

## Service Quality in Distance Education using the Gronroos Model

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**Abstract:** Demand for distance education programs have been increasing rapidly over the years. As a result, assessment of the quality of distance education programs has become a strategic issue that is very pertinent for program survival. This study uses Gronroos Model for assessing the service quality of the Malaysian distance education institutions. This model is chosen because it takes into account of the service delivery process and also service outcome. Our study confirms the multidimensional nature of service quality constructs as proposed by the Gronroos Model. However, it does not confirm the unidimensionality of functional quality and technical quality. Three service quality dimensions that emerged from the exploratory factor analyses relate to the dependability of the service (reliability), personal attention that is given to customers (empathy) and service outcome (technical quality). The result confirms all three service quality dimensions have significant and positive effect on image and perceived service quality. The mediating role of image in the model is also confirmed. The results also confirm that all three service quality dimensions have significant indirect effect on perceived service quality. The positive relationship between perceived service quality and satisfaction is also confirmed. Managerial implications of the major findings are provided.

**Key words:** Service quality, Gronroos Model, distance education, higher learning institutions

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### INTRODUCTION

Distance education provides the flexibility for students to further their education on a part-time basis. It is increasingly becoming a popular mode of studies among students especially the working adults as it allows them to improve their academic qualifications in order to secure better work opportunities and quality of life. These programs are preferred due to their flexibility, convenience and affordability. Over the years, there has been a rapid increase in the number of higher learning institutions that offers distance education in Malaysia. Report by the ministry of education shows that there were 37,065 students enrolled in distance education programs in Malaysian public institute of higher learning in 2013. Currently, there are >100,000 students enrolled in private distance learning institutions in Malaysia (Mohanachandran and Ramulu, 2000). This shows the importance of distance education in the Malaysian education system.

Existing literature confirms the benefits of service quality for organizations. Institutions that pay attention to service quality are shown to be able to differentiate themselves and remain competitive (Lewis, 1989) and also achieve higher profitability (Ghobadian *et al.*, 1994). Research shows that customers who are not happy with a service are likely to disengage themselves from it and

divulge their experiences with others (Ye *et al.*, 2011). Given the various benefits of service quality for organizations, universities need to adopt a more customer-focused strategy to remain competitive. This is essential since large percentages of distance education students are working adults who self-finance their education. Universities need to give serious consideration to the issues of service quality assessments to ensure student satisfaction.

Over the years, different models have been developed to measure service quality. Most of the existing studies have adopted the American perspective in measuring service quality. The SERVQUAL model proposed by Parasuraman, Zeithaml and Berry is widely used within the marketing literature (Pierrakeas *et al.*, 1985, 1988). In addition, it has also been used to assess service quality across various industries (Parasuraman *et al.*, 1985). However, this model has been criticized for focusing only on the service delivery process (Ladhair, 2008; Gronroos, 1990; Kang and James, 2004; Glynn and Babakus, 1991). Alternatively, under the European and Nordic perspective, service quality is measured using three dimensions, namely, functional quality, technical quality and image. However, this model proposed by Gronroos (1983, 1988, 1990) is general and it does not offer any technique to measure the three dimensions. Some studies have used this model in

measuring service quality (Gronroos, 1990; Lassar *et al.*, 2000; Yener, 2013). The study extends the existing literature by empirically examining the conceptualization of service quality as proposed in the Gronroos Model. This is particularly relevant in the context of the Malaysian distance education setting since none of the existing studies have looked at the multidimensional nature of service quality.

Most of the earlier studies that have looked into service quality in Malaysian higher education institutions have been based on the traditional setting that focuses mainly on face-to-face classroom teaching (Zaibaf *et al.*, 2013; Abdullah, 2006; Jusoh and Lin, 2012). Given the presence of physical separation between the students and teachers in the distance education setting, students are required to engage in independent and self-directional study. This poses new challenges for students and as a result the way they evaluate the quality of services offered by the DEIs is likely to be different (Tahar, 2008). By looking at the multidimensional nature of service quality, this study may provide valuable insights about areas of distance education services that need to be improved in order to remain relevant. This may help universities to improve their service functions, attract new students and retain current students. The latter is particularly important given the fact that student dropout rates in DEIs are higher than those of conventional education (Al-Mushasha and Nassuora, 2012). To achieve these research goals, we first review relevant theory and present our conceptual model. We argue on why functional and technical quality should affect student perception of service quality and how image might mediate this relationship. Next we discuss about our methodological approach. The empirical findings of this study are presented and the managerial implications are also discussed.

