The Impact of Service Quality Dimensions on Customer Satisfaction: Case Study of University Utara Malaysia

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Abstract

The purpose of this study is to investigate the effect of service quality (reliability, empathy, tangibility, assurance, responsiveness) on customer satisfaction in University Utara Malaysia (Education Service). Each variable is measured using 7-point interval scale; reliability (6 items), empathy (6 items), tangibility (5 items), assurance (10 items), and responsiveness (5 items) on customer satisfaction (6 items). Using the primary data collection method, 160 questionnaires were distributed to postgraduate students inside University Utara Malaysia (Sintok Campus), in north Malaysia. The responses collected were 98 completed questionnaires representing with 61.25 % response rate. The data were analyzed using Structural equation modeling (SEM) using AMOS 7. Confirmatory factor analysis of measurement models indicates adequate goodness of fit after a few items were eliminated through modification indices verifications. Goodness of fit for the revised structural model shows adequate fit. This study has established five direct effects: (1) reliability – customer satisfaction; (2) empathy and customer satisfaction; (3) tangibility and customer satisfaction; (4) assurance and customer satisfaction; (5) and responsiveness on customer satisfaction. And, this study concludes that all hypotheses have been asserted in the revised model.

Keywords: Service quality, SERVQUAL scale, Customer satisfaction, Education sector, University Utara Malaysia, SERVQUAL dimensions.


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Contribution of this paper to the literature
This study contributes to the body of knowledge in the area of service quality in the education sector, especially in universities in developing countries such as Malaysia, due to fact that the education sector in Malaysia rapidly developed in the last two decades and service quality increased in the same pace. This study has significance because it deals with customers' satisfaction (students) who have the most influence on the performance of the university, especially the services provided.

1. Introduction
In an era of increased competition, the importance of achieving high levels of customer satisfaction has gained the attention of researchers and practitioners alike. This is especially the case in the service sector, where many companies are focusing upon service quality improvement issues in order to drive high levels of customer satisfaction.

The relatively recent emergence of the relationship-marketing paradigm in modern marketing thought consolidates the increasing importance given by marketing academics to managing, developing and evaluating relationship (Berry, 1995; Payne, Christopher, Clark, & Peck, 1995; Sheth & Parvatiyar, 1995). Within this paradigm, the topic of relationship quality has stimulated a profuse production of scientific publications (Samiee & Walters, 2003). Indeed, in an international business context, “the rate of Hypotheses Formulation conceptual development of new frameworks has tended to go faster than empirical testing and, not surprisingly, hard data on many aspects of relationship marketing is still lacking.” Our study intends to empirically assess the quality of the relationship in an exporting context.

2. Literature Review
This study builds on validated and reliable measurement scales from the strategy (Menon, Bharadwaj, Adidam, & Edison, 1990) and relationship-marketing literatures (Ali, Doski, & Mohamed, 2003; Cannon & Homburg, 2001) to propose a multidimensional scale to assess relationship quality (RELQUAL) in an exporting context. This new multidimensional scale comprises four dimensions: (1) amount of information sharing in the relationship, (2) communication quality of the relationship, (3) long-term relationship orientation and (4) satisfaction with the relationship. Our study furthers previous research by adapting and testing the four scales in a new relationship-marketing context, the exporting–importing relationship. More importantly, our study proposes the existence of an underlying commonality among the five different dimensions and, hence, tests an integrated approach to the relationship quality phenomenon by integrating the previously isolated measures into a unique multidimensional scale.

The nature and role of Service quality is a complex construct that is one of the most investigated constructs in the marketing discipline (Iacobucci, 1998). It is generally viewed as an overall evaluation of the service provided (Taylor & Baker, 1994). It has also been viewed as a multidimensional construct formed from the consumer's evaluation of a number of service-related attributes (Brady & Cronin, 2001).

