

Psychometrical Properties of SERVPERF Model in Measuring Service Quality in Tertiary Educational Institutions

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Abstract

Service Quality is a crucial tool for gaining competitive advantage among institutions in the present information age where customers' satisfaction and retention are vital to the survival of any organization or institution. This study is aimed to examine the Psychometrical Properties of SERVPERF model in measuring the quality of services delivered at Institute of Education, IIUM as perceived by students. The study adopted a Quantitative approach where a survey instrument was administered. A total of 219 respondents were used in the study and each respondent is requested to indicate his experience and perceptions on the service quality using the SERVPERF model. The findings shows that both divergent and discriminant validity holds through inter-items correlational matrix. Similarly, the reliability and consistency of the dimensions of the model was well established with scores of (≥ 0.82) using the Cronbach's alpha Coefficient and Pearson Correlation Coefficient for proper items loading while the overall service quality was well perceived by the respondents in the Institute.

Keywords: Competitive Advantage, Education, Service Quality, SERVPERF.

1. Introduction

Education is one of the key aspects of sustainable development in every society, as it develops skilful human resources needed for problem-solving across societies in the globe. Quality in education has become an important indicator of institutional survival in a competitive economy which necessitates stakeholders and educational leaders to strive hard and ensure that quality is assessed, defined and maintained in their institutions. The issue of quality education has gone beyond maintaining relevancy and identity in the market place, where focus are more laid on producing highly satisfied students with adequate capabilities and employability in the flexible global labour market, thus promoting valued/issue-oriented education

that guaranteed increase in the performance of global enterprises (Ostrom et al., 2015). In order to provide learners with sound academic environment and prepare a platform for retaining and gaining attention of prospective students, likewise maintaining statuesque among knowledge providers. Indeed quality management and sustainability as an important tool need to prevail in all activities of learning institutions (Liu et al. (2022). Knowledge has increasingly becoming a commercial property rather than a public good as the case in the past three decades where students or their sponsors have mostly shouldered the increasing costs of education more than ever, which as a result has caused parents and students to be critical of what they are receiving in terms of educational

service quality in the host institution. Hence, knowledge providers must strive hard in creating changes within the institutional framework and ensure the qualities of both human resources and facilities in order to develop efficiency and effectiveness of the learning environment of the institution in meeting its desired purposes (Usman & Fadimatu, 2019).

Service Quality and Tertiary Education system

Higher education constitutes the best and most effective model of system when related to other sectors which remains the hope and root of development and highly appreciable by citizens in the developing nations (ISESCO, 2008). Meanwhile, in a university system, development of quality instructional and Administrative services need adequate strategies and complementary effort from all layers of employees particularly the academic and administrative staff through the guidance of a visionary leadership supported by the stakeholders and the beneficiary society. However, the continual process of service quality maintenance seems to be more difficult in an institution as it requires a regular quality assessment strategy where customers/students perceptions of service quality are assessed to ascertain the degree to which the services are delivered in the university in order to make improvement. Thus, service quality has received increasing attention in governance and public management especially in higher education sector globally (Wasiu & Tululope, 2022).

Certified quality Service delivery is a catalyst that links between customers and knowledge providers in the education sector which helps in the retention of customers and upgrading the status of institution to a level of gaining competitive advantage among other competitors in the knowledge industry. Thus, it has become an imperative for Higher education institutions (HEI) to measure regularly quality standard services

perceived by students in order to fulfil their satisfaction level (Rapidah et al., 2020).

In view of the above, this study is aimed at investigating the applicability of SERVPERF instrument in measuring Service Quality as perceived by customers in educational setting.

Significant of the Study

SERVPERF model have been used in measuring service quality delivery and customer satisfaction by experts and researchers in various fields of human endeavour namely; financial and banking sector, Hospitality industry, Logistic and Transport, Military and security, Marine etc. Through literature reviewed, it was found that the model was not much used in the tertiary educational institutions. Thus, it has become an imperative to study Statistical or Psychometrical properties of the Model in order to ascertain the reliability, validity and acceptability of the Model in measuring educational services especially in the tertiary institutions.