**Literature review:** It was not until the 1990s that the development of quality management was given some kind of importance in the service and public sectors as compared to the established manufacturing sectors (Vinzant and Vinzant, 1996). However, in the field of higher education, the acceptance of the concept and direct practices of quality control was not really possible because of the different nature of activities and processes in the education business (Srikanthan and Dalrymple, 2003). Nevertheless, higher education institutions acknowledge that they are influenced by market forces and as a result they need to be competitive. In doing so, they realize that the issue of quality is not only achieved through course review and accreditation which had been used as the traditional routes of assessment and reviews

(Huang, 2007). The feedbacks obtained from students are crucial in assessing the quality of service that is offered by universities given the fact they are one of the crucial stakeholders in higher education settings.

In marketing literature, the conceptualization of service quality was initially started by the European scholars in the 1980, before it became popular in North America. The SERVQUAL model is most widely used for measuring service quality (Pierrakeas *et al.*, 2004). This model analyses customer's perception of service quality based the difference in customer's expectations and perceptions. The original SERVQUAL instruments comprises 22 items that measure five dimensions, namely, reliability, responsiveness, assurance, empathy and tangibles. While reliability takes into account of the consistency of the service performance and its dependability, responsiveness looks at the willingness or preparedness of employees in providing service. Meanwhile, assurance pertains to the employee's knowledge and generosity and their ability to inspire trust and confidence. Finally, empathy relates to caring and personal attention that a firm gives to its customers and tangibles are the physical appearance of the service.

Arguably, Cronin and Taylor (1992) asserts that measurement based on customer's perception alone can produce a better assessment of service quality compared to the GAP model. Ladhari asserts that the GAP model is ambiguous in variable definition, stability of scale over time and dimensionality of the instrument (Parasuraman *et al.*, 1985). Even though, this model suggested that there are two components of service quality, namely, functional and technical quality, the measurement instrument does not take into account of the latter (Kang and James, 2004). Some studies asserts that service quality is a multi-dimensional construct (Ladhari, 2008; Cronin and Taylor, 1992; Parasuraman *et al.*, 1988). Hence, the measurement of service quality only using a single dimension can be unspecified and have low predictability (Richard and Allaway, 1993). Nevertheless, there is no consensus on the type and number of dimensions to be used (Brady and Cronin, 2001).

The technical and functional quality model originally conceptualized by Gronroos (1983), Richard and Allaway (1993) is one of the well-accepted models of service quality (Kang, 2006). Technical quality reflects "what" the customers obtain from the service experience. Hence, it takes into account of the effectiveness of service that is delivered to the customers. Functional quality, on the other hand, reflects the perception of "how" service is delivered. It relates to the buyer-seller interactions and it is very similar to the measurement of service quality

perception in SERVQUAL model that takes into account of the care and manner of the person delivering the service. A number of other studies have also conceptualized service quality based on service outcome and service-delivery process (Berry *et al.*, 1985; Lehtinen and Lehtinen, 1982; Lehtinen, 1983). However, the former can be difficult for consumers to assess and as a result they may depend on service-delivery process in evaluating service quality (Gronroos, 1990). For example, it can be difficult for consumers to evaluate the technical competencies and treatments outcome of a health care service provider and as a result they may depend on measurement of service quality that is linked to the process of health care delivery. Even though the two dimensions are related, evaluation of process quality happens while the service is being performed; whereas, the evaluation of outcome quality happens after the service has been delivered (Kang, 2006).

Image is included as an additional variable in this model. It reflects the customer's perception of service quality based on their previous experience with the company and it is influenced by both functional and technical quality. Repeated positive experience will facilitate in building a positive image of the service provider. This image in turn will influence how customers perceive the services. The customers may ignore minor mistakes made by a company with good image but may pay more attention to minor mistakes made by a company with bad image. Image in this case works as a filter that can either adjust customer's perception of quality positively or negatively (Gronroos, 1988).

