CHAPTER SIX

DATA ANALYSIS AND RESULT

6.1 INTRODUCTION

This present chapter discusses the analysis and results of the study. Specifically, two step structural equation models have been utilized in order to test the research's hypotheses. Preliminary examinations of the responses will be conducted to test the hypotheses. The following section will present the profile of the respondents to illustrate the respondents' characteristics in this study.

6.2 PROFILE OF RESPONDENTS AND PRELIMINARY RESPONSES ON BRAND

6.2.1 Profile of Respondents

According to Chonko and Hunt (2000), presenting respondents' profiles in research reports is important. This information provides the readers a better picture of the respondents, as well as helping their own understanding according to the study's findings and limitations. The profile of the respondents will be analyzed based on race, education, period of working experience, functional/area in company, and income per month. This analysis is represented by 272 respondents.

According to the table in Appendix C, in terms of the respondents' race, 76 or 27.9 percent are Malay, 155 or 57.0 percent are Chinese, 33 or 12.1 percent are Indians, and 5 or 1.8 are others. Information concerning the race of 3 of them or 1.1 percent is missing. The average of the respondents' working experience in the sample is 11-15 years, and 63.2 percent are male in the 35-44 years age group. Further, 67.3 percent are,

at the minimum, undergraduate/bachelor level of education. The average age, education of respondent, and year of working experience in the Celuch et al. (2007) sample were 40-49 years, with secondary education as their highest completed level of education, and 10 years industry experience, respectively. Thus, the mean age of the respondents is lower and the sample is more skewed in terms of period of working experience and education as compared to the Celuch et al. (2007) sample in the business-to-business (B2B) perspective. Nevertheless, the sample is representative of an industrial buyer for electronic office equipment compared to Celuch's et al. (2007) sample.

Based on the functional/area in the company, respondents in a CEO position are 12 or 4.4 percent, GM are 70 or 25.7 percent, Production Manager are 42 or 15.4 percent, Financial Manager are 97 or 35.7 percent, and Marketing Manager are 49 or 18.0 percent. The rest who are in other positions are 2 or 0.7 percent. Finally, the average income of respondents is RM 7,000.00-7,999.00 per month.

For a clearer picture, profile of respondents is exhibited in Appendix C.

6.2.2 Preliminary Response on Brand

The current study also illustrates the respondents' responses to the usual brand they use. Table 6.1 describes the type of brands of electronic office equipment from respondent's responses for this study.

Table 6.1 Respondents' Responses to Type of Brand of Electronic Office Equipment

No.	Brand of Electronic Office Equipment	Frequency	Percent (%)
1	Brother	5	1.8
2	Canon	49	18.0
3	Ericsson	5	1.8
4	Epson	13	4.8
5	Fujitsu	2	.7
6	Fuji-Xerox	2	.7
7	Gestetner	5	1.8
8	Hitachi	8	2.9
9	Hewlett Packard	38	14.0
10	Infocus/Plus	3	1.1
11	Lexmark	9	3.3
12	Minolta	8	2.9
13	NEC	19	7.0
14	Nortel	2	.7
15	Panasonic	21	7.7
16	Ricoh	5	1.8
17	Siemens	2	.7
18	Sony	25	9.2
19	Toshiba	21	7.7
20	Dell	24	8.8
21	Others	6	2.2
	Total	**272**	**100.0**

According to Table 6.1 above, 21 brands were selected by respondents in response to this current research. The most dominant brand of electronic office equipment was Canon. Many respondents selected it in response to the questionnaire (18.0 percent). This was followed by Hewlett Packard and Panasonic consisting of 14.0 percent for each. Sony was also included as a dominant brand, because it received a 9.2 percent response. Dell was selected by 8.8 percent and Toshiba and Panasonic each received a 7.7 percent response. NEC was selected by 7.0 percent, and Epson 4.8 percent. Lexmark was 3.3 percent; Hitachi and Minolta were each eight respondents or 2.9 percent. There was 1.8 percent for Ericsson, Gestetner, and Ricoh, and Infocus was 1.1 percent. The rest were each 0.7 percent for Fujitsu, Fuji-Xerox, Nortel, and Siemens. Finally, there were 2.2 percent who selected 'others' brand which were not listed in the questionnaire for this study. In comparison Covalence (2007) reported, Hewlett-Packard, Dell, IBM, and Toshiba as the best reported electronic products selected in the survey.

In terms of type of the electronic office equipment used, the findings indicate that Desktop Computers, Notebook Computers, Laser Printers, Photocopier, and Fax Machines are the most commonly used electronic office equipment by companies. The Computer Servers, Dot Matrix Printers, Scanners, Multi-functional Products, Multimedia Projector/LCD Projectors, Electronic White Boards, and PBX/PABX (Phone-line Switches) were less used by companies. Table 6.2 describes the type of electronic office equipment based on the average use by respondents as follow:

Table 6.2 Type of Electronic Office Equipment Based on Average Amount of Use

Type of Electronic Office Equipment	Computer Servers	Desktop Computer	Notebook Computer	Dot Matrix Printers	Laser Printers	Photocopiers	Scanners	Multi-functional Products	Multimedia Projector/LCD Projectors	Electronic White Boards	PBX/PABX (Phone-line Switches)	Fax Machine
No.	1	2	3	4	5	6	7	8	9	10	11	12
Average amount in Use	< 3	7 to 10	3 to 6	No	3 to 6	<3	<3	No	<3	No	<3	<3
Frequency	213	80	76	189	123	174	134	220	151	180	136	209
Percent (%)	78.3	29.4	27.9	69.5	45.2	64.0	49.3	80.9	55.5	62.2	50.0	76.8
Total Respondents	272											

The next section will discuss the preliminary examination of stored data to address the assumption.

6.3 PRELIMINARY EXAMINATION OF STORED DATA

In order to ensure whether matters pertaining to multivariate assumptions are met, it is important to conduct a preliminary analysis. Therefore, the following is the outcome concerning sampling adequacy in principal factor analysis, and assumptions testing.

6.3.1 Univariate Normality and Outlier

Before a decision is made on how many factors should be retained, researchers should analyze and report the univariate normality by assessing each single variable according to its level of skewness and kurtosis in principal factor analysis. Normality is one of the assumptions that must be fulfilled by data when being run by multivariate analysis. If univariate normality is achieved, multivariate normality will occur too. There are two statistical tools for this purpose, namely, Shaphiro-Wilks, and another is a modification tool of Kolmogorov-Smirnov. If the level of significance is small ($p<.05$), it can reject the null hypothesis stating that the sample is from a normal population.

A weakness of these normality tests is the inaccuracy if it is used on a small sample (below than 30), and it is very sensitive for a large sample (more than 1,000). Therefore; most of the goodness of fit tests produce a reject of null hypothesis. Thus, it is less probable to get accurate data distributing normally. Therefore, *'the researchers should always use both of the graphical plots and any statistical test to assess the actual degree of departure from normality' (Hair et al., 1998, p. 73).*

However, Tabachnick and Fidell (2001) recommend that researchers assess a test of skewness and kurtosis in reporting the univariate normality. This analysis is useful to ensure how many factors should be retained before conducting further analysis. The univariate descriptive analysis (e.g. standard deviation and normality) can be seen in Appendix D.

The results indicate that all skewness values were < 3 and all kurtosis values were < 10. Referring to Kline (1998) who recommends that the level of normality according to skewness analysis must be < 3 and kurtosis must be < 10. Therefore, the factors of this study are in univariate normality condition. Because the sample size of this study is not too small, besides the skewness and kurtosis test, the histogram graph can also be considered to identify normality. According to Talbachnick and Fidel (2001) a histogram of variables plots is very helpful for identifying univariate outliers. The kurtosis values are illustrated graphically (histogram of items with normality plots, see Appendix D). According to the graph shown in Appendix D there are no outliers appearing, so all items of the sample can be declared as being normally distributed.

Furthermore, the normal distribution of variables is also shown by the understanding gained through the frequency analysis. As described in Appendix C, the opinions of the respondents are normally distributed with no answers missing for any of the items.

Based on the explanation above, it can be concluded that all constructs of this study are normally distributed or the level of normality is acceptable.

6.3.2 Linearity and Homoscedasticity

Another significant assumption of exploratory factor analysis (EFA) or structural equation modeling (SEM) that must be fulfilled is checking that the relationship

between independent and dependent variables is linear and homoscedastic (Tabachnick & Fidell, 2001). For this purpose, when using more than one independent variable, Hair et al. (1998) notified that each independent variable's relationship should also be linear to ensure its best representation in the equation in order to achieve the objective of homoscedasticity of the data.

The objective of homoscedasticity testing is to identify whether the independent variables have the same variances when they are related to the dependent variable. If they have the same variances, this means that there is homoscedasticity, conversely, if they do not have the same variance, heteroscedasticity will occur (Hair et al., 1998). Thus, assumption of linearity is achieved when the residual has a straight-line relationship with the dependent variable's scores, and, conversely, the assumption of homoscedasticity is achieved when the display of dots existing in the plots is detached throughout the plot. While, the assumption of heteroscedasticity is met when the equations indicate that the scatterplot graph and the standardized residual do not have heteroscedasticity due to the data being distributed normally around the diagonal line as the predictive line. According to Hair et al. (1998) both partial regression plots and regression standardized residuals can be employed to test linearity and homoscedasticity. The output of both linearity and homoscedasticity of three univariate variables are normally distributed around the diagonal line. A clearer picture is exhibited in Appendix D.

6.4 THE DATA ANALYSIS

Analysis of this study conducted two main approaches that consisted of exploratory factor analysis (EFA) by principal factor analysis (PFA) and confirmatory factor analysis (CFA). The use of principal factor analysis (PFA) is based on items used to

measure constructs derived from past literature. This method, therefore, is necessary to determine the underlying constructs of this model. In contrast, measures for product quality, service quality, and price perception as independent variables, company reputation as mediating variable, and loyalty as the dependent variable have been specified in prior theory, therefore, the use of confirmatory factor analysis is necessary. The ethical brand as a new construct, which has not been tested in the past, confirmatory factor analysis is also essential to confirm whether the scale achieves the requirement of validity or not before further analysis which is based on a goodness-of-fit measure rather than statistical calculation (Hair et al. 2006). Finally, hypothesis testing was analyzed by structural equation modeling (SEM).

6.4.1 Principal Factor Analysis (PFA): Orthogonal or Oblique Rotation?

Usually, marketing research has some variables correlating to each other, and they must be reduced in order to ease the process of analyzing (Malhotra, 1996). For this purpose, factor analysis can be used to reduce the certain items of variables. Factor analysis is a statistical technique correlating one variable to another to identify some dimensions of the variable.

In the first step, when applying principal factor analysis/exploratory factor analysis, a study must decide either to employ orthogonal or oblique rotation. For this purpose, Pedhazur and Schmelkin (1991) suggest that it is necessary to run both types of rotation of EFA and examine the correlation between the extracted factors in order to determine which rotation technique is suitable to apply. If the oblique overcomes a small correlation between the extracted factors, then the orthogonal rotation solution is suitable to apply. Conversely, if oblique rotation reveals a correlation factor structure,

then it is not suitable to use the orthogonal rotation solution. The following table shows the results for both rotation techniques:

Table 6.3 Factor and Transformation Correlation Matrix

Factor Transformation Matrix

Factor	1	2	3
1	.684	.614	.394
2	-.716	.668	.203
3	-.138	-.421	.897

Extraction Method: Principal Axis Factoring
Rotation Method: Varimax with Kaiser Normalization

Factor	1	2	3
1	1.000	.473	.420
2	.473	1.000	.501
3	.420	.501	1.000

Extraction Method: Principal Axis Factoring
Rotation Method: Oblimin with Kaiser Normality

According to the above table, factors 1 and 2 definitely have high correlation. As a result using oblique rotation is relevant in this study. This is in line with Field (2000), who argues that if the constructs are not significantly correlated; a similar solution would probably be expected between oblique rotation and orthogonal rotation in which the factor correlation matrix should be an identity matrix.

Moreover, this technique is in line with other studies in the past in measuring service quality (e.g. Carman, 1990; and Cronin & Taylor, 1992). Even, Zeitham et al. (1996) recommend that the factors should be allowed to correlate in exploratory factor analysis. The following section will present the Sampling Adequacy.

6.4.2 Sampling Adequacy

In terms of sampling adequacy, to test whether exploratory factor analysis (EFA) is appropriate for the present data. For this purpose, the Kaiser-Meyer-Olkin test (KMO) is conducted to evaluate whether some independent variables in the correlation matrix

are relevant to factor analysis or not. KMO has a value from 0 to 1. If the result of the statistic is above .7, this shows that the correlation is sufficient as a factor. To be cautious, if the value is between .5 to .69, and the value of KMO is less that .5, it shows that the factor is not a set of variables (de Vaus, 2002). On the other hand, Bartlett's Test of Sphericity has also been conducted in this study to analyze whether the correlation matrix is an identity or not. If a null hypothesis of the correlation matrix is an identity matrix, it will not be suitable to use it as a factor. The value of KMO and Bartlett's Test for IV's of this study is illustrated in Table 6.4 as follows:

Table 6.4 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test (Independent Variables)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	917
Bartlett's Test of Sphericity:	
Approx. Chi-Square	3483.449
df	253
Sig.	.000

Based on the above table, this study indicates that the KMO statistic value is .917, therefore, EFA is appropriate for this data. While Bartlett's Test of Sphericity indicates that the value is significant ($p < .000$). Based on the criteria explained, it can be concluded that independent variables processed by factor analysis of the samples are useful for further analysis of this study.

To be consistent with independent variables, the Kaiser-Meyer-Olkin (KMO) is also conducted to evaluate whether some mediating variable in the correlation matrix is relevant to factor analysis or not. Table 6.5 describes the result as follows:

Table 6.5 KMO and Bartlett's Test of the Ethical Brand

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.953
Bartlett's Test of Sphericity:	
Approx. Chi-Square	1951.215
df	66
Sig.	.000

The results indicate that the KMO statistic value is .953, therefore, EFA is appropriate for this data. While Bartlett's Test of Sphericity indicates that the value is significant (p< .000). Based on the criteria that has been explained, the ethical brand processed by factor analysis of the samples is valuable for further analysis of this study.

Table 6.6 illustrates the sampling adequacy's result for variable company reputation and brand loyalty.

Table 6.6 KMO and Bartlett's Test of Company Reputation

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.908
Bartlett's Test of Sphericity:	
Approx. Chi-Square	1659.513
df	66
Sig.	.000

The KMO statistic value is .908, therefore, EFA is also fit for this data. While Bartlett's Test of Sphericity indicates that the value is significant (p< .000). Therefore, company reputation and brand loyalty processed by factor analysis of the samples is appropriate for further analysis of this study.