The service quality literature has seen a substantial debate on the nature and dimensionality of the construct. Most of this debate centered on the dimensionality of the SERVQUAL scale and the appropriateness of measuring service quality as a gap between customer expectations and customer evaluations of performance (Parasuraman, Zeithaml, & Berry, 1991). The result of this debate was general agreement that it is not necessary to measure consumer expectations of service performance in measuring the service quality construct (Zeithaml, Berry, & Parasuraman, 1996).

Even though it is a widely use as measure of service quality, one of the serious deficiencies of the SERVQUAL scale is that it captures less than the full spectrum of issues and attributes on which consumers evaluate service quality. In resolving this problem, an alternative position is that there are three major dimensional antecedents of overall service quality: interaction quality, outcome quality and environment quality and in addition each dimension may have a number of sub-dimensions (Brady & Cronin, 2001).

The nature of interaction quality is that what goes on in the service encounter between the customer and the service provider is a key determinant of the customer’s evaluation of service quality, Environment quality relates to the extent to which the tangible features of the service-place play a formative role in consumer perceptions of overall service quality (Brady & Cronin, 2001).

SERQUAL is a generic instrument for measuring perceived service quality that is viewed as the degree and direction of discrepancy between consumers’ perceptions and expectations. This, service quality, as perceived by consumers, stems from a comparison of what they feel service providers should offer with their perceptions of the performance of service provided by service providers (Zeithaml et al., 1996).

The researchers also identified that there are five dimensions to service quality. The following is a list of the five dimensions and a brief description of each:

1. Tangibles: (physical facilities, equipment, and appearance of personnel).
2. Reliability: (ability to perform the promised service dependably and accurately).
3. Responsiveness: (willingness to help customers and provide prompt service).
4. Assurance: (knowledge and courtesy of employees and their ability to inspire trust and confidence).
5. Empathy: (caring, individualized attention the firm provides its customers).

Among the five dimensions, reliability was found to be the most important of the five dimensions for lodging consumers followed, in ranking, by assurance, responsiveness, tangibles, and empathy (Ali et al., 2020; Knutson, Wullaert, Patton, & Yokoyama, 1990). Subsequently, they analyzed the statistical methodology itself, comparing the uses of confirmatory analysis versus factor analysis in index testing and refinement.

A second debate within the literature pertains to the relationship between service quality and customer satisfaction. Satisfied customers tend to be loyal to the company and more likely to return. Understanding satisfaction is important in the sense that dissatisfied customers rarely complain, but rather simply purchase from another service provider (Milbourne, 1996).
Satisfaction is most commonly described in terms of the disconfirmation approach, which describes it as the variation between a customer’s pre-purchase expectations and post-purchase perceptions of the actual service performed (O’Neill, 2001). The general thought is that satisfaction mediates the relationship between perceived service quality and firm performance (Fornell, 1992). However, some research suggests that satisfaction is an antecedent to service quality (Bolton & Drew, 1991). Thus, no consensus has been formed concerning the relationship between these two constructs.

When a customer buys a physical good, they acquire a title to the goods and there is a transfer of ownership. In contrast, a service consumer receives only the right to that service and for only a specified amount of time (Kandampully, 2002).

Service quality has been defined as a gap between the customer’s expectations of a service and the customer’s perceptions of the service received (Parasuraman, Zeithaml, & Berry, 1985). Definitions of quality have included: a) satisfying or delighting the customer or exceeding expectations; b) product of service features that satisfy stated or implied needs; c) conformance to clearly specified requirements; and d) fitness for use, whereby the product meets the customer’s needs and is free of deficiencies (Grönroos, 1984). The consumer satisfaction literature views these expectations as predictions about what is likely to happen during an impending transaction, whereas the service quality literature views them as desires or wants expressed by the consumer (Kandampully, 2002).

The literature reveals that no generic measure of service quality for all industries has emerged (Blose & Tankersley, 2004). Thus, service quality is generally believed to be a multi-level construct with multiple dimensions making up each level. However, scholars have varied as to the number of dimensions included in each model. The most popular conceptualization of service quality is Parasuraman et al. (1985) SERVQUAL model. Originally containing 10 dimensions, Parasuraman, Zeithaml, and Berry (1988) later reduced the SERVQUAL instrument to its present five dimensions: a) tangibles; b) reliability; c) responsiveness; d) assurance; and e) empathy. However, scholars continue to examine issues related to the validity and reliability of the SERVQUAL instrument (Nel, Pitt, & Berthon, 1997).