Objective of the Research

1. To determine the Convergent and Discriminant validity of the SERVPERF model, in measuring service quality.
2. To examine the Reliabilities and Consistency of SERVPERF dimensions in measuring service quality.
3. To ascertain which of the service quality dimensions is best perceived by respondents at INSTED, IIUM.

Research Questions

1. Determine the Convergent and Discriminant validity of the SERVPERF model in measuring service quality in Tertiary Institution?
2. What are the Reliabilities and Consistency of SERVPERF dimensions in measuring service quality?
3. Which of the service quality dimensions is best perceived by respondents at INSTED, IIUM?

2. Literature Review

The word “quality” has been defined differently by many scholars under different situations. The obvious thing regarding this phenomenon is that most of the definitions are narrowed towards customer-satisfaction in both production and service industries including educational sector. In an introduction, According to Valencia-Arias et al (2023), Crosby 1979 defined quality in education as ‘the conformity of educational outcomes to planned goals specification and requirements, “so the quality of education has become one of the fundamental objectives of higher education institutions. In a similar vein “Quality” in higher education institution has been defined by Annamdevula & Bellamkonda (2016) as the difference between expectation and students’ perception. It can be clearly understood here that perception of quality is highly subjective also to service delivery process and not only to service outcome.

Service Quality in Education

The global transformation and intensification in terms of competitiveness and complexity has made knowledge to become a specific driven tool of advancement and supremacy in the information age, therefore maintaining quality in knowledge enterprise in creating a competitive advantage as a driving force which is less known in education previously where knowledge is termed a public good rather than a private commodity determined by the market (Usman & Fadimatu, 2019). In order to be relevant and to overcome the contemporary challenges of history faced in human societies, multiple studies have been invested to assess the quality of educational services; virtually almost in all angles, scholars have examined quality Assurance in terms of service delivery and customer satisfaction in the teaching and learning environment.

In view of the above, service quality management is very vital in higher

education institutions which mostly help in demonstrating a significant influence of positive perception on students’ satisfaction and loyalty (Ali, et al. 2016)

Bui Thi Thu et al (2022); Nguyen et al. (2023); Richard (2024), applying survey quantitative method using a Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) all affirmed in their studies that SERVPERF model exhibit both internal consistency and validity where all inter-scale correlations co-efficient were positive and significant.

In their study of service quality and students satisfaction, Taeshik and Youjae (2018) found that overall service quality has strong relationship with student satisfaction in private higher education institutions.

SERVPERF VS SERVQUAL

SERVQUAL Model is the earlier service quality measurement model developed by Parasuraman, Zeithaml, and Berry in 1985. SERVQUAL model is the most well-known and used tool or measure of service quality over the years. This instrument has been used across service sector such ranging from financial industry, hospitality and entertainment, education, health, Military, Marketing etc. The originator of this model design it to measure service quality through comparing between client expectation and performance obtained (Valencia-Arias et al., 2023).

In the other hand, SERVPERF was developed and modified by Cronin and Taylor in 1992. The authors presented this scale as an alternative scale for measuring service quality which is usually known as service performance scale. Cronin and his colleague criticized SERVQUAL scale because its limited measurement validity in various industries and culture. They argued that SERVPERF model mostly focused on performance and have better psychometric properties than SERVQUAL across industries. They further confirmed that, in terms individual perception, SERVPERF is more accurate in prediction than

SERVQUAL scale as service is conceptualized based on attitude rather than **Conceptual Model of SERVPERF**

by conformation (Karatas et al. 2016; in Valencia-Arias et al. 2023).

