425	0.00
Goodman Test	9.452	0.00

The results in **Table 4.18** indicate that the mediator, Customer Value has a significant effect ($p<.05$) on the relationship between the independent variables and the dependent variable, which is Customer Loyalty in this study. The result supports hypothesis 5 of this study in which customer perception of the value offers positively influences customer loyalty in the telecommunication industry.

Table 4.19: Summary of Result for Hypotheses 5

Hypothesis	Description	Status
H5	Customer perception of value mediates the relationship between independent variables (service quality, brand image, brand trust, price) and customer loyalty towards the mobile service providers	Supported

The results demonstrate that four independent variables mediate through customer value in this study and have a positive influence on customer loyalty. The

interrelationship between IVs and DV is relatively strong. However, it is important to take into account the multiple regression analyses result presented earlier concerning the three significant predictors, in which brand image appeared to be an insignificant predictor of customer perceived value in the context of customer loyalty towards mobile service providers. Hence, as far as the essential factors are concerned, brand image is a silent predictor.

4.10   Summary of the Chapter

All the performed analyses were extensively discussed in this chapter. The normality tests indicate that the sample is normally distributed. The factor analysis and Cronbach's alpha coefficient test confirm the validity and reliability of the instrument adopted in this study. Correlation analysis and multiple linear regression were conducted to build the relationship between IVs and DV through the mediating variable. Further discussions of those findings are presented in **Chapter 5**.