3. Methodology
All selected respondents (students) were involved in some aspect of customer service involving frequent interaction with customers or clients. Questionnaires were hand-delivered to postgraduate students in Sintok campus located in Kedah State / North Malaysia. The questionnaires were left with students studying in University Utara Malaysia in various course and different level of study with different background, also with different period of study.

- **H1:** Reliability is related positively with customer satisfaction.
- **H2:** Empathy is related positively with customer satisfaction.
- **H3:** Tangibility is related positively with customer satisfaction.
- **H4:** Assurance is related positively with customer satisfaction.
- **H5:** Responsiveness is related positively with customer satisfaction.

A seven-point Likert scale ranging from strongly agrees to strongly disagree was used to measure each of the six impacting indicants. And the theoretical framework illustrates in Figure 1 and the hypothesis has been write done as below.

A total of 160 complete questionnaires have been distributed to university students who are studying different courses in all three main colleges in University Utara Malaysia were requested to complete a questionnaire that contained measures of the constructs of concern. The questionnaires were distributed to the respondents in their workplace by using purposive sampling method. A response rate of about 61.25% was collected back corresponding to 98 responses.

![Figure 1. Research framework data screening and analysis.](image)

The 98 datasets were coded and saved into SPSS version 18 and analyzed using AMOS version 7.0. Missing data screening shows 26 data set were missing, thus the data have been treated using median of nearby point through SPSS. During the process of data screening for outliers, one dataset was deleted due to Mahalanobis (D1) values more (74.472) than the χ² value (χ²=70.71; p<0.001) leaving a final 98 datasets to be analyzed. We also conducted univariate normality computations using z-scores of skewness statistics and standard error of skewness as well as kurtosis statistics. Z-score skewness of more than 2 needs to be transformed since it is considered as non-normal data (Hair, Black, Babin, Anderson, & Tatham, 2006).
The result indicates that respondents number (42) is more than chi square, thus has deleted. After checking the missing data by using SPSS, there is need for replacing, because there is missing data, therefore detecting multivariate outliers should be calculated by Mahalanobis distance for each respondent if the Mahalanobis distance is greater than a critical value, they are deemed to be Multivariate outliers. The new variable (mah_1) represents the Mahalanobis distance (D2) for each respondent. If the D2 value is small than critical value (32), then that respondent is NOT a multivariate outlier. If the D2 value is larger than critical value (32), the respondent is a multivariate outlier.

Several statistical validity tests and analysis were further conducted such as reliability (Cronbach alpha) and composite reliability tests, validity tests using confirmatory factor analysis (CFA) for construct convergent, discriminant, and nomological validities. Subsequently, the data was subjected to descriptive analysis, correlation and structural equation modeling analysis. The steps in SEM analysis are CFA analysis, measurement analysis, discriminate analysis, composite reliability analysis.