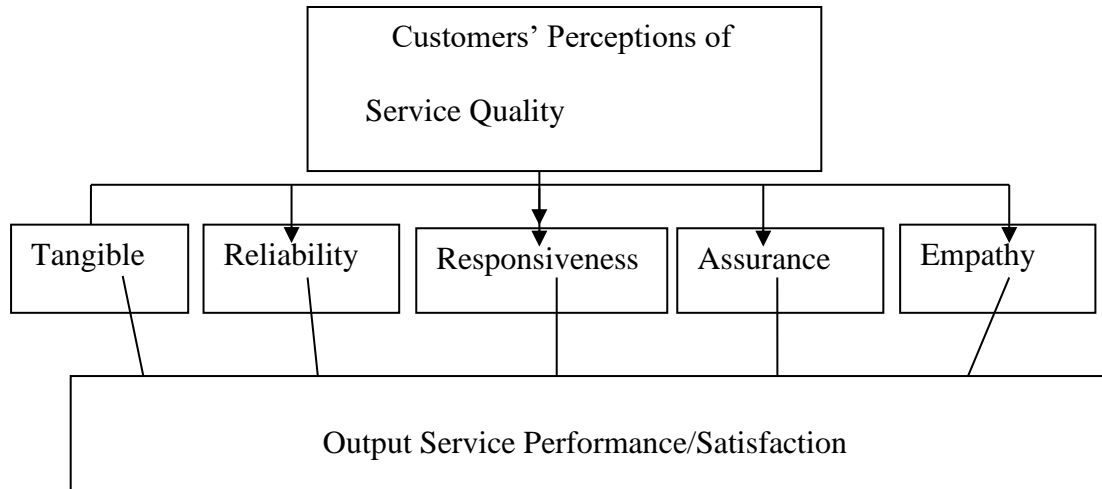


Figure 1.1: General Conceptual Model of the Study

Source: *Adopted and modified from Parasuraman et al (2002 p 8).*

Figure 1.1 presented the General conceptual model of Service Quality as perceived by customers. It shows that customers' perception of Service Quality can be assessed as an attitude using SERVPERF model. Similarly measuring of Service Quality actually depends on the five dimensions of this model, namely; Tangibility (4 items), Reliability (5 items), Responsiveness (4 items), Assurance (3 items) and Empathy (5 items). These dimensions all together consist of 22 scale items which are treated unidimensionally in assessing service performance or customers' satisfaction as an output of Service Quality.

3. Methodology

Research Design

As a survey, the study was conducted using a quantitative approach and the data used were obtained through a modified SERVPERF questionnaire developed and adjusted by Cronin and Taylor in 1992 which they argued to have more better psychometrics than (SERVQUAL) that measure the difference between expectation

and perception of customers (Valencia-Arias et al. 2023). The modification on the SERVPERF model was made to fit-in the peculiarity of the institution where the study was conducted and to fulfill the main objectives of the study.

Instrumentation and Data Collection Techniques

This instrument is expected to be suitable to these specific research objectives which are aimed at establishing the consistency, validity, reliability and credibility of SERVPERF instrument for Service Quality measurement in educational institutions.. The survey instrument consisted of two sections namely section 1 and section 2, the Section 1 focused on the demographic background of the respondents that is the filter information, while Section 2 focused on the Perception scores consisted of twenty two scale items within five Service Quality dimensions (Tangible, Reliability, Responsiveness, Assurance and Empathy). Response of each participant to each item was obtained using a 7 Likert scales ranging from 1-strongly disagree to 7-strongly agree, which is used to measure the degree of Service Quality and quality factor present

in INSTED. The researcher personally administered the survey questionnaires which were targeted on the specified respondents using a convenient sampling procedure. Out of 269 respondents targeted as sample of the study, the response of 219 respondents were successfully obtained and used for the study. The convenient sampling became the only option in the study as a result of cultural behavior of Malay students whom are the majority (Respondents) in the institution of study. They mostly uphold privacy higher that lead to extreme difficulties in accessing them randomly.