6.4.3 Principal Factor Analysis (PFA) and Results 1

All 20 items of independent variables (product quality, service quality and price perception) that were developed from the past studies were analyzed by PFA (with principal axis factoring and direct oblimin-oblique as rotation method). According to Hair et al. (1998) the principal construct of the items are maintained if (1) they loaded 0.5 and above on a factor, (2) did not load more than 0.5 and above on two factors, in terms of cross loading factors, and (3) if the reliability indicates an item to total correlation of more than 0.4.

Additionally, correlation between variables and factor are called loading factors. According to Hair et al. (1998), the minimum value of factor loading depends on the

amount of respondents. Having 272 respondents, this study can use .5 as a minimum value of factor loading. If the value is squared, there will be covariance between the variable and the factor. Total variance of the factors or total contribution of the variable to them is called the Eigenvalue.

Measurement of factor analysis is good; it can be looked at as the magnitude of total variances explained by the factor. The larger the value of variance, the better the factor. Thus, most of the researchers use only factors with an Eigenvalue greater than 1 (de Vaus, 2002). This study refers to 1 as the minimum Eigenvalue in choosing the factor. The following table illustrates respectively the factor loading and the retained items based on Kaiser's criterion and if the Eigenvalue is greater than one (de Vaus, 2002).

Table 6.7 Principal Factor Analysis Result 1 of Independent Variables (Product Quality, Service Quality and Price Perception)

Item	Factor		
	1	2	3
Good performance (pq1)	.754		
Good feature (pq2)	.715		
Good specification (pq3)	.757		
Good durability (pq4)	.743		
Aesthetics (pq5)	.747		
High quality product (pq6)	.655		
Innovative (pq7)	.700		
Promise to do something by a certain time, it does so (sq1)		.752	
Sympathetic and reassuring staff (sq2)		.777	
Trust employees (sq3)		.696	
Polite employees (sq4)		.777	
Personal attention (sq5)		.778	
Providing good online information (sq6)		.757	
Providing good information in documentation (sq7)		.770	
Providing quickly supplementary information (sq8)		.764	
Expected the prices to be high (pr1)			.759
Prices are higher than average market prices (pr2)			.712
Higher price is equivalent to the quality (pr3)			.571
Good price information (pr4)			.597
The acceptable price (pr5)			.646
Eigenvalue	**8.998**	**2.958**	**1.746**

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.
Total Variance Extracted by three factor = 59.577%

From 20 items consisting of 7 items measuring product quality, 8 items that reflect service quality and 5 items that are attributes of price perception, no item was dropped

because of cross-loading factor. The procedure used to drop items as suggested by Hair et al. (1998) is first to drop the item that does not achieve the minimum score of loading (greater than .50), then check the items that exist in double and more factor, and also loading in the single factor.

The same technique is also used to run exploratory factor analysis (EFA) for variable the ethical brand. Twelve elements were adapted to conceptualize this construct, which was derived from conceptual studies of Enderle & Tavis (1998); and Nnorom & Osibanjo (2008). The concept of 'the ethical brand', which is an integral element of the new paradigm (Fan, 2005, and Paluszek, 2006), is as an additional variable included in the model. Then exploratory factor analysis (EFA) is also conducted to outline what attributes represent this construct. This procedure is as suggested by Hair et al. (1998). The detailed results of exploratory factor analysis (EFA) to the ethical brand can be seen in the following table.

Table 6.8 Principal Factor Analysis Result 1 of Mediating Variable (The Ethical Brand)

Item	Factor
	1
Make/maximum profit (eb1)	.755
Increases the wealth (eb2)	.755
Respects its supplier (eb3)	.640
Respects the laws and regulations of the country (eb4)	.730
Prevents discrimination (eb5)	.743
Respects social customs and cultural heritage (eb6)	.786
Consuming less natural resources (eb7)	.724
Monitor the potential negative impacts (eb8)	.737
Preserve the jobs (eb9)	.760
Recycling the material (eb10)	.774
Recover the valuable material (eb11)	.717
Disposal for final disposal (eb12)	.761
Eigenvalue	**7.035**

Extraction Method: Principal Axis Factoring.
a 1 factors extracted. 3 iterations required.
Total Variance Extracted by one factor = 58.627%

The findings indicate that all twelve items loaded on the one factor. Measurement of factor analysis is good; it can be looked at as the magnitude of total variances extracted

by the factor is 58.627 percent and the Eigenvalue is about 7.035, greater than 1.00 as the considered value. As justified in the literature review, the ethical brand responsibilities consider three aspects – economic, social, and environmental. Thus, the ethical brands may be an actor entailing moral responsibility. As a moral actor, according to Fan (2005) brand should be evaluated not only by economic responsibility, but also an ethical brand should not harm people or the environment, but contribute to the development of the community. Therefore, responsibility to the three aspects are conducted at the same time, the ethical brand stands as one factor as existed in the exploratory factor analysis.

On the other hand, company reputation has been defined as a particular type of feedback received by an organization from its stakeholders, concerning the credibility of the organization's identity claims (Whetten & Mackey, 2002). In general, inspired by the viewpoint of definition, company reputation is conceptualized by six key drivers that were taken from Cretu and Brodie's (2005) study.

While, brand loyalty has been defined as a commitment of the buyer to maintain stability in a long-term relationship with a brand's manufacturer (Lam et al., 2004; and Oliver, 1999). Based on the above point of view, the scale items generated from previous literature capture six elements (Morgan & Hunt, 1994; and Fan Riel et al., 2005). The EFA for these constructs were analyzed together as company reputation and brand loyalty are the outcome of the industrial buyers' responses investigated. Even though the items were adopted from the established literature, the EFA was also conducted in order to get consistency with others.

The following table describes the outcome of this construct.

Table 6.9 Principal Factor Analysis Result 1 of Company reputation and Brand Loyalty

Item	Factor	
	1	2
Being well managed (cr1)	.662	
Having customer focus (cr2)	.706	
Being a good corporate citizen (cr2)	.665	
Being product driven (cr4)	.803	
Being successful (cr5)	.788	
Being innovative (cr6)	.669	
Committed buyer (bl1)		.598
Maximum effort to maintain relationship (bl2)		.759
Do almost anything to keep relationship (bl3)		.584
Care a great deal about long term relationship (bl4)		.869
Recommending (bl5)		.750
Intent to use (bl6)		.799
Eigenvalue	**5.964**	**1.489**

Extraction Method: Principal Axis Factoring.
a 1 factors extracted. 8 iterations required.
Total Variance Extracted by one factor = 62.109 %

The results indicate that all six items of company reputation loaded on one factor, while all six items of brand loyalty loaded on another. Therefore, no items needed to be dropped. This is in line with the previous study by Cretu and Brodie (2005). The total variance extracted of the construct is 62.109 percent and the eigenvalue is 5.964 for factor 1 and 1.489 for factor 2.

Based on Table 6.8, IVs have 20 items, with three factors extracted, and 59.577 percent in total variance extracted. While, in Table 6.8 above, the ethical brand as MV is loaded by a single factor with 12 items and 58.627 percent in total variance extracted. Based on Table 6.9, company reputation and brand loyalty are loaded by two factors with 62.109 percent in total variance extracted. Finally, in Table 6.9 brand loyalty as DV has 6 items loaded in a single factor and 63.444 percent in total variance extracted.

For further analysis, the results of principal factor analysis (PFA) need to be followed-up by confirmatory factor analysis (CFA) and will be discussed in the following section.

6.5 FOLLOW-UP RESULT IN CONFIRMATORY FACTOR ANALYSIS (CFA)

After presenting analysis by PFA in the first step, the next is a follow-up by CFA before testing them in the full step-two structural equation modeling (SEM). As explained in Chapter Five, CFA was used to confirm the measurement model with the same data. This was conducted because as Chin, 1998; Chin & Todd, 1995; and Hurley et al., 1997 explain this allows the opportunity of capitalizing on chance and not being able to imitate outcome.

Independent variables (product quality, service quality, and price perception), company reputation, and brand loyalty of this study have been developed from past literature; therefore, CFA is essential. The ethical brand as a new construct, which has not been tested in the past, CFA is also essential to confirm validity which is based on a goodness-of-fit measure. This is consistent with Parasuraman (2005) who employs the CFA to confirm the scale of the E-SQ as a new construct where it was redeveloped from the traditional SQ. The next section will present CFA for the independent variables.

6.5.1 Testing Independent Variables

In the previous step, 20 items of product quality, service quality, and price perception as independent variables were identified in PFA. There were also 20 items remaining as the output of CFA. In order to be an acceptable model fit, fit indexes must be in the acceptable level, and there should be no substantial misfit as explained earlier. For this purpose, Cheng (2001) suggests that modification indexes (MI) and large standardized residuals (>2.58) are useful. It also means that if standardized residual signify values > 2.58 and is > 5 percent in the whole data, cross loading of misspecification among the variables occurs (Byrne, 2001) and according to Hair et al. (1998) this condition is

unacceptable. Therefore, these variables must be excluded from further analysis. In order for the model to be analyzed further, the data evaluation must be conducted so that the fit indices fulfil the acceptable level (e.g. GFI, TLI, CFI are > .9) or cross loadings factor occurs if the standardized residual between variables are <.258 and are <5% of the model. In order for a model to be fit, according to Byrne (2001), the parameter estimates must also be significant (with at least p<.05), and Kline (1998) notifies that convergent validity must also be fulfilled with an acceptable level for each item (loading must be greater than .5). Additionally, Long (1983) justifies that items having cross-loading in more than one variable are undisturbed at that time. Based on the results, there are no misfits. It means that all 20 items that were sent to this CFA are a good fit.

However, Garver and Mentzer (2001) suggest that when a researcher conducts confirmatory factor analysis or structural equation modelling, Cronbach's Alpha (CA) coefficients and composite reliabilities (CR) are presented. The coefficient of CA in the past has indicated .70 and above. The results are excellent according to Nunnally's criteria if it is greater than .70. While, the acceptable level for construct reliabilities in structural equation modeling is not much different from composite reliability (CR), however, Hatcher (1994) considers .6 and above as the internal consistency level.

The cronbach's alpha (CA) and composite reliability (CR) are outlined in the following table.

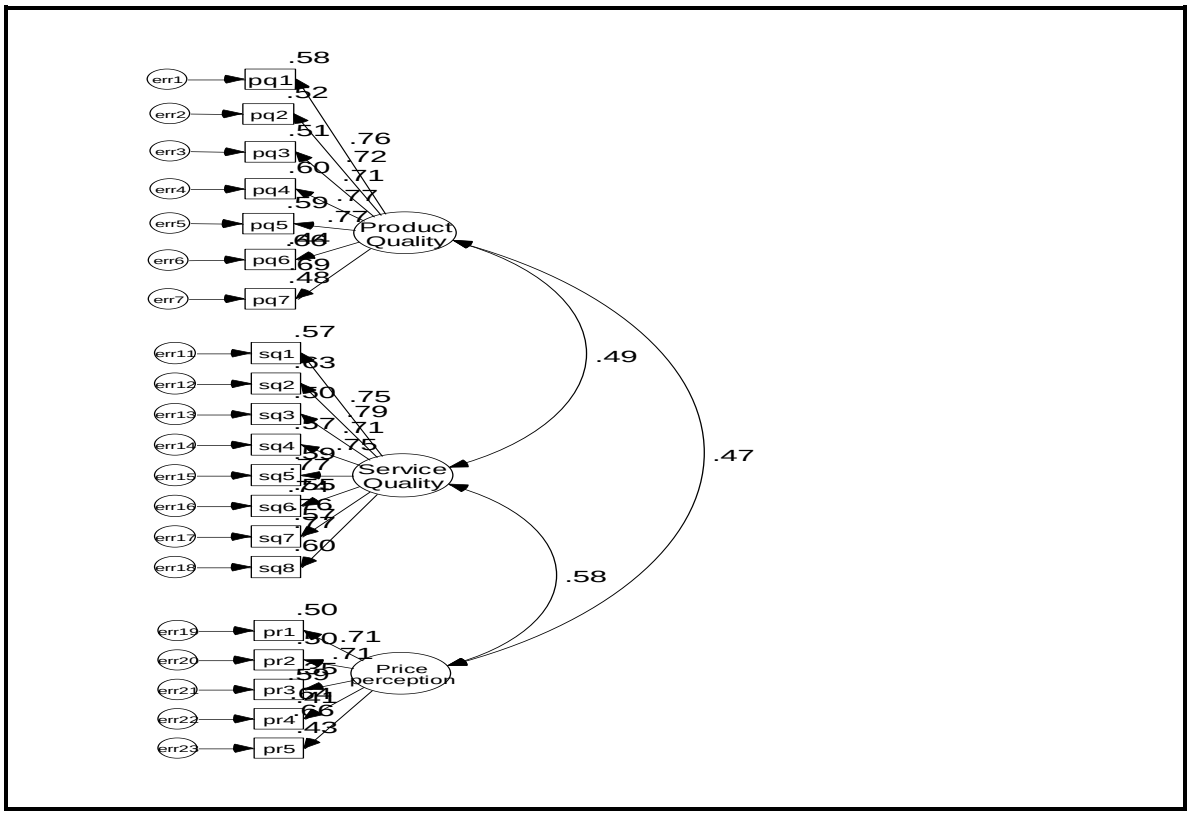
Table 6.10 Cronbach's Alpha and Composite Reliability Test of Constructs (Product Quality, Service Quality, and Price Perception)

Constructs	Cronbach's Alpha	Composite Reliability
Product Quality (PQ)	.919	.889
Service Quality (SQ)	.914	.923
Price Perception (Pr)	.792	.818

The final outcome of CFA demonstrates that the good fit indices are exceeded, in which GFI is .887 (marginal fit), CFI is .937 (good fit) and RMSEA is .061 (good fit): standardized loading were all >.50, (Kline, 1998). More over this result indicates that the p-value for all items are statistically significant (p<.001). Therefore, according to Anderson and Gerbing (1998), it also means that this condition supports the convergent validity of each parameter estimate, in which loading is greater than .5 (from .593 to .795) and correlation among constructs indicated is low, between .48 - .58. This result, then, supports the convergent and discriminant validity of the model.

In addition, the three factors presented industrial buyers' responses based on the CFA's results. Attributes of product quality were labelled as: (1) Good performance, (2) Good features, (3) Good specification, (4) Good durability, (5) Aesthetics (6) High quality product, and (7) Innovative. These attributes reflect the quality of the electronic products developed by the firms to build the reputation among industrial buyers in Malaysia. These remaining attributes are consistent with Crosby et al. (2003) as labelled by the first five attributes selected in the current study. While, the following two attributes are in line with Van Riel, et al. (2005) in which the quality of electronic equipment must be high quality, and innovative in terms of adopting recent technology.