A number of studies have focused on the topic of service quality in the Malaysian distance education setting. Existing studies have examined among other areas, the link between service quality and student satisfaction (Sim and Idrus, 2003; San, 2010) the effectiveness of distance learning process in eight HEIs in Malaysia (Poon *et al.*, 2004), the effect of service quality on student's intention to complete studies and the relationship between service quality perception and ease-of-use of the Learning Management System (LMS) (Hilmi *et al.*, 2012). Even though, these studies have analyzed topics related to service quality, none of them have looked at the sub-dimensions of service quality. More specifically, no studies have used the Gronroos model in understanding the determinants and consequences of service quality in the Malaysian distance education setting.

### Conceptual foundation and hypotheses

**Research model:** This study aims to find the suitability of the Gronroos model in measuring service quality in distance education setting. The following conceptual model is used in Fig. 1.

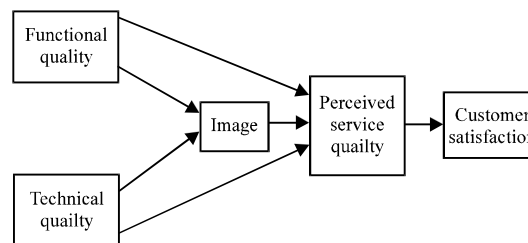


Fig. 1: Gronroos service quality model

## MATERIALS AND METHODS

This study uses a quantitative survey method in identifying the relationship among functional quality, technical quality, image and perceived service quality. An online survey was carried out among students in the distance education institutions in Malaysia. The brief overview of the survey and the link to the questionnaire is posted on the student portal of the respective universities. The students are directed to a Web site containing the questionnaire which they then self-administered. This process yielded a total of 850 completed questionnaires.

The questionnaire was designed based on Kang and James (Gronroos, 1990). Functional quality is measured using 22 items that relates to reliability, response, assurance, empathy and tangibility of the service. Given the nature of the distance education that combines face to face interactions with online interactions, items relating to tangibility take into account of both elements of service. Technical quality dimension is measured using 7 items, Image is measured using 8 items and Satisfaction is measured using 8 items. All the items are measured using a seven-point Likert-type scales anchored by "Strongly disagree" to "Strongly agree". The perceived service quality dimension is measured using a single item that rates the "overall service quality" of the distance education institutions. Scores ranged from "Very low" to "Very high".

## RESULTS AND DISCUSSION

The sample of this study consists of 850 students from three major distance education institutions in Malaysia. The data collected is analyzed to find the attributes of the respondents. Table 1 shows the summary of the respondent based on the type of distance education institutions, gender, age, level of education, field of study, year of study, employment and income.

Table 1: Respondent data

| Variables                | Values |
|--------------------------|--------|
| <b>Institution type</b>  |        |
| Public                   | 39     |
| Private                  | 61     |
| <b>Gender</b>            |        |
| Male                     | 40     |
| Female                   | 60     |
| <b>Age</b>               |        |
| <25                      | 14     |
| 25-35                    | 55     |
| 36-45                    | 24     |
| >45                      | 7      |
| <b>Educational level</b> |        |
| SPM                      | 20     |
| STPM                     | 16     |
| Diploma                  | 51     |
| Degree                   | 13     |
| <b>Field of study</b>    |        |
| Science                  | 13     |
| Soc. Science             | 16     |
| Business                 | 21     |
| Arts                     | 7      |
| Others                   | 43     |
| <b>Year of study</b>     |        |
| First                    | 16     |
| Second                   | 26     |
| Third                    | 23     |
| Fourth                   | 25     |
| Fifth                    | 10     |
| <b>Employment</b>        |        |
| Full time                | 85     |
| Part time                | 10     |
| Unemployed               | 5      |
| <b>Income (RM)</b>       |        |
| <2500                    | 48     |
| <2501-5000               | 40     |
| >5000                    | 12     |