4. Results and Discussion

The success was made through 219 respondents, where 159 (72.6%) were female while the rest which is 60 (27.4%) were male. The majority of the respondents (171) which is 78.1 % were within the age range of 21 to 30 years, and 28 (12.8%) within the age range of 31 to 40. However, for those within the age range of 41 and above and those less than 20 years old, there were only 10 respondents each which are 4.6%, respectively.

Regarding the study level of respondents, 126 respondents which is 57.5% were Undergraduates, 78 (35.6%) were Master's candidates and 15 (6.8%) were PhD candidates. Out of the 219 respondents 158 (72.1%) were local students while 61 (27.9%) were international.

With respect to the distribution of respondents according to Faculty/Institute, the entire 219 respondents were drawn from the Institute of Education which is the site of the study. Regarding working experience, the majority of the respondents had no experience with a total number of 103 (47.0%), followed by those with less than 5 years' experience at 84 (38.4%). 15 respondents (6.8%) were with 6 to 10 years working experience, while there were 11(5.0%) and 6 (2.7%) with 11 to 15 years

and 16 to 20 years' working experience respectively.

The Validity of SERVPERF Instrument

Validity is an essential aspect in quantitative research which is either construct validity or content validity that shows the degree of accuracy, objectivity, empirical conceptions, truth, evidence, fact, actuality, reason, etc, in a research work. Validity is the extent to which research truly and accurately measures what it is intended to measure in such a way that the research instrument allows the researcher to achieve the objective(s) of the research through truthful results and findings (Middleton, 2025).

The SERVPERF instrument indeed exhibit both convergent and discriminant validity and has better psychometric properties as claimed by Cronin and Taylor in 1992 (Usman & Fadimatu, 2019; Valencia et al. 2023). However, to ascertain the validity of the instrument, both construct and discriminant validities were explored by the researcher using the Pearson correlation coefficient within and among items in the quality dimensions. To explore the convergent validity of the instrument used, items from the same Service Quality construct were correlated with each other. While on the other hand to explore the discriminant validity, scores of items on the Service Quality instrument from a particular Service Quality construct were correlated with scores of items from other constructs obtained from the respondents regarding the Service Quality of INSTED, IIUM. Discriminant validity is established which is in consistence with findings of Magdy & Nevien (2017), when the correlation between two different items of the same variable is higher than the correlation between the measure of that variable and those of any other variables. Hence, it can be concluded that the measuring instrument used in the study exhibited the characteristics of a valid measurement. Establishing a Validity score will help in

determining the goodness of this instrument to be used in this study (Creswell, 2016).

As expected from the theoretical ground, the inter items correlation coefficient matrix from the same Service Quality dimension posted a high coefficient between .456 and .771 (Appendix B). This means that the interrelations between items of the same Service Quality dimension and their loadings to measure the same Service Quality were well established, hence, the

Table 1:

Correlation Matrix of Service Quality Dimensions

Dimension	Tangible	Reliability	Responsive	Assurance	Empathy
Tangible	Pearson Correlation 1				
Reliability	Pearson Correlation .571(**)	1			
Responsiveness	Pearson Correlation .548(**)	.859(**)	1		
Assurance	Pearson Correlation .539(**)	.803(**)	.837(**)	1	
Empathy	Pearson Correlation .505(**)	.770(**)	.826(**)	.874(**)	1

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

In order to explore the construct validity of the SERVPERF Model used in this research, table 1 shows that the convergent validity holds looking at the correlation matrix among service quality dimensions which posted a high correlation co-efficient ranging from 0.505 to 0.874. Thus, the degree of accuracy have been established, that the five (5) quality dimensions can be able to measure the overall service quality in the institute under study.

Similarly, the convergent validity also holds as the correlation matrix posted a high correlation co-efficient within and among service quality dimensions for example correlation between Tangible and Tangible which posted (1.0) and so all the other dimensions. Despite that, the correlation coefficient between Responsiveness and Reliability service quality dimensions recorded high correlation of .859 which is above (.85) and so also between Empathy

convergent validity of the instrument holds. While on the other hand, the correlation coefficient matrix of items from different Service Quality dimensions posted mostly a low correlation ranging between .241 and .459 meaning that items from different Service Quality dimensions are not strongly related, hence, measure different Service Quality construct which establish the discriminant validity of the instrument.

and Assurance (.874) which further display the dependability of the dimensions to measure service quality in the institution.