For a clearer picture, Figure 6.1 gives a graphic representation of the results:



Note: * indicates all loadings were significant at p<.001

Figure 6.1 Follow-up in Confirmatory Factor Analysis of Product Quality, Service Quality, and Price Perception

Table 6.11 Fit Indices for Confirmatory Factor Analysis of Product Quality, Service Quality, and Price Perception

Fit Indices	X^2	X^2/df	GFI	TLI	CFI	RMSEA
	335.542 (p<.000)	2.01	.887	.929	.937	.061

Service quality on the other hand is about the ability to advise the customers on technical and commercial questions in the business to business context (Aaker, 1997). In general, based on the CFA, service quality was presented by (1) Promises to do something by a certain time, it does so, (2) Sympathetic and reassuring staff, (3) Trust employees, (4), Polite employees, (5) Personal attention (6) Good online information, (7) Good documentation, and (8) Quickly receive supplementary information. The first five attributes derived from Jayawardhena et al. (2004) reflect the basic service quality of the responding industrial buyers, offered by the company in terms of the ability of the company's staff to address customers' complaints in order to strengthen the

relationship and commitment. The second three attributes reflect the quality of service of information offered by the firm's information service that are a strategic point in the current customers' behaviour and may be a significant factor for predicting their decision behaviour. This is in line with Van Riel, et al. (2005); Kennedy et al. (2001); and Jeong & Lambert (2001) who included the attributes in their studies in the industrial buyer context.

Based on the CFA, price was presented by (1) expecting the prices to be high, (2) prices are higher than average market prices, (3) higher price is equivalent to the quality, (4) good price information, and (5) the price is acceptable. The first two items were derived from Kukar-Kinney et al. (2006) measuring store or brand price perceptions by adapting a scale from Srivastava (1999). However, the item reflecting higher price is equivalent to the quality that was adapted from Lichtenstein et al. (1993). The authors argue that price particularly influences customer behaviour because it is present in all purchase situations. When price is considered positively, it usually signals quality of product/brand. Finally, the last two scales were adopted from Bolton & Kannan (2000); and Lowengart et al. (2003) who suggest that contradictive information can cause loyal customers to diminish as customers use their internal reference price (RP) of the brand as their comparison to previous prices paid in that category.

6.5.2 Testing Mediating and Dependent Variables

The ethical brand consists of twelve items and company reputation consists of six items as mediating variables. Also, brand loyalty as the dependent variable consists of six items. A similar test was conducted for these constructs. The initial result of CFA indicated that all the items of these constructs remain for each construct. In other words, assessment of model fit indicated that no items of the constructs should be

excluded. There was no cross-loading among the items in a construct. The results of the CFA explained that GFI = .867; TLI = .920; CFI = 928; and RMSEA = .064. Therefore, no items were excluded; the results indicated that 24 items remain in the business buyers' responses.

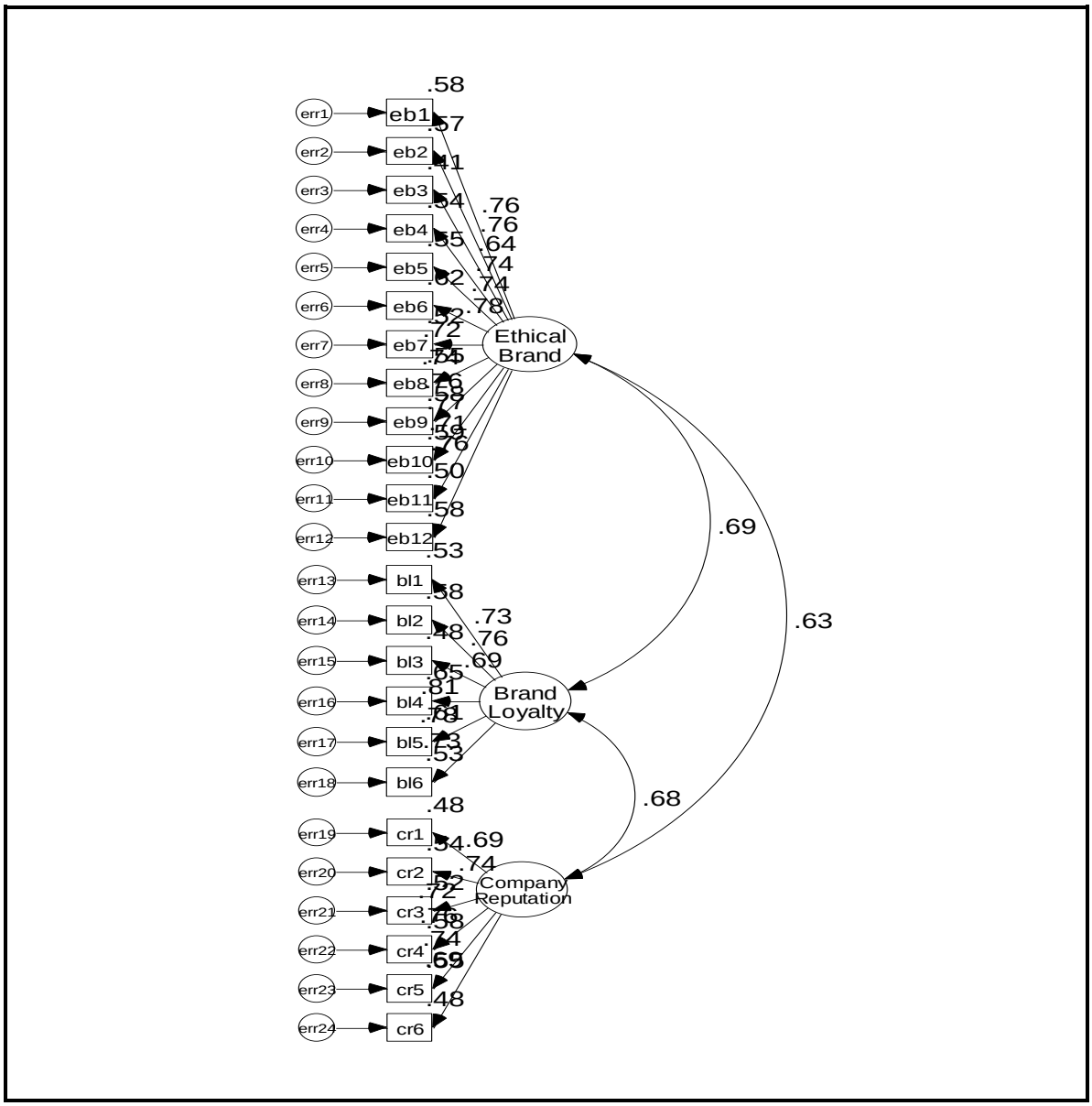
In terms of reliability, similar tests were also conducted to indicate the internal consistency for each construct. The outcome shows high internal consistency levels for CA and CR as displayed in Table 6.12 below.

Table 6.12 Cronbach's Alpha Composite Reliability Analysis of Company Reputation, and Brand Loyalty

Constructs	Cronbach's Alpha	Composite Reliability
Ethical Brand	.939	.907
Company Reputation	.868	.914
Brand Loyalty	.884	.917

The model of the CFA follow-up result demonstrates good fit, in which standardized loading ranging from .691 to .812 were all >.5, as Kline (1998) recommends and items were statistically significant with p<.001, which supports the convergent validity of each parameter estimate, (Anderson and Gerbing, 1998). Correlation (the covariance) among these constructs is also low ranging from .63 to .69. Based on the result, this indicates that the condition supports the discriminant validity of the model.

For a clearer picture, the correlation among these constructs is graphically shown in the following figure.



Note: *indicates all loadings were significant at p<0.001

Figure 6.2 Follow-Up Confirmatory Factor Analysis of Company Reputation and Brand Loyalty

Table 6.13 Fit Indices for Confirmatory Factor Analysis of Company Reputation, and Brand Loyalty

Fit Indices	X^2	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	524.062 (P<.000	2.10	.867	.921	.928	.064

Moreover, the variable the ethical brand, as the mediating variable discussed in the literature review, is operationalized by 12 items divided into three responsibilities (i.e. economic, social, and environmental) as can be seen in the following table:

Table 6.14 The Remaining Items of the Construct 'the Ethical Brand' Based Upon Confirmatory Factor Analysis

Aspect	(Items/Indicators) 12 items	Generated from
Economic responsibility	Make/maximize profit Increases the wealth Respects its supplier	Enderle, and Tavis. (1998)
Social responsibility	Respect the laws and regulations Prevent discrimination Respects social customs and cultural heritage Preserve the jobs	Enderle, and Tavis. (1998)
Environmental responsibility	Committed to "sustainable development" through consuming less natural resources Monitor the potential negative impacts	Enderle, and Tavis. (1998)
	Recycling programme Recovery programme Disposal programme	Nnorom, & Osibanjo (2008)

The result from exploratory factor analysis as presented earlier found that 12 items were represented in this one construct (i.e. unidimensional). Although, measuring the ethical brand has been derived from two sources (i.e. Enderle & Tavis, 1998; and Nnorom, & Osibanjo, 2008), the remaining items were reflected to be unidimensional as one factor. Thus, it is clear that the items from the previous literature reflect the construct of the ethical brand.

Similarly, a result also exists for company reputation in which the construct has been labelled as: (1) being well managed, (2) having customer focus, (3) being a good corporate citizen, (4) being product driven, (5) being successful company, and (6) being innovative. However, one item was excluded, namely, 'we consider buying brand x because it is well managed'. The remaining six items representing this construct were unidimensional, which was in line with Cretu and Brodie (2005).

Finally, brand loyalty has been operationalzed by (1) the relationship with brand X is very committed to, (2) Maintaining relationships with brand X (3) doing anything to keep relationship with brand X, (4) care of long-term relationship with brand X

(Morgan and Hunt, 1994 cited in Davis, 2003), (5) recommending brand X, and (6) intend to use brand X in the future (Van Riel et al., 2005). Measuring brand loyalty was captured from two authors and selected after wise consideration via a purification process in order to be accurate, then after conducting the confirmatory factor analysis follow-up, therefore, the six items still exist in the good fit condition.

6.6 RESULT: THE ETHICAL BRAND'S ATTRIBUTE

This section re-describes a part of the study's research questions (RQ) as listed in the beginning of chapter 2. The research question (RQ1) that will be explained is:

1. **What are components of the ethical brand?**

Following the viewpoint of Fan (2005), and Paluzsek (2006) as discussed earlier, the construct 'the ethical brand' has been defined as a moral actor that recognizes economic, social, and environmental responsibilities, having integrity and commitment to do the right thing, create added value to the firm, customers and stakeholders as a whole. However, Fan (2005) and also Paluzsek (2006) do not focus on the measurement scale. Therefore, the attributes to measure the ethical brand is still unclear. In the present study, twelve elements have been combined to operationalize this construct, which were derived from the basic concept from Enderle & Tavis (1998), and Nnorom, & Osibanjo (2008). The concept of 'the ethical brand', which is an integrated element of the new paradigm (Paluszek, 2006), is an additional variable incorporated in the current model.

Following the suggestion of Hair et al. (1998) exploratory factor analysis was conducted to explore the elements that were selected to measure the construct. The

results of the exploratory factor analysis indicated that all twelve elements of the ethical brand exist as one construct.

In a similar vein, the measures of the ethical brand scale, which consists of 12 items as derived from Enderle & Tavis (1998), and Nnorom, & Osibanjo (2008), were sent to confirmatory factor analysis to follow-up. This analysis was conducted by combining the ethical brand with company reputation and brand loyalty. In the final result, 12 items of ethical brand remained.

Referring to Enderle & Tavis (1998), and Nnorom, & Osibanjo's (2008) viewpoint, there is a consistency with this quantitative analysis. The consistency is that the ethical brand viewpoint can be expressed in terms of responsibilities in three aspects (economic, social, and environmental). These responsibilities are the key to success for any brand that must be applied extensively at the same time. Therefore, it is clear that the items of the ethical brand as an expression of brand's responsibility are unidimensional as one construct after the testing.

Furthermore, all the constructs with the remaining items will be sent to composite reliability (SEM) by using step-one approach that will be analyzed and discussed in the following section.

6.7 STRUCTURAL EQUATION MODELING (SEM): STEP-ONE APPROACH – THE COMBINED MEASUREMENT MODEL

6.7.1 Step-One Model

All constructs (product quality, service quality, price perception, the ethical brand, company reputation, and brand loyalty) will be combined in the measurement model phase. This phase is in line with Anderson and Gerbing (1988), who performed the

step-one approach. From the last step, product quality, service quality and price perception consisted of 7 items, 8 items and 5 items, respectively. Furthermore, the ethical brand had 12 items, company reputation had 6 items, and brand loyalty had 6 items.

According to the initial result of the measurement analysis it showed a poor fit and had to be re-specified (Hair et al. 2006). The result of $(X^2)_{(272)}$ = 2112.887; GFI = .764; TLI = .854; CFI = 862; and only RMSEA = .063 describes a marginal fit, therefore, it needed to be re-specified. Specifically, 'our company buys brand x because its products are aesthetically pleasing' had a big MI = 13.486 and SR = 2.901 (>2.58) with 'the higher price of brand x reflects its quality'. Therefore, in terms of product quality, one item was deleted, namely, 'products of brand x are aesthetically pleasing'.

In terms of service quality, it had a big MI = 15.221 and SR =3.242 (>2.58) between 'employees of brand x know what our company's needs are' and 'when staff of brand x promises to do something by a certain time, it does so'. Again, the item 'our company buys brand x because it provides good information in documentation' had a big MI = 13.709 and SR = 2.979 (>2.58) with 'our company buys brand x because it provides good online information'. The item 'providing good information in documentation' was excluded from this construct. Another one was between the item 'our company can trust employees of brand x', which had a big MI = 13.113 and SR = 2.855 (>2.58) with item 'our company expects the overall price of brand x to be high' and it was decided to exclude 'trust employees of brand x'.

There were two items excluded from company reputation because of high modification indexes and the standardized residual was greater than 0.58. Specifically, the item 'we decide to buy brand x because it keeps us well informed about what is happening with the company' has a big MI = 17.889 and SR = 3.676 (>2.58) with item 'our company

buys brand x because it is customer focused'. Also, the item 'our company decides to buy brand x because its company is a successful company' has a big MI = 13.233 and SR = 2.886 (>2.58) with item 'we always decide to buy brand x because its company is innovation oriented'. This is consistent with Cretu and Brodie's (2005) study. Four items remain in these constructs.

Moreover, a big MI = 13.181 and SR = 2.703 (>2.58) also existed between the item 'using brand X because manager of the company monitors the potential negative impacts on our community' and item 'tangibility'. Additionally, the item 'increase the wealth' has a big MI = 12.623 and SR = 2.985 with the item 'innovative product'. Therefore, 'monitors the potential negative impacts on our community', and 'increase the wealth' were excluded from the construct ethical brand.

Finally, two items were also dropped in the brand loyalty because of having a high MI and SR (>2.58). The items were 'we use our maximum effort to maintain the relationship with brand x', which had a high MI = 14.060 and SR = 3.726 with item 'the product specifications of brand x match with our needs'; and the item 'we would do almost anything to keep the relationship with brand x' has a big MI = 19.801 and SR = 4.243 with item 'our company buys brand x because it is innovative'. Therefore, the study decided to exclude the items 'we use maximum effort to maintain relationship', and the item 'we would do almost anything to keep the relationship with brand x' from the model. As a comparison, in the study conducted by Cretu and Brodie (2005) two items of this construct remained; however, this study has four items of this construct remaining for further analysis.

