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Service Quality and Students' Satisfaction in Tanzania's Higher Education: A Re-examination of SERVQUAL Model

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ABSTRACT

This study assessed the effect of service quality on customer satisfaction in Tanzanian's higher education (HE) by re-examination of SERVQUAL Model through testing its existing five dimensions, namely; tangibles, reliability, responsiveness, empathy and assurance and one new suggested dimension, namely, compliance. The study was carried out in higher learning institutions situated in Dodoma city. The study employed a stratified random sampling technique to select a sample. The study adopted a cross-sectional research design whereas a questionnaire survey was used to collect quantitative data from a sample of 326 students from higher learning institutions. Descriptive statistics were used to compute the quality of services using perceived service quality (P) and expected service quality (E). Inferential statistics involved a binary logistic regression model to estimate the effect of service quality dimensions and compliance on customer satisfaction. The findings show that service quality in HE was perceived by students to be below their expectations. The findings from logit model revealed that tangibles, reliability, responsiveness, empathy, assurance and compliance were important variables in predicting students' satisfaction in HE.

Keywords: Customer Satisfaction, Higher Education, Service Quality, SERVQUAL Model
JEL Classifications: IM

1. INTRODUCTION

The service sector has increasingly become the engine of the overall domestic and global economy since it contributes to 67.9% of global GDP (Magoti and Mtui, 2020) and employ more than 70% of the labour force worldwide (Deloitte, 2018). In Tanzania's context, the service sector accounts for the largest share (51.3%) of the total national GDP (BOT, 2019). Therefore, it is imperatively logical to argue that for the service sector such as information technology, hospitality, travel, transportation, media, entertainment, sports, banking, education, and healthcare to flourish, they should deliver the optimal quality services. Besides, to economically perform well, service sectors such as finance, insurance, design, markets, marketing and sales, energy, retail, e-commerce, asset rentals, and education must deliver the quality services. Njau (2019) and Padma et al. (2009) further agree that in this globalized digital economy and stiff competitive environment, delivering the best service quality has become the most powerful strategy that a company uses to distinguish itself from its competitors and gain sustained competitive advantages. Parasuraman et al. (1988) define perceived service quality as satisfaction that results from comparing the service expectations, perceptions, and performance. Despite perceived service quality playing a vital role in customer satisfaction, it has been revealed that one of the most crucial problems facing the service sector's management is service quality (Cronin and Taylor, 1992; Parasuraman et al., 1988; Mashenene, 2019).

The best-perceived service quality lowers customer defection and switch off, fuels more repeat purchase, creates stronger customer loyalty, enhances positive word-of-mouth and cross-selling, lowers price war, forms unique brand identity, builds a reputable corporate image, and also develops and sustains a long-term relationship with customers (Kotler and Keller, 2014; Ladhari et al., 2011; Magasi, 2016; Wang and Hui, 2003). Therefore, repeat purchase, spreading positive word-of-mouth, stronger customer loyalty, and sustaining long-term relationships are considered important antecedents of customer satisfaction. Thus, based on the stated advantages of

perceived service quality, service quality is one of the superior competitive and winning strategies to be used by a service firm since it benefits both the service providers and their esteemed customers. Several studies have been done on the relationship between service quality (SERVQUAL [SQ] model) and customer satisfaction (Ali and Raza, 2015; Ananda and Devesh, 2017; Ladhari et al, 2011; Mashenene, 2019; Parasuraman et al., 1988). Some studies indicate a positive relationship between the SQ model and customer satisfaction (Ali and Raza, 2015; Ananda and Devesh, 2017) while others indicate a negative relationship between the SQ model and customer satisfaction (Mashenene, 2019; Njau, 2019). Customer satisfaction is an outcome of the customer's perception of the service quality (Heskett et al., 1994). Satisfaction leads to improved repeat purchase, positive word of mouth recommendation, customer trust and commitment, customer loyalty, increased firm-customer relationships, a 5% increase in customer retention, and also an increase of firm's profitability by not <25% (Heskett et al., 1994; Kotler and Keller, 2014; Reichheld and Sasser, 1990).

It has, however, been revealed that measuring and evaluating the relationship between SQ model and customer satisfaction may vary depending on the context, culture, service industry type, and level of economic development (Hussain et al., 2015; Ladhari et al., 2011; Laroche et al., 2004; Yılmaz and Temizkan, 2022). This implies that the relationship between the SQ model and customer satisfaction is more contextual, culturally, and specific service type oriented rather than being treated as generic. Thus, the research results obtained from a different context and culture might not be generalized or transferred across a global landscape. Also, the aforementioned empirical studies treated the SQ model as the functional model, and hence difficult to capture other new evolving dimensions which can fit into the model. For example, Mashenene (2019) used only the traditional five dimensions of the SQ model, namely tangibles, reliability, responsiveness, empathy, and assurance to examine the effect of service quality dimensions on the satisfaction of students in Tanzania's higher education (HE). Nevertheless, Ali and Raza (2015) integrated compliance into the five traditional SQ dimensions and proved it to have a positive relationship with customer satisfaction in the banking industry. The reasoning is that complying effectively and accurately with the set industry laws and standards such as policies, regulations, procedures, and architectures are vital for improving the quality of the service being provided. Therefore, a modified SQ model for measuring the perceived service quality in the banking industry consists of six dimensions, namely compliance, tangibles, reliability, responsiveness, empathy, and assurance. In the education system, compliance with set college and regulators' laws and standards such as policies, regulations, procedures, and architectures are implicitly important for establishing, maintaining, and sustaining quality education. However, the compliance construct has not been studied as one of the SQ model dimensions in the education sector. This study was expected to have knowledge contribution by testing how a modified SQ model relates to customer satisfaction in Tanzania's HE. Besides, the findings from this study were unique because contrary to developed countries, students in the Tanzanian context and culture might have unique expectations of the services delivered in HE. Mashenene (2019) also proposes a further study on the relationship between the SQ model and student satisfaction in many higher learning institutions of Tanzania for the generalization of obtained results since his study covered only the College of Business Education.