Table 2: Rotated factor matrix for quality variables

| Factors/measurement items | Factor loadings | Cronbach's alpha |
|---------------------------|-----------------|------------------|
| <b>Reliability</b>        |                 |                  |
| Reliability 1             | 0.915           | 0.974            |
| Reliability 2             | 0.913           |                  |
| Reliability 3             | 0.836           |                  |
| Reliability 4             | 0.885           |                  |
| Respon 1                  | 0.747           |                  |
| Reliability 5             | 0.661           |                  |
| Respon 2                  | 0.609           |                  |
| <b>Empathy</b>            |                 |                  |
| Empathy 1                 | 0.897           | 0.926            |
| Empathy 2                 | 0.824           |                  |
| Empathy 3                 | 0.686           |                  |
| Empathy 4                 | 0.600           |                  |
| Empathy 5                 | 0.641           |                  |
| <b>Assurance</b>          |                 |                  |
| Assurance 1               | 0.716           |                  |
| Assurance 2               | 0.816           |                  |
| Assurance 3               | 0.782           |                  |
| <b>Technical quality</b>  |                 |                  |
| Technical quality 1       | 0.899           | 0.955            |
| Technical quality 2       | 0.874           |                  |
| Technical quality 3       | 0.574           |                  |
| Technical quality 4       | 0.904           |                  |
| Technical quality 5       | 0.743           |                  |
| Technical quality 6       | 0.782           |                  |
| Technical quality 7       | 0.631           |                  |
| Facility 2                | 0.596           |                  |
| Facility 3                | 0.530           |                  |
| Facility 4                | 0.616           |                  |
| Facility 5                | 0.644           |                  |

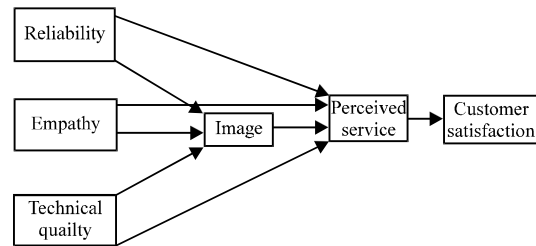


Fig. 2: Revised service quality model

**Scale reduction:** The data obtained from survey are subjected to a number of scale reduction methods. Firstly, since the structure of the Gronroos model has never been tested in the context of distance education, exploratory factor analysis is conducted on the items measuring functional and technical quality dimensions. Principal component analysis is used as the extraction method and oblimin (with Kaiser normalization) as the rotation method. Break-in-eigenvalues criterion is used to decide on the initial number of factors to retain. Series of iterations are performed to eliminate items with low loadings on all factors or high cross-loadings on two or more factors. EFA is conducted on the remaining items. The results do not support the unidimensionality of the independent variables. This iterative process resulted in the final scale consisting of 26 items on three dimensions which are labeled as reliability, empathy and technical quality as shown in Table 2. Reliability construct takes into account of the dependability and promptness of the service while empathy takes into account of the trust and personal attention that a firm gives its customers. Both of these variables are sub-constructs of functional quality. Even though none of the items measuring

Technical quality are dropped during the factor analyses, 4 additional items that takes into account of the online aspect of the service that relates to the learning management system are added into this construct (Fig. 2). Based on the revised model, eight hypotheses are developed:

- H<sub>1</sub>: Reliability is positively associated with image
- H<sub>2</sub>: Empathy is positively associated with image
- H<sub>3</sub>: Technical quality is positively associated with image
- H<sub>4</sub>: Reliability is positively associated with perceived service quality
- H<sub>5</sub>: Empathy is positively associated with perceived service quality
- H<sub>6</sub>: Technical quality is positively associated with perceived service quality
- H<sub>7</sub>: Image is positively associated with perceived service quality

Table 3: Reliability test for other variables

| Variables    | No. of final item | Cronbach's alpha |
|--------------|-------------------|------------------|
| Image        | 8                 | 0.774            |
| Satisfaction | 5                 | 0.809            |

Table 4: Discriminant validity

| Variables         | Quality | Reliability | Empathy | Technical Q | Image   | Satisfaction |
|-------------------|---------|-------------|---------|-------------|---------|--------------|
| Quality           | -       | -           | -       | -           | -       | -            |
| Reliability       | 0.792** | -           | -       | -           | -       | -            |
| Empathy           | 0.702** | 0.814**     | -       | -           | -       | -            |
| Technical quality | 0.597** | 0.815**     | 0.819** | -           | -       | -            |
| Image             | 0.592** | 0.779**     | 0.847** | 0.850**     | -       | -            |
| Satisfaction      | 0.163** | 0.247**     | 0.248** | 0.26**      | 0.265** | -            |

\*\*Correlation is significant at the 0.01 level

- H<sub>8</sub>: Perceived service quality is positively associated with customer satisfaction

The internal reliability of each of the variables is estimated using Cronbach's alpha. Item-to-total correlations are examined and items whose elimination improved reliability coefficient alpha are eliminated. Results in Table 1 and 2 show that the Cronbach's alpha values ranged between 0.774 and 0.974 for the measures of the five variables.