The final fit indexes indicate that the model fits the data reasonably, in which the standardized loading are all>.5 and significant level at p<.001. In detail, Figure 6.3 and Table 6.15 explain it as follows:

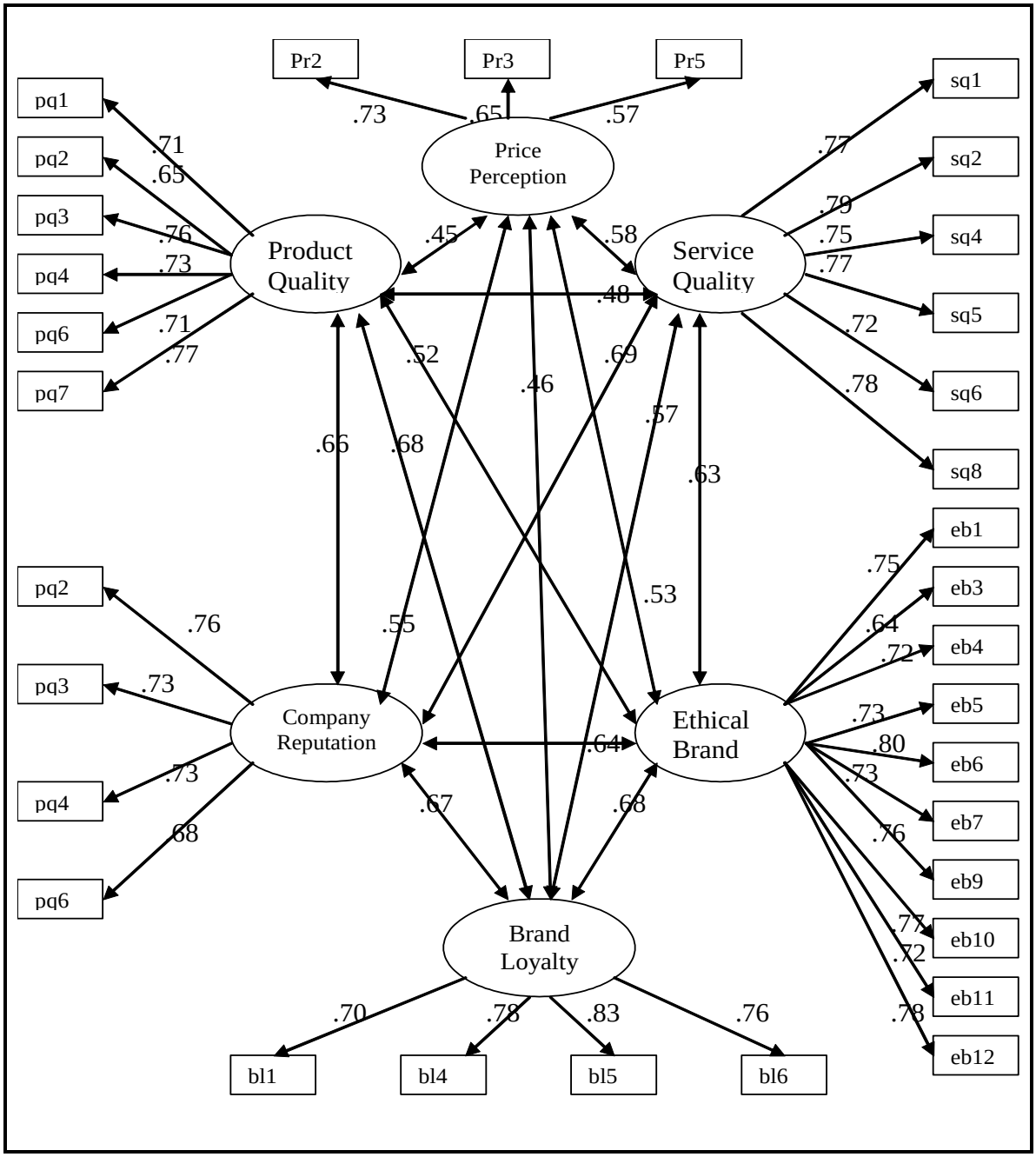


Figure 6.3 Measurement Model

Table 6.15 Fit Indexes for Measurement Model

Fit Indices	X^2	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	818.196 (P<.000	1.71	.847	.923	.930	.051

The following table explains the good internal consistency for every construct:

Table 6.16 Composite Reliability Analyses of the Constructs Based Upon Measurement Model

Constructs	Composite Reliability
Product Quality (6 items)	.913
Service Quality (6 items)	.884
Price Perception (3 items)	.752
Ethical Brand (10 items)	.915
Company Reputation (4 items)	.823
Brand Loyalty (4 items)	.850

Before sending all variables with the remaining items from the above analysis it is necessary to conduct a correlation analysis, which will be discussed and analyzed in the following section.

6.8 CORRELATIONAL ANALYSIS AND THE RESPONSES ANALYSIS MEAN SCORE

Correlation analysis is conducted to explain the correlation among variables. For this purpose, Pearson's bivariate correlation test was employed. This analysis is necessary to identify whether variables have a significant relationship or not and also being a preliminary confirmation of the relationships and the direction of the hypotheses before sending all variables to step two in the structural equation modelling. The significant levels of correlation are considered at the 5% level of significance.

The descriptive statistic (mean and standard deviation) reliabilities and zero order correlations between the variables examined in the study are described specifically in table 6.17 below:

Table 6.17 Description of Final Model: Means (μ), Standard deviation (σ) and Zero Order Correlation

No.	Variables	Mean	S.D	1	2	3	4	5	6
1	Product quality	5.2495	.76842	1					
2	Service Quality	5.2439	.88143	*** .454	1				
3	Price Perception	5.4384	.69136	*** .406	*** .514	1			
4	Ethical Brand	5.2153	.82884	*** .519	*** .601	*** .468	1		
5	Company Reputation	5.3382	.84747	*** .583	*** .412	*** .443	*** .572	1	
6	Brand Loyalty	5.2730	.89235	*** .617	*** .596	*** .428	*** .607	*** .566	1

***Correlation is significant at p<.001

The predictor variables (product quality, service quality, and price perception) are positively and significantly related to company reputation at p<.001. These predictor variables are also positively and significantly related to the ethical brand at p<.001. Finally, the results also indicate that the predictors are similar and have a positive and significant relationship with brand loyalty.

Based on the above outcome, it can be summarized that all the relationships of the antecedents that were hypothesized and the outputs of this model are in the estimated directions and could be used as a preliminary confirmation of the approved hypotheses. However, structural equation modeling (SEM) step two will be conducted to test the hypotheses properly as proposed in chapter four. The discussion of structural equation modeling (SEM) step two will be provided in the next section.

6.9 STRUCTURAL EQUATION MODELING: STEP-TWO APPROACH-THE STRUCTURAL MODEL

Research question one has been explained in the previous confirmatory factor analysis section outlining the items remaining to perform the ethical brand as an additional

construct in the current model. Subsequently, this section discusses the following research questions:

(2) **Does having better quality of product, service and price perception enhance a company reputation, perceive brand as ethical, and increase brand loyalty?**

(3) **Does the ethical brand enhance a company reputation?**

Based on the validated data according to the measurement model of structural equation modeling step-one approach, further analysis was conducted by the step-two approach or the structural model. In the previous section, the results of the validated measurement models refers to acceptable fit indexes, feasible and statistically significant parameters and lack of any substantial model misfit. The step-two approach emphasizes testing the study's theoretical models (see Figure 4.1, the above research questions and the outlined hypotheses).

Additionally, in the measurement model phases, discrminant, convergent validity, unidimensionality, and reliability all achieved the acceptable level. Furthermore, the full model conducts with the predictive or nomological validity and hypotheses testing. According to Garver and Mentzer (1999), the way to achieve predictive validity can be fulfilled by correlating constructs to other constructs that they are supposed to predict, where these correlations should be considerable in magnitude (i.e. known as structural coefficients or standardized regression weights in AMOS), and must be statistically significant (Garver & Mentzer, 1999). For example; if H1 proposes that product quality will have a positive and significant relationship with company reputation, then it should have a significant structural coefficient or regression and indicate the correct sign as hypothesized; otherwise it will not have the ability or power to predict. According to this condition of analysis, the study is

able to establish whether there is any relationship between the predictor and the dependent variables in the industrial buyer context (from H1 to H16) and which variables are more important in the formation of the model in business to business contexts, as outlined in the research questions above. Thus, the next section discusses structural equation modeling with the step-two approach providing the findings of the hypotheses (H1 to H16) by evaluating the hypothesized model.

6.9.1 Step-Two Structural Model: Evaluation of the Hypothesized Model

The output in Table 6.18 indicates that the hypothesised models of the structural equation modeling are a satisfactory fit to the sample data with $x^2_{(272)}$ = 882.273 at p<.001; $x^{2/df}$ = 1.83; GFI = .838; TLI = .909; CFI = .917 and RMSEA = .055. However, it indicates that the GFI index is less than .9 (GFI= .829), which commonly occurs when a sample size larger than 200 is involved (Anderson & Gerbing, 1988; and Garver & Mentzer, 1999). The output also shows that all other standardized loadings in the model are significant at p<.001. As explained earlier, the goodness-of-fit statistics (i.e. the x^2) should display p>.05 in order to get a good and fit model. However, the present study's model indicates a significant model with p<.05. According to Anderson & Gerbing (1988); Garver & Mentzer (1999), and Long (1983), when the sample size is high (N>200), significance will normally be found for most of the models.

As explained earlier, a GFI above .9 indicates an acceptable fit, indicating a good model. On the other hand, Hair et al. (1998) justify that a GFI = .874 can be considered as a marginally accepted GFI. Moreover, Bloemer et al. (2002) clarifies that a GFI index usually displays lower than recommended due to it usually being influenced by small sample size and model complexity. As the current study has a

relatively small sample size (272) of industrial buyers, the output indicates a minor decrease in the GFI index. Even though Hair et al. (1998) suggest that a GFI = .874 as a marginally accepted index, according to Bloemer et al. (2002) and Srinivasan et al. (2002) the GFI index in their studies exhibited .79 and .75, respectively. Therefore, to maintain the GFI index = .838 as indicated in this study is consistent with other related existing studies such as Bloemer et al. (2002) and Srinivasan et al. (2002).

In terms of structural regression coefficient, the result as displayed in figure 6.4 below indicates that the structural regression coefficients or all other paths are significant at $p<.05$. Specifically, Product Quality (.33*), Service Quality (.47*), and Price Perception (.19*) explain 42% of the variance (or squared multiple correlation) in the Ethical Brand context, whereas Service Quality (.47 in structural coefficient) has an important effect compared to others predictors in this study. The squared multiple correlation (SMC) = 42% and refers to the estimated variance explained by the predictor variable. In detail, it is estimated that the predictors can explain 42% of its variance, which means the error variance to predict the Ethical Brand is approximately 58%, which also means it is explained by other factors.

Although, this output, which contains the significant paths from predictors (product quality, service quality, and price perception) discovers that there are positive and significant relationships between these variables and the ethical brand (as additional variable), service quality (.47*) has an important effect on the ethical brand according to industrial buyers' responses.

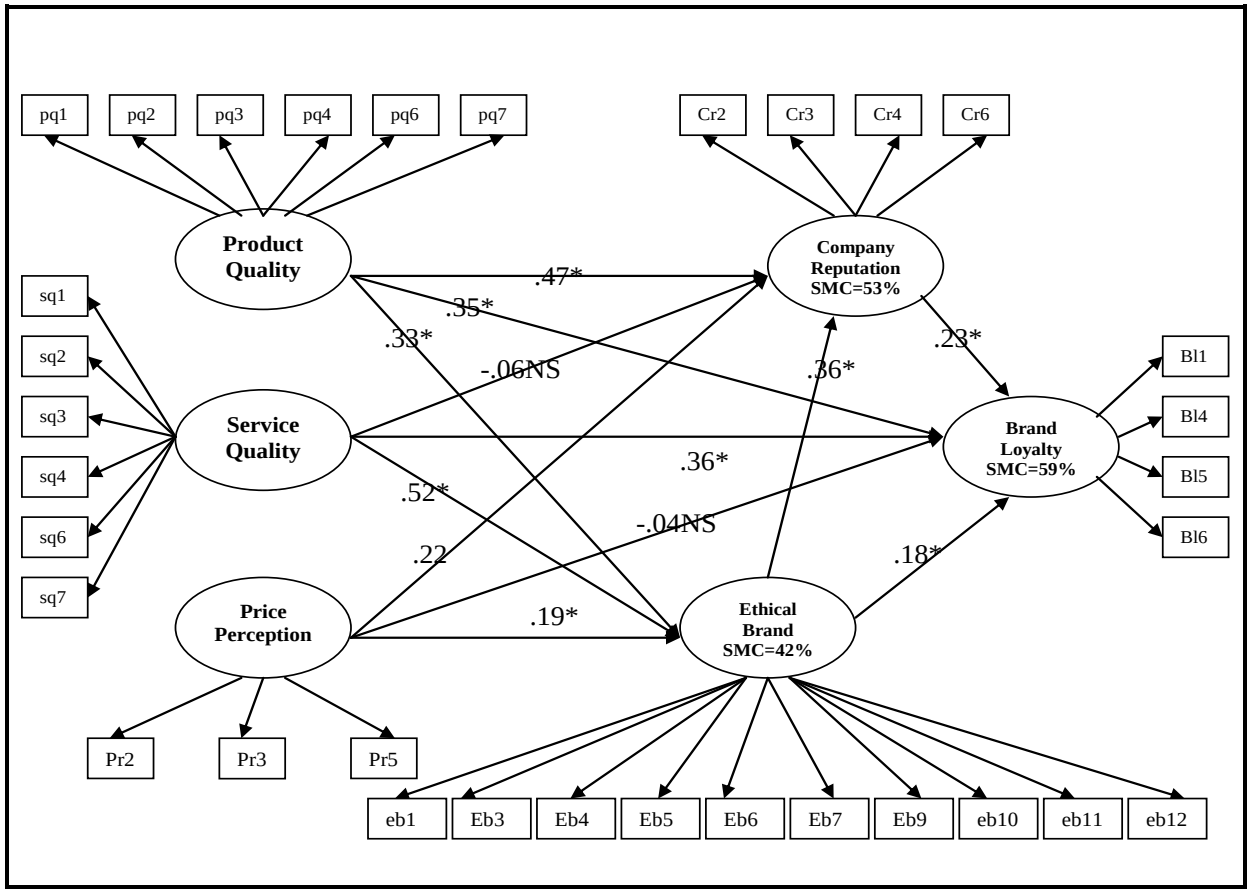
Besides this, the output displays in figure 6.4 also indicate that Product Quality (.47*), and Price Perception (.22*) explain 53% of the variance (or squared multiple correlation) in the company reputation. The ethical brand is also important in

explaining the Company Reputation with .36 structural regression coefficients. The results indicate that Product Quality (.47 in structural coefficient) has an important effect compared to others. It also means that 47% is the error variance to predict the Company Reputation. However, Service Quality is insignificant with Company Reputation in this case. In addition, this output containing the significant paths from predictors (product quality and price perception, and the ethical brand) discovers that there are positive and significant relationships between these variables and company reputation. Product quality (.47*) has an important effect on the company reputation according to industrial buyers' responses.