Reliability Index of SERVPERF Instrument

According to Haradhan (2017), in Richard (2024). Reliability is the measurement of consistency, precision, repeatability and trustworthiness of research instrument, it indicate the extent to which results are without bias.. Similarly, a research instrument can be considered to be reliable if the result of a study is free from error and can be reproduced under a similar methodology; that is the ability of instrument to be replicable and repeatable, and stability of measurement over time. The performance-based instrument SERVPERF for measuring service quality has been proved reliable by many studies empirically in terms of both internal and external consistency with reliability scores of

Cronbach's Alpha ranging from 0.88 to 0.96 (Landrum et al., 2009; Bui Thi Thu et al., 2022).

Despite the above assertions, in order to ensure the reliability and consistency of the instrument in answering the research questions of the study and solving the research problem, it became necessary to retest the survey instrument for its reliability. Similarly, to attest the factors

Table 2: Reliability of Service Quality Dimensions

Sss Dimensions	Ss No. of Items	Cc Cronbach's Alpha
Tangible	4	0.822
Reliability	5	0.914
Responsiveness	4	0.911
Assurance	4	0.901
Empathy	5	0.923
SERVPERF Scale	22	0.967

claimed to be measured accurately and consistently, the items in each dimension were analyzed for co-efficiency using Alpha Correlation in the SPSS version 12. The reliability scores of items within the 5 service quality dimensions of the SERVPERF were presented in Table 2 indicating good item consistency and conformity within each dimension.

Table 2 displayed the reliability scores of service quality dimensions having Empathy with the highest Alpha reliability score of 0.923 while Tangible have the least score of 0.822 among the 5 service quality dimensions presented in the table. On the

other hand, the Cronbach's Alpha reliability of the 22 items of SERVPERF instrument was 0.967 which shows that the instrument is reliable and consistent in measuring students' perception in this study.

Table 3: Mean scores of service quality dimensions

	Dimension	Mean	Std. Deviation
Tangible	4.6690	0.96230	
Assurance	4.6085	1.14736	
Responsiveness	4.5491	1.19303	
Reliability	4.4758	1.14263	
Empathy	4.4676	1.16221	
Overall service	4.5465	0.99685	

The important aspect presented in Table 3 is that, the most perceived and the best Service Quality dimension perceived by students of Institute of Education (INSTED), International Islamic University Malaysia

(IIUM) is the Tangible factor with the highest mean score (Mean = 4.6690, Std. = 0.96230) and Assurance (Mean= 4.6085, Std. = 1.14736), followed by Responsiveness, Reliability and the less or

worst perceived factor is Empathy with mean score of 4.4676 and Std = 1.16221.

Discussion

An interesting finding of this study shows as expected from the theoretical ground that, the inter items correlation coefficient matrix from the same Service Quality dimension posted a high coefficient between .456 and .771. This means that the interrelations between items of the same Service Quality dimension and their loadings to measure the same Service Quality were well established, hence, the convergent validity of the instrument holds. While on the other hand, the correlation coefficient matrix of items from different service quality dimensions posted mostly a lower correlation ranging between .303 and .450 meaning that items from different service quality dimensions are not strongly related, hence, measure different service quality construct which establish the discriminant validity of the instrument. Despite that, the correlation coefficient between Responsiveness and Reliability service quality dimensions posted high correlation of .859 which is above (.85) and so also between Empathy and Assurance (.874) meaning that discriminant validity does not strongly hold between these services quality dimensions respectively.