4. Results

The respondent’s information is shown that out of 98 respondents, 39 were female and 59 were male with percentage (39.8% and 60.2%) respectively. While for race data, 48 of the respondents were Arab, 12 Indonesian, 41 Thai and only two from African. As for religion, 93.9% of them were Muslims, 5.1% Buddhist, and only 1% Hindu. While, for marital status, 80.6% of them were singles, 18.4% were married and only 1% was divorced. The research framework consists of five exogenous and one endogenous variable. Each construct shows Cronbach alpha results in acceptable range of values of above 0.8, which are above nominally, (1970) recommendation of 0.60 limits. Composite reliability shows similar high results. The convergent validity is examined by utilizing the confirmatory factor analysis (CFA) result; we observed that the regression estimates or factor loadings of all manifesting observed variables or items are adequate ranging from 0.53 to 0.98. The factor loadings of latent to observed variable should be above 0.50 (Hair et al., 2006). This indicates that all the constructs conform to the construct convergent validity test. After deletions were made using modification indices suggestions, the remaining numbers of items for each construct are as follows: reliability (4 items of 6), empathy (3 of 6 items), tangibility (3 items of 5), assurance (5 items of 10), responsiveness (3 items of 5), and satisfaction (4 items of 5 items). The composite reliability calculations depend on the standardized factor loadings obtained from the final revised structural model. The results from composite reliability of all exogenous latent constructs are well above 0.60 (Nunnally, 1970) as shown in Table 1. To substantiate discriminant validity, average variance extracted (AVE) is compared to correlation squared of the interrelated variables of concerned (Fornell & Larcker, 1981). From the variance extracted, AVE is than calculated by averaging the two variances extracted of the variables. The finding is presented in a matrix as in Table 2. For discriminant validity to be upheld, the value of AVE must be more than correlation squared Table 3. For example, between the variable’s assurance and empathy, the AVE = 0.563 as shown in Table 2, while correlation squared = 0.294 (The figures in brackets in Table 3. Hence, AVE > correlation squared, or assurance discriminates from empathy. Also, between reliability and responsiveness, the AVE = 0.677 as shown in Table 2. While correlation squared = 0.287 (The numbers in brackets in Table 3. Hence, AVE > correlation squared, or reliability discriminates from responsiveness. Thus, discriminant validity is supported. All constructs used for this study support discriminant validity.

Table 1. Descriptive statistics of variables.

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>No. of Items</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Cronbach Alpha</th>
<th>Composite Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathy</td>
<td>6</td>
<td>4.8767</td>
<td>0.88808</td>
<td>0.874</td>
<td>0.845</td>
</tr>
<tr>
<td>Reliability</td>
<td>6</td>
<td>4.3818</td>
<td>0.101160</td>
<td>0.887</td>
<td>0.615</td>
</tr>
<tr>
<td>Tangibility</td>
<td>5</td>
<td>4.5827</td>
<td>1.11254</td>
<td>0.864</td>
<td>0.92</td>
</tr>
<tr>
<td>Assurance</td>
<td>10</td>
<td>4.6082</td>
<td>0.92002</td>
<td>0.831</td>
<td>0.935</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>5</td>
<td>4.5745</td>
<td>0.90005</td>
<td>0.841</td>
<td>0.855</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>6</td>
<td>4.9194</td>
<td>0.85400</td>
<td>0.876</td>
<td>0.773</td>
</tr>
<tr>
<td>Total items</td>
<td></td>
<td>38</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. AVE matrix of exogenous variables.

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Empathy</th>
<th>Reliability</th>
<th>Tangibility</th>
<th>Assurance</th>
<th>Responsiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathy</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td>0.564</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tangibility</td>
<td>0.436</td>
<td>0.600</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assurance</td>
<td>0.563</td>
<td>0.643</td>
<td>0.625</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Responsiveness</td>
<td>0.494</td>
<td>0.677</td>
<td>0.554</td>
<td>0.745</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Table 3. Correlation & correlation square matrix among exogenous variables.

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Empathy</th>
<th>Reliability</th>
<th>Tangibility</th>
<th>Assurance</th>
<th>Responsiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathy</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td>0.530 (0.280)</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tangibility</td>
<td>0.432 (0.186)</td>
<td>0.533 (0.268)</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assurance</td>
<td>0.542 (0.294)</td>
<td>0.461 (0.213)</td>
<td>0.602 (0.362)</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Responsiveness</td>
<td>0.489 (0.239)</td>
<td>0.535 (0.287)</td>
<td>0.466 (0.480)</td>
<td>0.567 (0.322)</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Note: Correlation is significant at 0.01 level (1-tailed), values in brackets indicate correlation squared.