Moreover, Product Quality (.35*), Service Quality (.36*), Price Perception (-.04), the Ethical Brand (.18*), and Company Reputation (.23*) explain 59% of the variance (or squared multiple correlation) in Brand Loyalty. Based on this result, it indicates that 41% is the error variance to predict Brand Loyalty. In this case, only Price Perception (-.04) has an insignificant result with Brand Loyalty. Thus, the output explaining the significant paths from predictors (product quality, service quality, the ethical brand, and company reputation) discovers that there are positive and significant relationships between these variables and brand loyalty based on industrial buyers responses. As a comparison, the earlier study conducted by Cretu and Brodie (2005) indicated that product and service quality (.10*), price and cost (.58*), company reputation (.22*) were able to predict customer value with a square multiple correlation 71% (or the variance). While, company reputation (.57*), and customer value (.32*) explained 71% of the variance (or squared multiple correlations) in brand loyalty. However, Cretu and Brodie (2005) did not investigate the square multiple correlation of product and service quality, and price on brand loyalty.

The above viewpoint with the final output of structural equation modeling has explained the research questions 2 and 3. The output of the structural equation modeling full-model containing the direct and indirect effect between the ethical brand and company reputation, and loyalty indicate that both directions have significant effects as hypothesized.

A clearer picture of the structural equation modeling full-model is displayed as follows:



Note: * indicates all loadings were significant at p<.001
SMC = R^2; N.S = Not Significant

Figure 6.4 Steps-Two Structural Model

Table 6.18 Steps-Two Structural Model: The Fit Indexes

Fit Indices	X^2	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	882.273 (P<.000)	1.83	.838	.909	.917	.055

As displayed in figure 6.4, the output indicates that the predictors' variables (product quality, service quality, and price perception) along with the ethical brand explain 53% of the variance in company reputation. The predictors, the ethical brand and company reputation explain 59% of the variance in brand loyalty. The ethical brand is a new concept that only has a conceptual study by Fan (2005) and Paluszek (2006), therefore, as the variance explained in both company reputation and brand loyalty has never been reported in the past there can be no comparison. The present study, thus, provides a step towards understanding these phenomena empirically. However, Cretu and Brodie (2005) use customer value as a part of ethical concern as explained by Gundlah and Murphy (1993) who found that product quality, service quality, price, and also company reputation explained 71% of the variance in the customer value. The customer value and company reputation also explained 71% of the variance in brand loyalty.

The further analysis is to test the mediating effect. This testing will discuss the following research questions:

(4) Are there any indirect relationships between antecedents (product and service quality, and price perception) and a company reputation, and subsequently its brand loyalty via the ethical brand?

(5) Finally, can company reputation mediate the relationship between the ethical brand and loyalty?

To determine the research questions 4, and 5 of the current study, this study will provide explanation of not only the direct effect of the ethical brand on company reputation and brand loyalty but also the investigation on the mediating effect. In the previous literature that has been discussed in Chapter four, there could be a direct effect of the ethical brand on company reputation. Furthermore, a direct effect was

also justified between the ethical brand and brand loyalty; consequently a mediating effect could rationally exist between the ethical brand and brand loyalty via company reputation. Moreover, some mediating effect has also been noted in Chapter four, in which there could be a mediating effect of predictors (product quality, service quality, and price perception) on company reputation and subsequently loyalty via the ethical brand. Interestingly, both direct and indirect effects can be run and explained simultaneously in the structural equation modeling full model. Total effect, therefore, can also be investigated, in which the direct effects represent the direct effect of one variable on another, while the indirect effects, according to Kline (1988, p.52), involve *'one or more intervening variables that transmit some of the causal effect of prior variables onto subsequent variables'*. In addition, Bentler (1995) indicates that the magnitude of the indirect effect is explained by the product of the standardized coefficients of the paths that link the two variables. However, there is an alternative technique according to Kelloway (1995) to investigate the mediating effect of study. The technique will be described in detail in the following sub-section.

6.9.2 Testing for the Mediation Effects

According to Kelloway (1995), it is essential to recognize that some important cases can be actually tested. Specifications for the test are recognized as being mediated in the relationship as described by Baron and Kenny (1986). A mediator is seen as the third variable that affects and is also influenced by the independent variables. Baron and Kenny (1986) explain that the mediator helps the researchers to explain how and why effects or the relationship occurs.

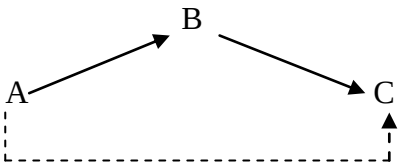
According to Baron and Kenny (1986), a mediated relationship can form a full mediation model as A → B → C, and can be tested and perform the partial mediated model, which also includes paths from A to C as Kelloway (1995) justified. As

mentioned earlier, this current study also includes the mediating variable, i.e., the ethical brand; therefore, there is a need to test its mediating effect as suggested by Kelloway (1995). This process is also conducted through structural equation modeling where structural equation modeling is seen as superior in testing for the mediation as Anderson & Gerbing (1988); and Kelloway (1995) mentioned.

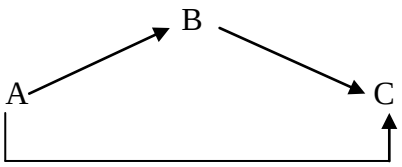
On the other hand, according to Kelloway (1995), there is also a non-mediated model within the discussion on the full and partial mediation model as explained earlier, which could be tested by excluding the path from B to C and incorporating the path A to C.

To provide a clearer viewpoint as discussed above, Figure 6.5 summarizes the fully-, partially-, and non-mediated models.

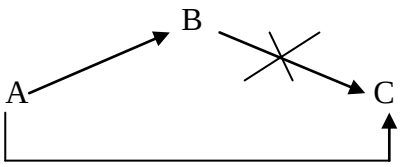
a). Full Mediation



b). Partially-Mediated



c). Non-Mediated



Source: Adapted from Kelloway, E.K. (1995).

Figure 6.5 Diagram of the Fully-, Partially-, and Non-Mediated Models

Following the above diagram, this study will discuss three types of mediating effect that can be outlined as:

1. Between predictors (product quality, service quality, and price perception) and company reputation mediated by the ethical brand (PQ, SQ, Pr effect on CR via EB).
2. Between predictors (product quality, service quality, and price perception) and brand loyalty mediated by the ethical brand (PQ, SQ, Pr effect on BL via EB).
3. Between the ethical brand and brand loyalty mediated by company reputation (EB effect on BL via CR).

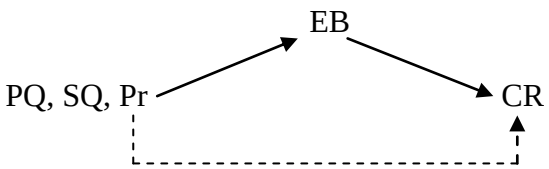
The following sub-section will present in detail the first testing of the mediating effect.

6.9.2.1 Testing Mediating Effects of the EB in the Relationships between Predictors (PQ, SQ, and Pr) and CR

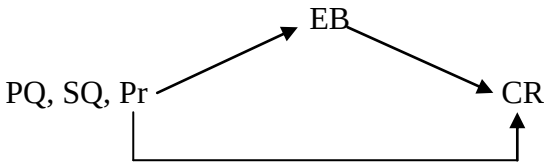
Discussion on this study model presents the investigation on the effects of product quality, service quality, and price perception on company reputation mediated by the ethical brand.

The diagram of the first mediating model is presented as:

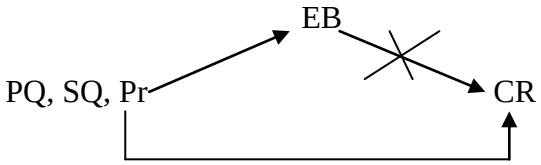
a). Full Mediation



b). Partially-Mediated



c). Non-Mediated



Source: Adapted from Kelloway, E.K. (1995).

Figure 6.6 Diagram of the Fully-, Partially-, and Non-Mediated Models of the EB and Relationship between Predictors (PQ, SQ, and Pr) and CR

Figures 6.7 to 6.9 present the structural models for the fully mediated, partially mediated and non-mediated models to test the relationship between PQ, SQ, Pr and CR mediated by the EB, respectively.

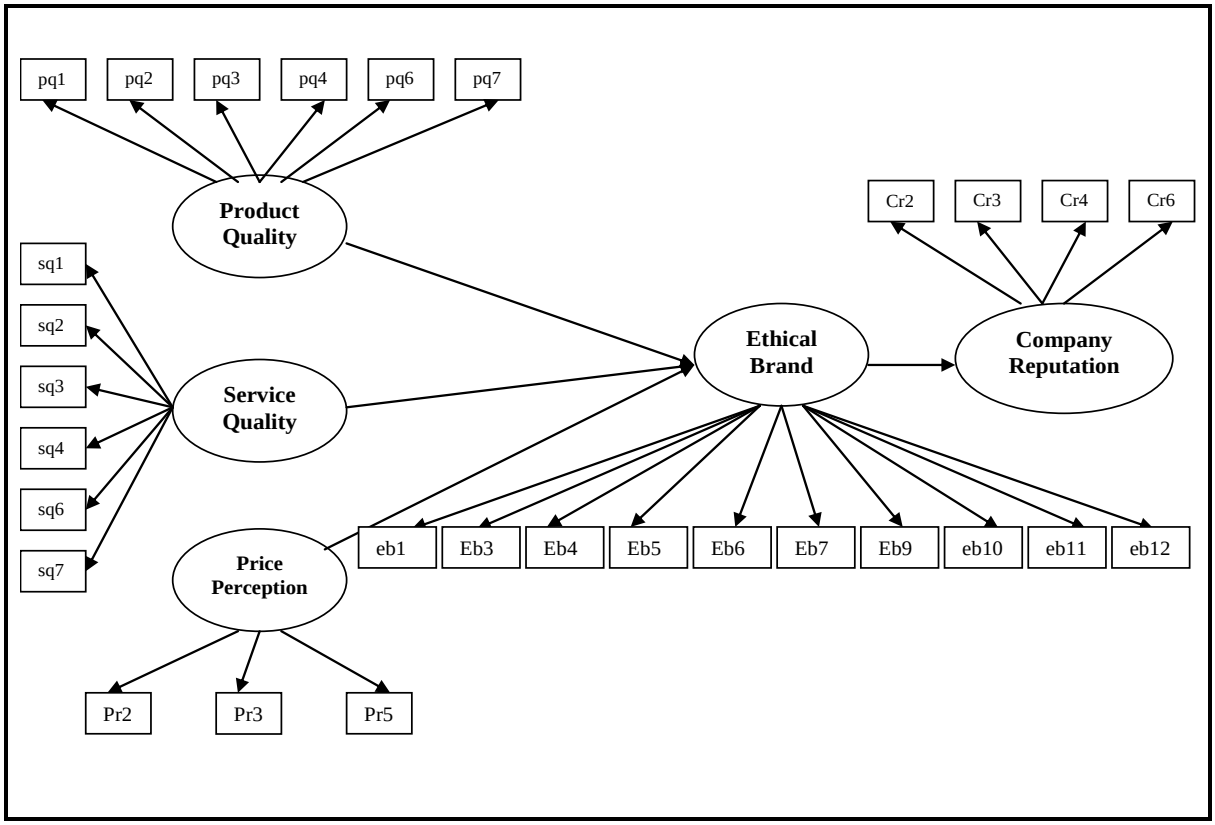


Figure 6.7 Fully Mediated Model

Table 6.19 Fully Mediated: The Fit Indexes

Fit Indices	X^2	df	p =	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	698.591 (P<.000	398	.000	1.755	.861	.921	.928	.053

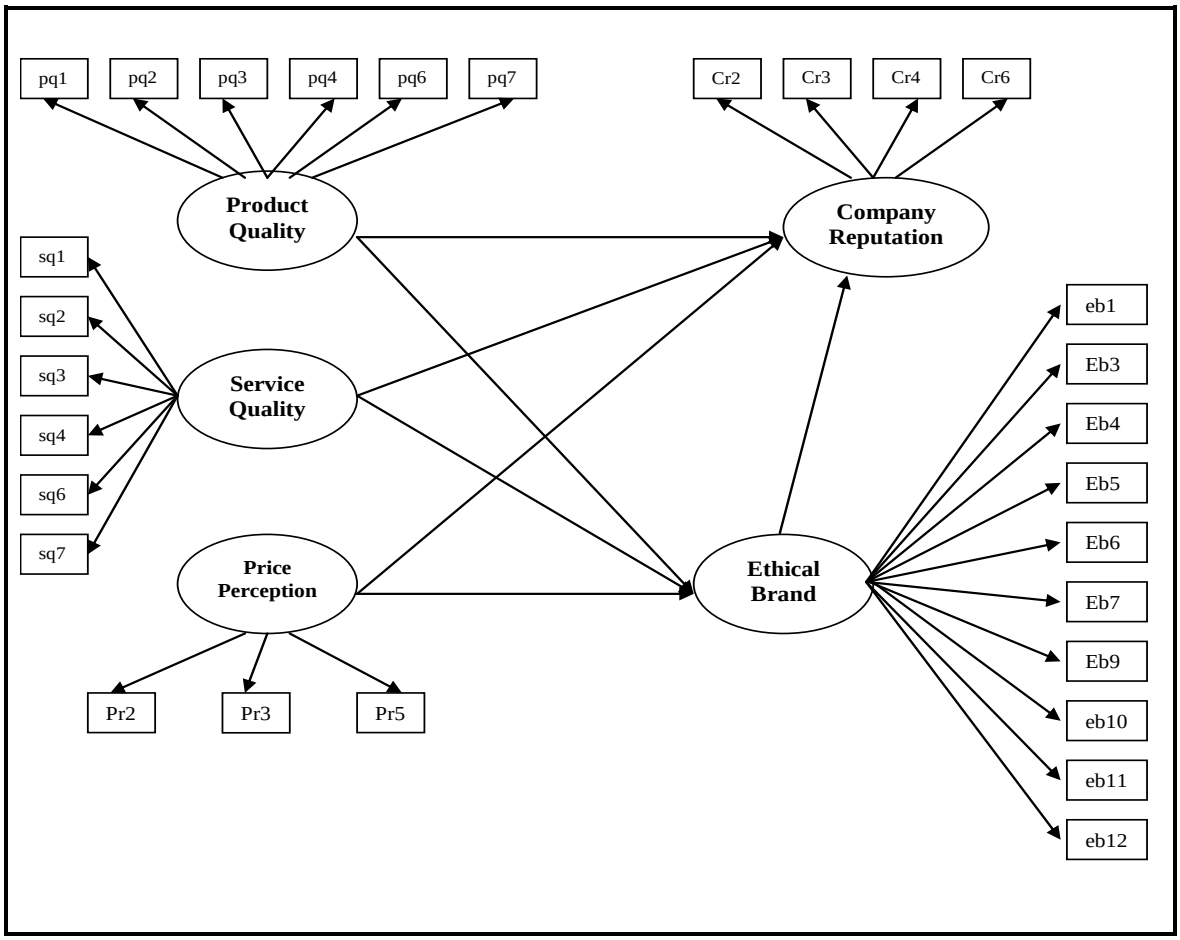


Figure 6.8 Partially Mediated Model

Table 6.20 Partially Mediated: The Fit Indexes

Fit Indices	X^2	df	p =	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	649.176 (P<.000	395	.000	1.643	.868	.933	.939	.049