Another exciting finding regarding the experience of students on the service quality elaborated in this study is the hierarchy placed on Tangibility in respect to the service quality dimensions of INSTED earlier proposed by Parasuraman et al. (2002) as important dimension that explain the present or otherwise of service quality in an organization. Supporting the findings of Seitova et al. (2024) where students highly perceived and satisfied with the tangible facilities of Khoja Ahmet Yassawi University in Kazakhstan, the result shows that out of the five service quality dimensions, students of INSTED perceived

Tangible service factor to be most present in the institute meaning that students were satisfied with the state of affairs of the physical facilities, equipment comprising both electronic and non-electronic and the appearance of employees of the institute. Tangibility was perceived as one of the most important factors needed in the service quality of an institution as it is physically observed by customers in the schooling environment. Assurance Service Quality dimension was also positively perceived by the students to be present in INSTED, meaning that students were highly concerned with the knowledge ability and courtesy of employees as well as their ability to inspire trust and confidence on the customers whom in this case are the students of the institute. Assurance as shown by several studies is a very important construct to students as it plays a positive role in fostering customer satisfaction and retention because of the sound correlation that exists between Assurance and customer satisfaction and loyalty.

In addition to the abovementioned service quality dimensions, Responsiveness was also perceived positively by the students as the third service quality dimension to be present at INSTED, meaning that the employees of the institute are concerned in providing support services and willing to help customers at any time promptly and this is important in yielding students' satisfaction. Furthermore, the Reliability factor was perceived as the fourth service quality dimension that was present in INSTED. This service quality construct is crucial to customers and entails the ability of the institute to perform the promised services dependably and accurately with concern and quality consciousness. Conversely, the item "your institute insists

on error-free records” was perceived negatively due to inability of the students to assess the item from the institute’s services confirming the assertion of Parasuraman et al. (2002) that the item should be removed from the instrument on conceptual reason as customers may only have little access to organizational records. In contrast to the In view of the above, it could be understood that unlike the Tangible services that are related to physical facilities and equipment, services that are associated with administrative employees of the institute demonstrating the capacity and capability of the employees in rendering quality services to customers need improvement. Cordial relationship between students and employees of an institution especially the administrative staff plays a vital role in attraction and retention of students. In the same vein, Empathy as presented by many studies is the most important service quality dimension that is highly related to overall service quality as well as student satisfaction as demonstrated by Yaeshik and Youjae (2018) in their findings.

5. Conclusion and Recommendations

Conclusion

Service quality is a dynamic and multidimensional factor which has become more crucial to profitability and survival of educational institutions from preschool to university in the recent information age. Continual assessment and improvement of service quality of higher education is now an important issue to the management of institutions, students and stakeholders.

Recommendations

1. The findings of this research demonstrated the validity of this Model in educational institutions. Therefore more studies are needed to assess both academic and administrative service quality.
2. Institutions are obliged to have a regular assessment of quality of their educational services using the

aforementioned service quality dimensions, the Empathy factor which means that the institute has the ability of caring and providing individualized attention to its customers was perceived as the lowest. Some of the items in the construct were not seen to be present within INSTED’s service quality factors as indicated by the students. Indeed an institution can be defeated or lost its competitiveness due to failure to provide quality administrative and instructional services to its customers, which can ruin the existence of the institution in the long-run and may severely affect the management, employees, students and the entire stakeholders. The findings of this present study provides a yardstick and foundation for more in-depth future research on the credibility and applicability of other instruments used in measuring Service Quality in educational institutions. However, the current study is limited to an institute in a university environment; further studies should focus on the entire faculties of an educational system. The results demonstrated by this study shows that, SERPERF instrument is also applicable and reliable in educational settings. The findings similarly show that, the students of INSTED were highly tolerant and happy with the quality of services offered to them by their host institute. Out of the five service quality dimensions, the students perceived Tangible as the most positively present in INSTED, followed by insurance, Responsiveness, Reliability and then Empathy.

SERPERF Model in order to gain competitive advantage.

3. More effort is needed from the federal and state government of Nigeria to improve the quality of Tertiary education through quality measures as presented by this study. Perhaps this will enable the institutions to compete favorably and have a global ranking status

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