Nomological validity examines whether the correlations between constructs in the measurement theory makes sense such that correlations must be positive or negative according to theory stipulated (Hair et al., 2006). From Table 3, it is observed that all directions of correlations are in the hypothesized direction as stipulated in the hypotheses in accordance to theory. Thus, it can be deduced that nomological validity is substantiated for all...
measures used in this study. To arrive to the structural model, confirmatory factor analysis (CFA) was conducted on every construct and measurement models Table 4. The goodness of fit is the decision to see the model fits into the variance-covariance matrix of the dataset. The CFA, measurement and structural model has a good fit with the data based on assessment criteria such as GFI, CFO, TLI, RMSEA. All CFAs of constructs produced a relatively good fit as indicated by the goodness of fit indices such as CMIN/df ratio (<2); p-value (>0.05); Goodness of Fit Index (GFI) of >0.95; and root mean square error of approximation (RMSEA) of values less than 0.08 (<0.08) (Hair et al., 2006).

Table 4 shows the goodness of fit of generated or revised model is better compared to the hypothesized model. This is expected as hypothesized model is usually strictly confirmatory. GFI of revised model is 0.975 compared to GFI of hypothesized model of 0.556 Root mean square Error Approximation (RMSEA) also shows a better reading of 0.065 for revised model compared to 0.116 for hypothesized model (<0.08).

As shown in the results of hypothesized model did not achieve model fit (p<0.000), hence, the explanation of hypotheses result will be based on generated or revised model, The result demonstrates that reliability is a significant positive related to customer satisfaction. Hence, reliability has a direct significant impact on to customer satisfaction (CR=2.151; P<0.001) or H1 is asserted. Empathy has a positive and direct impact on customer satisfaction (CR=3.556; P<0.001), i.e H2 is asserted. Similarly, tangibility has a positive and direct impact on customer satisfaction. (CR=1.607; P<0.001), i.e H3 is also asserted. Also, H4 is asserted due to (CR= 0.565; p<0.05), means assurance has a positive and direct impact on customer satisfaction. And finally, H5 also asserted due to (CR= 2.371; p<0.05), means responsiveness has a positive and direct impact on customer satisfaction, as shown in Table 5. From Table 6 indicates the amount of variance explained by the exogenous variables in the revised model. Firstly, reliability explains 11.5% variance in customer satisfaction. Secondly, empathy explains 27.3% variance in customer satisfaction. Thirdly, tangibility explains 11.3% variance in customer satisfaction. Fourthly, assurance explains 21.0% variance in customer satisfaction. And finally, responsiveness explains 33.8 % variance in customer satisfaction.

5. Discussion

This study attempts to examine the relationships between five independents dimensions of service quality and customer satisfaction. As expected, the hypothesized model do not achieve model fit (p value=0.000, p <0.001). This implies that hypothesized model could not be generalized to the population. This is expected because the sample was small. The revised model accomplished model fit and supports all fifth direct effects as As resulted in the revised model in Figure 2.

Firstly, reliability has a significant positive relationship with customer satisfaction.
Secondly, empathy has a significant positive relationship with customer satisfaction.
Thirdly, tangibility has a significant positive relationship with customer satisfaction.
Fourthly, also, this study concludes that the assurance has a significant positive relationship.
And, finally, responsiveness has a significant positive relationship with customer satisfaction.
Figure 2 illustrates that the relationships between five independent dimensions of service quality and customer satisfaction in the hypothesized model do not achieve model fit (p value=0.000, p <0.001), which indicates that the results could not be generalized to the context population thus a revised model generated as shown in Figure 3.
Figure 3 demonstrates that the relationships between five independent dimensions of service quality and customer satisfaction in the revised hypothesized model do achieve model fit (p value<0.001, p <0.001), which indicate that the results could be generalized to the context population after a revised model generated.

6. Conclusion & Suggestion for Future Research

This study has established five direct effects: (1) reliability and customer satisfaction; (2) empathy and customer satisfaction; (3) tangibility and customer satisfaction; (4) assurance and customer satisfaction; (5) responsiveness and customer satisfaction. This study concluded to present all service quality dimensions have relationships effects to be positively significant with customer satisfaction.

This research found that, the result cannot be generalized for the whole of Malaysia because it was only conducted in a limited area. This model has shown some interesting findings which could be applied for utilization in research on a bigger scale to include bigger geographical area.

References