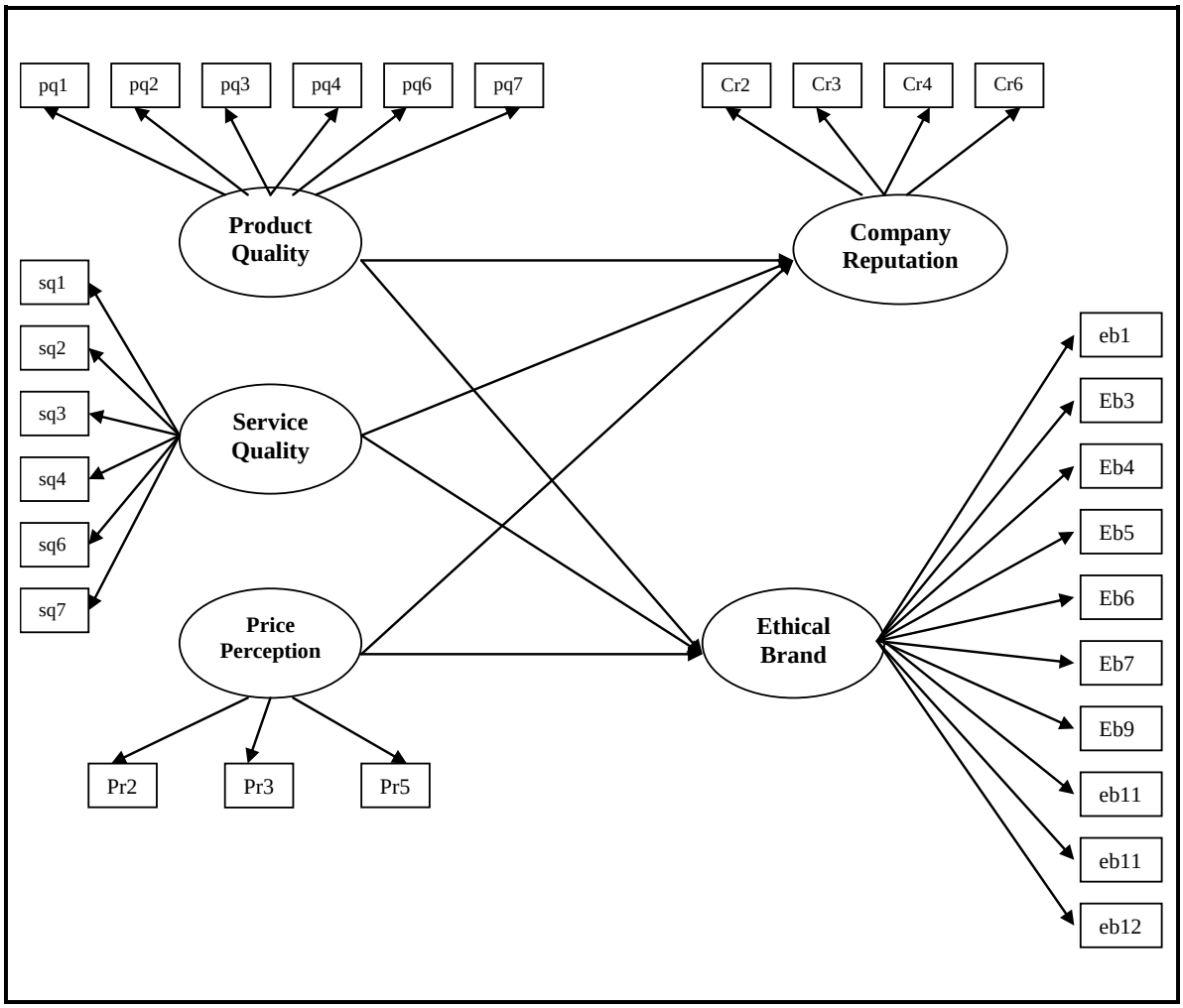


Figure 6.9 Non-Mediated Model

Table 6.21 Non-Mediated: The Fit Indexes

Fit Indices	X^2	df	p =	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	668.449 (P<.000	395	.000	1.692	.864	.928	.934	.050

The assessment of the mediated relationship is presented by the fit of the non-mediated and fully mediated models to the partially mediated model as a sequence of tests (Kelloway, 1995). If the non-mediated and partially mediated models present equivalent fits to the data, the necessity of the mediated relationship is stated as impugned. If the partially mediated and fully mediated models present equivalent fits, the sufficiency of the mediated relationship is impugned. In this case, both the non-

mediated and partially mediated models present a substantively meaningful alternative to the original mediated model.

As an interpretation, the changing in Chi-square for partially mediated models should be tested against the fully mediated and the non-mediated models to confirm these findings, as presented in Table 6.22. Regarding Figures 6.7 to 6.9 above, the results indicate that both the partially mediated and non-mediated models fit, whereas the fit is decreased for the non-mediated model. Thus, in summary, the necessity and sufficiency of the ethical brand as the mediating variable is impugned.

Table 6.22 Chi-square Differences Test for Fully Mediated, Partially Mediated, and Non-Mediated Models

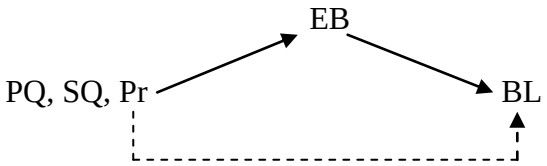
Models	χ^2	***df***	$\Delta\chi^2$	Δdf	$\chi^2_{(p=0.05)}$	**Conclusion (Accept X-Mediated Model**
Partially Mediated	649.176	395	49.415	3	7.815	Partially Mediated Model
Fully Mediated	698.591	398				
Partially Mediated	649.176	395	19.273	1	3.841	Partially Mediated Model
Non-Mediated	668.449	396				

Based upon Table 6.22 above, the model fits of partially mediated model present the better model fit compared to the fully mediated and non-mediated model, and the Chi-square difference test exposes that the partially mediated model is accepted. The partially mediated model being accepted might be explained by previous research, which did not examine the effect of the ethical brand as a mediating factor in the relationships between product and service quality and price on company reputation (i.e., Cretu & Brodie, 2005). In fact, in Cretu and Brodie's (2005) study, they found that other variables can also mediate the relationship between quality of product and service and company reputation (specifically in a business-to-business context).

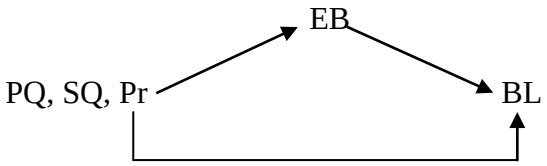
6.9.2.3 Testing Mediating Effects of the EB in the Relationships between Predictors (PQ, SQ, and Pr) and BL

Furthermore, discussion on the model precedes the investigation on the mediating effect of the ethical brand between variables product quality, service quality, price perception and brand loyalty. The diagram of the second mediating model is presented as:

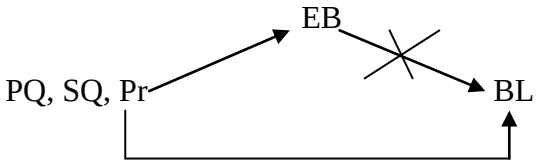
a). Full Mediation



b). Partially-Mediated



c). Non-Mediated



Source: Adapted from Kelloway, E.K. (1995).

Figure 6.10 Diagram of the Fully-, Partially-, and Non-Mediated Models of the EB and Relationship between PQ, SQ, Pr and BL

Figures 6.11 to 6.13 present the structural models for the fully mediated, partially mediated and non-mediated models to test the relationship between PQ, SQ, Pr and BL mediated by the EB, respectively.

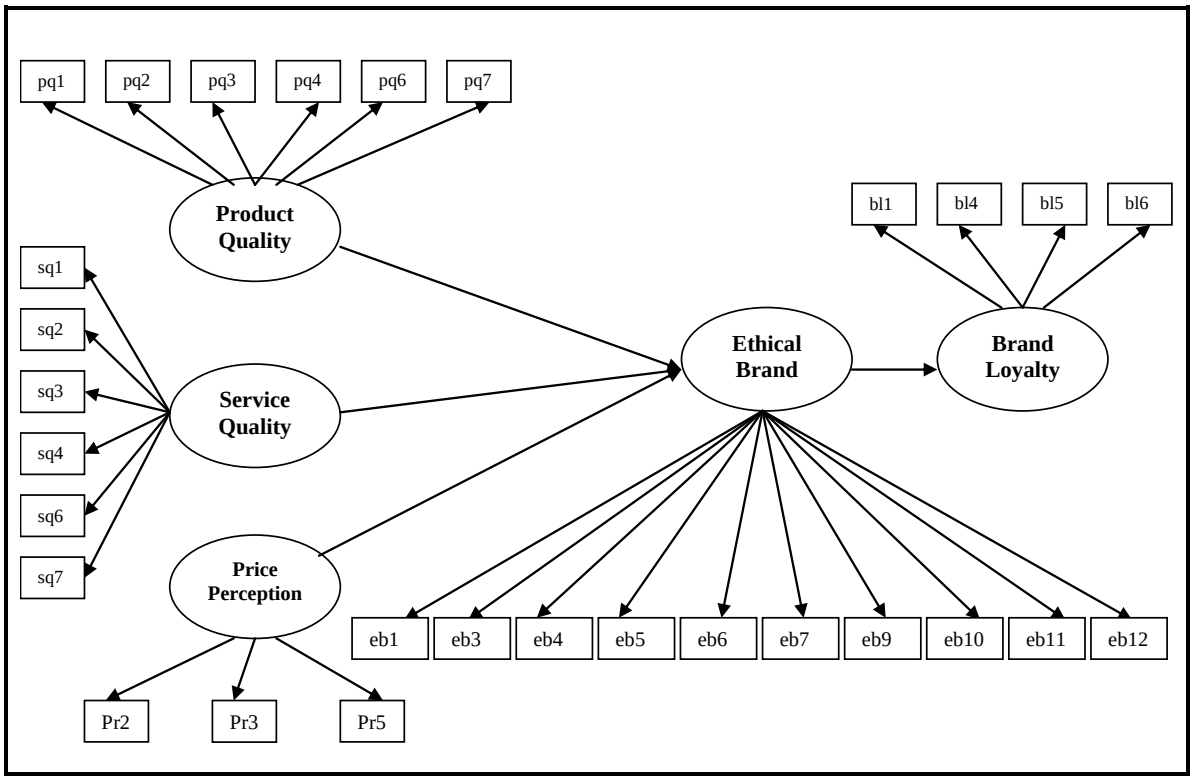


Figure 6.11 Fully Mediated Model

Table 6.23 Fully Mediated: The Fit Indexes

Fit Indices	X^2	df	p =	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	716.738 (P<.000	398	.000	1.801	.859	.919	.926	.055

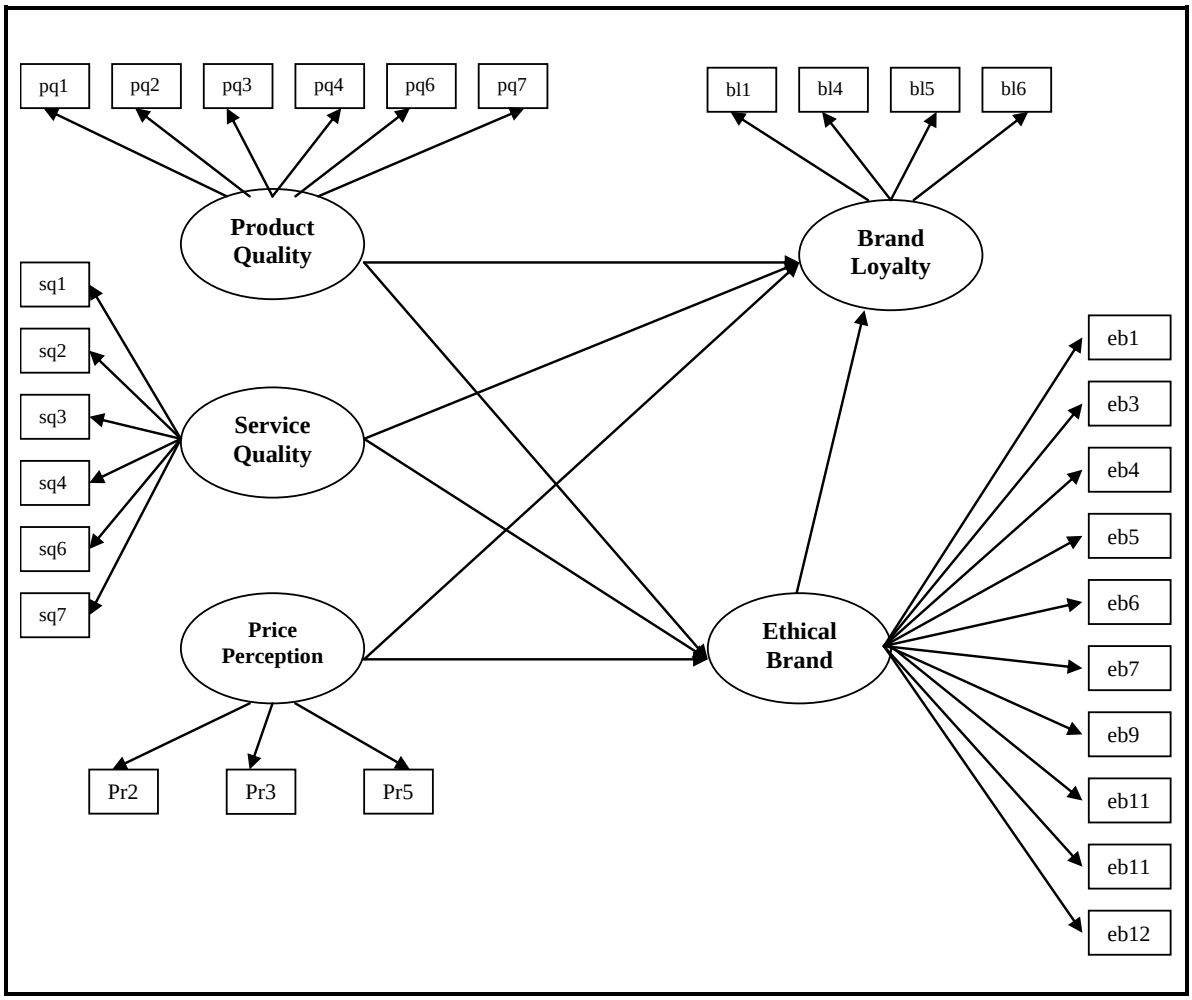


Figure 6.12 Partially Mediated Model

Table 6.24 Partially Mediated: The Fit Indexes

Fit Indices	X^2	df	p =	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	652.402 (P<.000	395	.000	1.652	.869	.934	.940	.049