Discriminant validity of the construct is assessed by comparing the square root of the average variance extracted for each construct with the correlation estimates between constructs (Hair *et al.*, 2010). Table 3 shows that the square root of the variance extracted estimate for each construct is higher than the corresponding inter-construct correlation estimates. This suggests that all the constructs in the study represent different concepts. In addition, the correlation coefficients among the study constructs do not exceed 0.85. This indicates that multicollinearity does not appear to be a problem (Kline, 2005) (Table 4).

**Hypotheses testing:** Image is hypothesized to be a mediating variable in the association between the three quality variables and perceived service quality. Table 5 shows the total, direct and indirect effects of the predictor variables on dependent variables based on the results of the bias corrected bootstrapping. All the hypothesized direct relationships between the independent variables and the mediator variable (H<sub>1</sub>-H<sub>3</sub>) are supported by the structural model data as shown in Table 5. Results in Table 5 and 6 demonstrate that the mediating conditions set up by Baron and Kenny are fulfilled (Baron and Kenny, 1986). The relationship of all the service quality dimensions with perceived service quality is mediated by image. This confirms that each of the three quality dimensions has significant indirect effect on perceived service quality. Table 6 shows that image is positively

Table 5: Analysis of direct, indirect and total effect

| Variables         | Direct   | Indirect | Total effect |
|-------------------|----------|----------|--------------|
| Reliability-image | 0.7835** | None     | 0.7835**     |
| Empathy-image     | 0.839**  | None     | 0.8389**     |
| Technical Q-image | 0.8380** | None     | 0.8380**     |
| Reliability-image | 0.6901** | 0.1357** | 0.8528**     |
| Empathy-image     | 0.4151** | 0.2995** | 0.7146**     |
| Technical Q-image | 0.4148** | 0.3061** | 0.7208**     |

Table 6: Regression equations results

| Dependent variables | Perceived SQ | Satisfaction |
|---------------------|--------------|--------------|
| R <sup>2</sup>      | 0.479        | 0.025        |
| Beta: image         | 711.229**    | 19.802**     |
| Beta perceived SQ   |              | 0.163**      |

associated with perceived service quality, supporting H<sub>7</sub>. The positive relationship between perceived service quality and customer satisfaction is also confirmed, supporting H<sub>8</sub>.

The demand for distance education in Malaysia is increasing. More institutions are offering distance education courses in order to reach a wider scope of students. Hence, understanding factors that influence student's perception of service quality is very important, specifically in today's economy where services are becoming easier to consume but increasingly more complex in their delivery.

Given the complex nature of distance education, this study explores the multidimensional nature of service quality using the Gronroos model. By conceptualizing service quality in relation to functional quality, technical quality and image, this study finds a number of interesting results. First, even though this study confirms the multidimensional nature of service quality as proposed by the European perspective, the results do not confirm the unidimensional nature of functional quality and technical quality as confirmed by Kang and James (2004). Instead, three distinct dimensions emerge after EFA. They are reliability, empathy and technical. Second, all three service quality dimensions strongly rely on image as a mediator for perceived quality. And finally, all three service quality dimensions have an overall significant direct effect on perceived service quality.

These findings reveal that customer's overall perception of service quality of distance learning institutions depends not only on the service delivery process but also on the outcome of the service. This implies that distance education providers need to take into account of the multiple aspects of service provision in order to improve their customer's perception of service quality. For example, reliability and empathy are important aspects of distance education as the service provision commonly runs into several years. The consistent maintenance of perceived service quality will enable the student to feel that their consumption is supported throughout the duration even though they are not physically on campus.

It is also evident that image is a precursor to perceived service quality, thereby being the mediator in the relationship between reliability, empathy and technical quality and perceived service quality. This suggests that service quality dimensions influence image formation and the overall perception of service quality. The establishment of the mediation model enriches service quality literature and provides valuable insights into research relating to perceived service quality.

### CONCLUSION

Rising number of distance education institutions provides students with greater options to choose from. As a result, they are likely to compare the services offered by different institutions in making their decision. This study shows that it is essential for distance education institutions to invest in improving service quality in order to build positive image and judgement of their services. Image serves as an asset for the providers of distance education and as a result they should pay attention in building a positive image of their services. Even though, the results confirm the positive relationship between service quality and customer satisfaction, the former only accounts for 2.5% of the variation in the latter. This suggests there are other factors that influence distance education student's satisfaction.

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