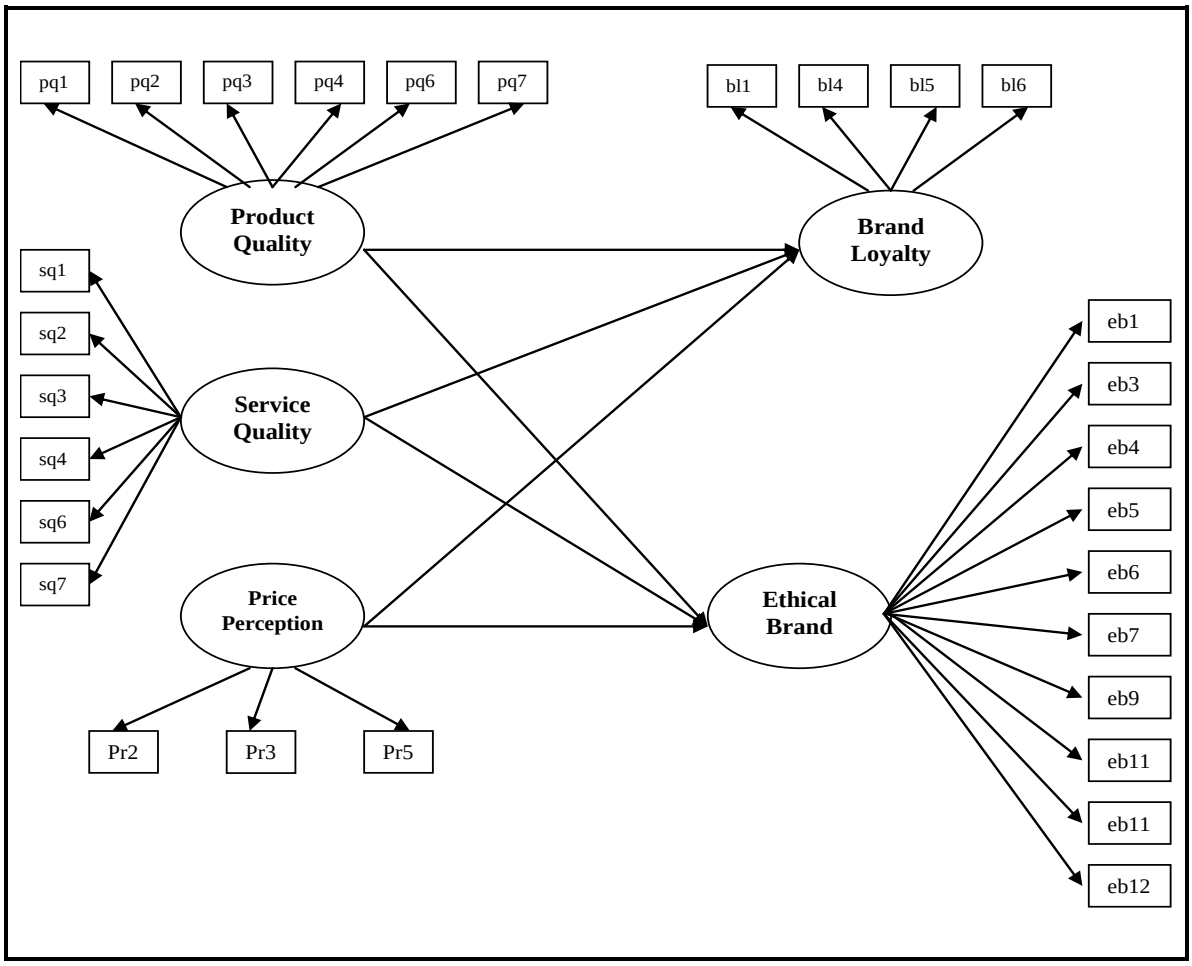


Figure 6.13 Non-Mediated Model

Table 6.25 Non-Mediated: The Fit Indexes

Fit Indices	X^2	df	p =	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	663.737 (P<.000	396	.000	1.675	.868	.932	.938	.050

The changing in Chi-square for partially mediated models was tested against the fully mediated and the non-mediated models to confirm these results, as presented in Table 6.26. Based upon Figures 6.11 to 6.13 above, the results indicate that both the partially mediated and non-mediated models are fits, with reduced fit for the non-mediated model. To summarize, the necessity and sufficiency of the ethical brand as the mediating variable between independent variables (product quality, service quality and price perception) and dependent variable (brand loyalty) is impugned.

Table 6.26 Chi-square Differences Test for Fully Mediated, Partially Mediated, and Non-Mediated Models

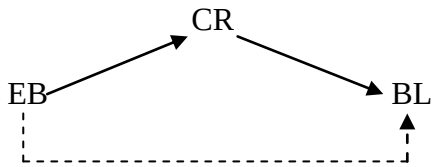
Models	χ^2	*df*	$\Delta\chi^2$	Δdf	$\chi^2_{(p=0.05)}$	Conclusion (Accept X-Mediated Model
Partially Mediated	652.402	395	64.336	3	7.815	Partially Mediated Model
Fully Mediated	716.738	398				
Partially Mediated	652.402	395	11.335	1	3.841	Partially Mediated Model
Non-Mediated	663.737	396				

Based upon Table 6.26 above, the model fits of the partially mediated model present the better model fit compared to the fully mediated and non-mediated model, and the Chi-square difference test indicates that the partially mediated model is accepted. That the partially mediated model is accepted might be explained by previous research which did not examine the effect of the ethical brand as a mediating factor in the relationships between product and service quality and price on brand loyalty (e.g., Cretu & Brodie, 2005; and Van Riel et al. 2005). In fact, in the study of Van Riel et al. (2005) they found that other variables can also mediate the relationship between quality of product and service and brand loyalty in a business-to-business context.

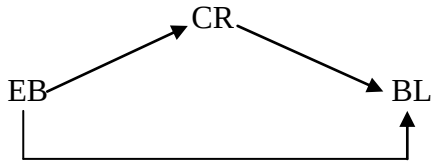
6.9.2.4 Testing Mediating Effect of CR in the Relationship between the EB and BL

In addition, discussion on the model precedes the investigation on the mediating role or effect of company reputation between the variables the ethical brand and brand loyalty. The diagram of the third mediating model is presented as:

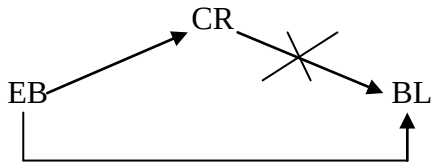
a). Full Mediation



b). Partially-Mediated



c). Non-Mediated



Source: Adapted from Kelloway, E.K. (1995).

Figure 6.14 Diagram of the Fully-, Partially-, and Non-Mediated Models of the CR and Relationship between the EB and BL

Figures 6.15 to 6.17 present the structural models for the fully mediated, partially mediated and non-mediated models to test the relationship between the EB and BL mediated by CR, respectively.

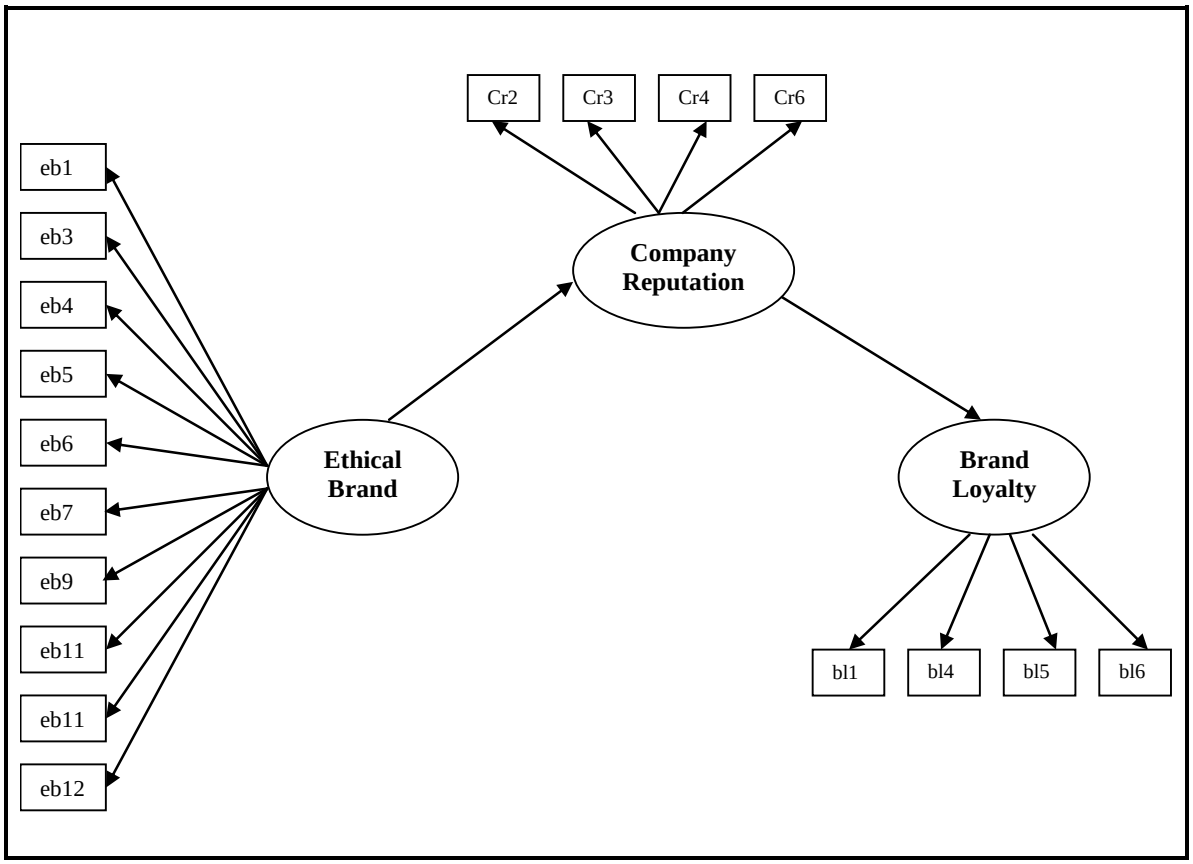


Figure 6.15 Fully Mediated Model

Table 6.27 Fully Mediated: The Fit Indexes

Fit Indices	X^2	df	p =	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	176.099 (P<.000	102	.000	1.746	.926	.958	.965	.055

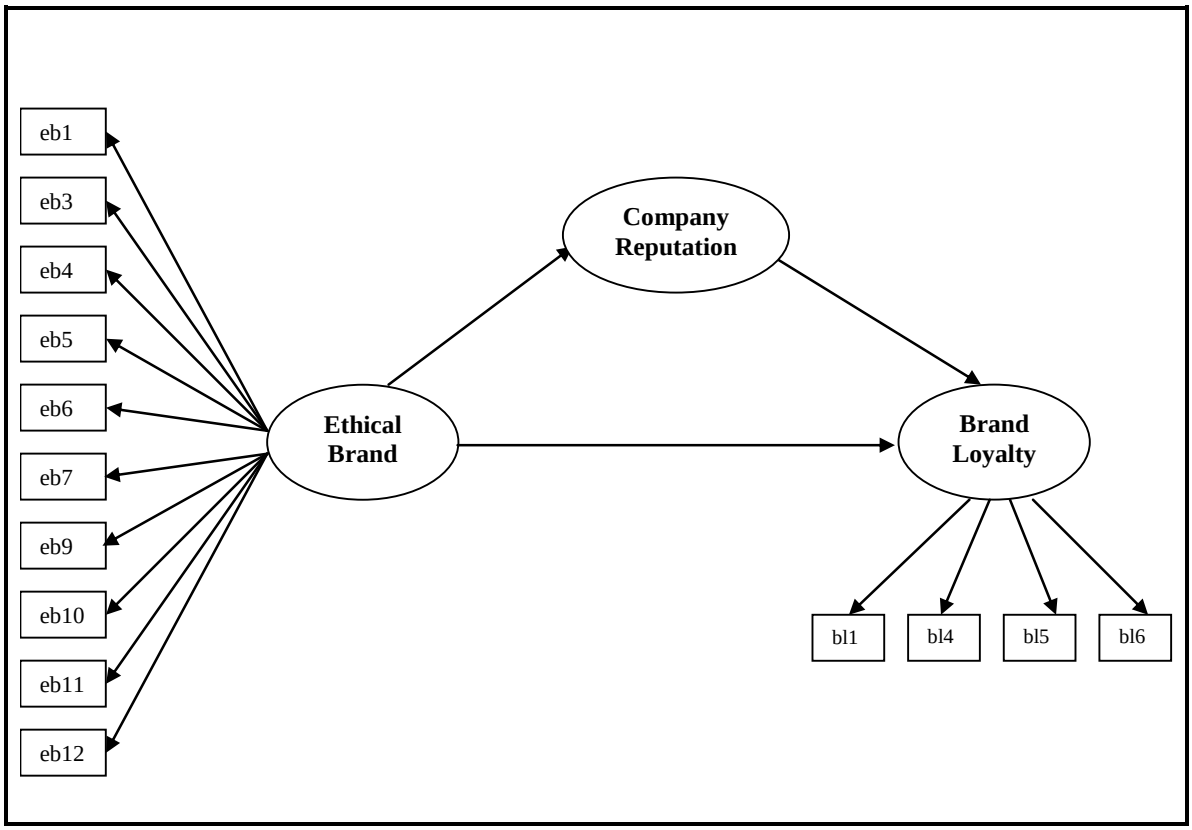


Figure 6.16 Partially Mediated Model

Table 6.28 Partially Mediated: The Fit Indexes

Fit Indices	X^2	df	p =	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	152.229 (P<.000	101	.000	1.507	.934	.972	.976	.043

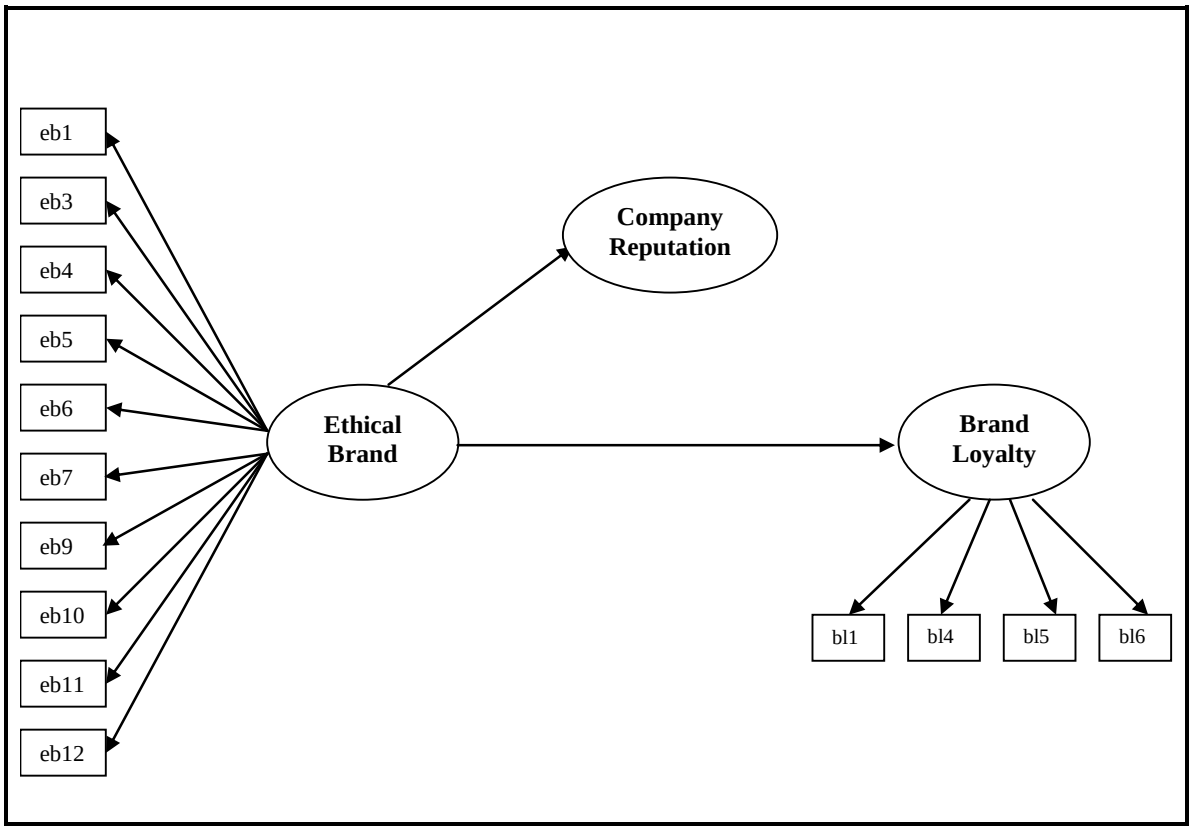


Figure 6.17 Non-Mediated Model

Table 6.29 Non-Mediated: The Fit Indexes

Fit Indices	X^2	df	p =	$X^{2/df}$	GFI	TLI	CFI	RMSEA
	256.705 (P<.000	102	.000	2.517	.900	.916	.929	.075

Moreover, as presented in Table 6.30, the changing in Chi-square for partially mediated models were tested against the fully mediated and the non-mediated models to confirm these results. Regarding Figure 6.15 to Figure 6.17 above, the results indicate that both the partially mediated and non-mediated models are fits, and that the fit for the non-mediated model is decreased. Thus, it can be summarized that the necessity and sufficiency of company reputation as the mediating variable between independent variables (product quality, service quality and price perception) and dependent variable (brand loyalty) is impugned.

Table 6.30 Chi-square Differences Test for Fully Mediated, Partially Mediated, and Non-Mediated Models

Models	χ^2	*df*	$\Delta\chi^2$	Δdf	$\chi^2_{(p=0.05)}$	Conclusion (Accept X-Mediated Model
Partially Mediated	152.229	101	23.87	1	3.841	Partially Mediated Model
Fully Mediated	176.099	102				
Partially Mediated	152.229	101	104.476	1	3.841	Partially Mediated Model
Non-Mediated	256.705	102				

Based upon Table 6.30 above, the model fits of partially mediated model present the better model fit compared to the fully mediated and non-mediated model, and the Chi-square difference test exposes that the partially mediated model was accepted. The fact that the partially mediated model was accepted might be explained by previous research that did not examine empirically the effect of company reputation as a mediating factor in the relationships between the ethical brand and brand loyalty (e.g., Cretu & Brodie, 2005; and Van Riel et al., 2005). In fact, in the conceptual study of Fan (2005), he only justified that the ethical brand may enhance company reputation.

In the next step, the analysis will discuss the mediating effect of the ethical brand and its relationships between antecedents and company reputation and brand loyalty.

6.9.3 Mediating Effects and Its Relationships

Table 6.31 summarises the results of the direct effects of product quality, service quality and price perception on company reputation, the ethical brand, and brand loyalty, which have been extracted from the output of the final model of this study, i.e., the partially mediated model. The results of these direct effects among variables was

used to examine the hypotheses 10 – 16 of this study regarding the mediating effects of the ethical brand and company reputation in the relationships between predictors and brand loyalty.

Table 6.31 The Direct Effects of the Constructs Based Upon the Hypothesized Relationships

Path	Direction +/-	β	SE	Sig.
Product Quality → Company Reputation	+	0.441	0.069	***
Service Quality → Company Reputation	-	0.054	0.069	0.430
Price Perception → Company Reputation	+	0.344	0.108	0.001
Ethical Brand → Company Reputation	+	0.378	0.090	***
Product Quality → Ethical Brand	+	0.301	0.056	***
Service Quality → Ethical Brand	+	0.469	0.062	***
Price Perception → Ethical Brand	+	0.292	0.097	0.003
Product Quality → Brand Loyalty	+	0.286	0.066	***
Service Quality → Brand Loyalty	+	0.294	0.061	***
Price Perception → Brand Loyalty	-	0.050	0.087	0.569
Ethical Brand → Brand Loyalty	+	0.161	0.077	0.036
Company Reputation → Brand Loyalty	+	0.197	0.084	0.019

β - standardised regression weights; SE - standard error;
Significance level: *** = $p \leq 0.001$; ** = $p \leq 0.01$; * = $p \leq 0.05$

6.9.3.1 Mediating Effects of The ethical brand in the Relationships between Predictors (PQ, SQ, and Pr) and Company Reputation

In order to examine the mediating effects of brand loyalty in the relationships between the perceptions of product quality, service quality, and price and company reputation, the hypotheses below were developed:

H10. Product quality will have a positive relationship with company reputation via the ethical brand (indirect effect).

H11. Service quality will have a positive relationship with company reputation via the ethical brand (indirect effect).

H12. Price perception will have a positive relationship with company reputation via the ethical brand (indirect effect).

Looking at the results of the direct effect of predictors (product quality, service quality, and price perception) on the ethical brand (Table 6.31) it appears that there is a significant and positive direct relationship between the product quality and the ethical brand ($p \leq 0.01$). This result is consistent with past studies, which found that product quality can increase customer value (Cretu & Brodie, 2005). Customer value has been discussed in the past as the ethical foundation (Gundlah & Murphy, 1993). On the other hand, there are significant and positive direct relationships between the ethical brand and company reputation, at $p > 0.05$.

The results discussed above, however, have to be translated into the mediation effect of the ethical brand between perception of product quality and company reputation. Based on the result of the significant direct effect between product quality and brand loyalty, it can be concluded that the ethical brand is the mediator between product quality and company reputation. As there is limited previous research investigating this relationship mediated by the ethical brand, the comparison therefore cannot be discussed. Thus, the hypothesis which stated that *product quality will have a positive relationship with company reputation via the ethical brand* was not rejected. The role of the ethical brand in this case is as a partial mediator based upon the assumption suggested by Kelloway (1995).

Although the results show no significant direct effect between service quality and company reputation, there is a positive and significant direct effect between service quality and the ethical brand, and the ethical brand itself has a positive and significant relationship with company reputation. This indicates that the ethical brand is the mediator in both relationships (between service quality and company reputation). Interestingly, the role of the ethical brand is as a full mediator. It means that there is no effect of service quality on company reputation without the role of the ethical brand. In

other words, service quality can enhance company reputation only if the ethical brand is provided by the company. Therefore, the role of the ethical brand as the mediator is very significant to mediate the relationship between service quality and company reputation. Thus, the hypothesis which stated that *service quality will have a positive relationship with company reputation via the ethical brand (indirect effect)* is supported.

Based on the results, there is a positive and significant direct effect between perception of price and the ethical brand, and between the ethical brand itself and company reputation. The results also indicate that there is a positive and significant relationship between price perception and company reputation. Thus, regarding the above procedure that was done as suggested by Kelloway (1995), it can be concluded that the ethical brand is the mediator between perception of price and company reputation, and the role of the ethical brand is as a partial mediator. Thus, the hypothesis that stated that *price perception will have a positive relationship with company reputation via the ethical brand (indirect effect)* is supported.

Fan (2005) assumed that the ethical brand may enhance company reputation. Based on the current result, the study concludes that the assumption has been proven. In regards to the predictors (PQ, SQ, and Pr) and CR, this study's findings confirm Fan's (2005) notation empirically that the ethical brand impacts on company reputation. Furthermore, Cretu and Brodie (2005) found that product quality, service quality, price, and also company reputation impact on customer value in which customer value is a part of ethical aspects as justified by Gundlah and Murphy (1993). Furthermore, this study's findings re-confirm Abratt, (1986), Michell et al. (2001) and Mudambi's (2002) findings that these variables (PQ, SQ, and Pr) could be the main drivers in establishing company reputation in which the ethical brand has a significant

role as mediator in the industrial buyer context. Considering the quality level of product and service and also price perception is a way that may encourage company reputation via the ethical brand.

The next sub-section will present the mediating effect of the EB in the relationship between PQ, SQ, Pr and BL.

6.9.3.2 Mediating Effects of the Ethical Brand in the Relationships between Predictors (PQ, SQ, and Pr) and Brand Loyalty

In order to examine the mediating effects of the ethical brand in the relationships between product quality, service quality, price perception and brand loyalty, the hypotheses below were developed:

H13. Product quality will have a positive relationship with brand loyalty via the ethical brand (indirect effect).

H14. Service quality will have a positive relationship with brand loyalty via the ethical brand (indirect effect).

H15. Price perception will have a positive relationship with brand loyalty via the ethical brand (indirect effect).

The results displayed in Table 6.31 show there are significant and positive direct relationships between the predictors (product quality, service quality and price perception) and the ethical brand. Product quality has a positive and significant relationship with brand loyalty at $p \leq 0.001$. The result also found that there is a positive and significant direct relationship between the ethical brand and brand loyalty ($p<0.05$). These current results, therefore, found that the ethical brand mediates the effect of product quality on brand loyalty. Thus, the hypothesis which stated that *product quality will have a positive relationship with brand loyalty via the ethical brand (indirect*

effect) is supported. The role of the ethical brand in this relationship is as a partial mediator.

Also, significant direct effects were found between service quality and the ethical brand. The findings also indicate that the ethical brand has a positive and significant relationship with brand loyalty. Therefore, the ethical brand is the mediator in this relationship. The ethical brand mediated the effect of service quality and brand loyalty; thus, the hypothesis which stated *service quality will have a positive relationship with brand loyalty via the ethical brand (indirect effect)* was not rejected. The role of the ethical brand in this case is also as a partial mediator regarding the procedure that was conducted as Kelloway (1995) suggested.

Based on the result of no significant direct effect between perception of price and brand loyalty; there is, however, a positive and significant relationship between perception of price and the ethical brand, and the ethical brand itself has a positive and significant direct effect on brand loyalty. Interestingly, according to the procedure, which was done as Kelloway (1995) suggested, it can be concluded that the ethical brand fully mediated between perception of price and brand loyalty. It means that there is no relationship between construct "perception of price" and "brand loyalty" without "the ethical brand" as the mediator. In other words, customers are willing to pay premium prices to express their loyalty only if the company provides the ethical brand. Therefore, the construct the ethical brand is very significant to mediate the relationship between perception of price and brand loyalty. Thus, the hypothesis which stated that *price perception will have a positive relationship with brand loyalty via the ethical brand (indirect effect)* is supported.

The next sub-section will discuss the mediating effect of CR in the relationship between the EB and BL.

6.9.3.3 Mediating Effect of Company Reputation in the Relationship between the EB and BL

The results displayed in Table 6.31 were used to examine the mediating effects of company reputation in the relationships between the perceptions of the ethical brand and brand loyalty, as hypothesised below:

H16. The ethical brand will have a positive relationship with brand loyalty via company reputation (indirect effect).

The study found that there is a significant direct relationship between perception of the ethical brand with company reputation, and company reputation itself has a positive and significant relationship with brand loyalty. Moreover, the result of this study also found that there is a positive and significant relationship between the ethical brand and brand loyalty. The findings indicate that company reputation is the mediator in the relationship between the ethical brand and brand loyalty. Thus, the present study concludes that the hypothesis that stated that *the ethical brand will have a positive relationship with brand loyalty via company reputation (indirect effect)* is supported. The role of company reputation in this relationship is as a partial mediator.

Based on the findings and discussions above, the study found that in general, the above hypotheses were partially supported (H10, H12, H13, H14 and H16 were supported). With a p value of greater than 0.05, the remaining hypotheses (H11 and H15) were also supported as full mediators.

The regression standardized residual normality plot was assessed for the analysis of multivariate normality. The outputs indicate that all independent to dependent variables

display no slight departure from multivariate normality. However, according to Jaccard and Wan (1996) if the researcher uses the Maximum Likelihood method (ML) many outliers in the normality may be found and a moderate departure from normality could be considered. Moreover, West et al. (1995) clarifies that if the data has a few outliers of normality in structural equation modeling, the researcher can refer to the level of CFI fit index in order to ensure whether this index is affected by the normality departure or not. In such case the CFI index must be at least 0.9. According to the output, the CFI index of this data has fulfilled the acceptable level. Therefore, the present data is not affected by the slight departure of normality.

6.10 CONCLUSION

The predictors (product quality, service quality, and price perception) have explained 42% in the ethical brand of industrial buyers' responses. Service quality appears to have the most effect on the ethical brand, and brand loyalty. The findings also indicate that the ethical brand has a significant relationship with company reputation, and also a significant effect on brand loyalty. Company reputation itself has a significant effect on brand loyalty. Following the testing on the mediating effect of company reputation, the role of company reputation was found to be a full mediator between the ethical brand and brand loyalty. The indirect significant effect was also investigated between the predictors and company reputation via the ethical brand. The role of the ethical brand is as a mediator between the predictors (product quality, service quality, and price perception) and company reputation. Specifically, the discussion of the main findings will be provided in the next chapter according to the study's research hypotheses and describes the main practical and theoretical contributions.