Since the quality of a service depends on individual customers' perceptions, it has been an everlasting challenge on how to accurately measure the service quality (Njau, 2019). The fundamental questions that are addressed in this study are: How does a student perceive the service quality in HE? How can the gap between expected and perceived service quality be measured in HE? Can the new modified SQ model lead to more improved perceived service quality and optimal student satisfaction in Tanzania's HE? How does each dimension of a modified SQ model, namely compliance, tangibles, reliability, responsiveness, empathy, and assurance relate to customer satisfaction in Tanzania's HE? Thus, the overall purpose of this study is to measure the relationship between perceived service quality and customer satisfaction among the students in Tanzania's HE by using a modified SQ model.

2. LITERATURE REVIEW

There exist several models for measuring the service quality in the service industry such as Gronroos's (1984) service quality model which is a technical quality and functional quality-based approach to measure service quality, Cronin and Taylor's (1992) SERVPERF model that is the performance-based approach to the measurement of service quality, and SQ model (Parasuraman et al., 1988) that is a gap between customer's perceived performance (P) and the expectations-based (E) approach to the measurement of service quality. Specifically, this part discusses the conceptualization of the SQ model by covering literature on the aspects of its evolution and limitations, application, how it influences customer satisfaction, existing research gaps, and conceptual framework since it has been abundantly and frequently applied as a suitable model for measuring the service quality in the service sector (Hussain et al., 2015; Ladhari et al., 2011; Yılmaz and Temizkan, 2022).

2.1. Evolution of SQ Model

The service quality model originates from the seminal work of Gronroos (1984) who researched the service quality (Gronroos, 1984). The Gronroos (1984) model recognizes technical quality and functional quality as the two main elements of service quality. Technical quality is what is being delivered to a customer (Gronroos, 1984). In an education setting, technical quality is the teaching provided. The aspects of technical quality at the college are therefore competent people, people's technical ability, technical solutions, and quality computerized systems (Ramzi, et al., 2022; Yılmaz and Temizkan, 2022). Functional quality refers to how a service is being delivered to a customer (Ali et al., 2017; Gronroos, 1984). Functional quality entails aspects like attitude, friendliness, promptness, courtesy, attentiveness, responsiveness, confidence, and communication. Gronroos (1990) advanced the service quality model to three elements, namely technical quality, functional quality, and service provider image, the latter being a new element.

The intention of Gronroos's (1990) service quality model was to measure the existing gap between customer expectations on the service to be received and customer experience while receiving service and after the service consumption. Nevertheless, it is practically difficult for the customer to assess the technical quality of service. For instance, it becomes tricky for the student to evaluate the teacher's technical competence. Despite the existing weaknesses of Gronroos's (1984) service quality model, his seminal work creates a base for developing other service quality models such as the SERVPERF and SQ models. Based on existing academic debates and arguments, there is no consensus on the most suitable service quality measurement model in the service industry. This study, however, was guided by the SQ model because of being abundantly and frequently applied as a suitable model for measuring the service quality in the service sector.

Parasuraman et al. (1985) agree that it is more difficult to evaluate service quality than evaluating goods quality. Besides, perceived service quality is an outcome of comparing consumer expectations and actual service performance. Moreover, service quality evaluations do not only depend on the service outcome but also evaluations of the service delivery process. Parasuraman et al. (1985) argument implies that measuring service quality is a complex and complicated process and thus calling researchers to come up with standard models that can consider both the aspects of process and outcome while measuring the service quality. Parasuraman et al. (1988) SQ model was formulated as the instrument for measuring the perceived service quality to reduce the gap that exists between customers' perceptions and expectations. The model was developed from a 34-item scale, purified and refined by using expectation and perception statements to measure the service quality in the four firms. The five SQ dimensions obtained after the final purification of the model are defined in Table 1 and presented in Figure 1.

According to Parasuraman et al. (1988), the dimensions of communication, competence, understanding/knowing customers, credibility, security, courtesy, and access are contained in the dimensions of assurance and empathy. Based on Parasuraman et al. (1988) findings, proper application of the SQ model dimensions by the service sector remarkably improve customer satisfaction. Therefore, based on Table 1 and Figure 1, the hypotheses for this study are as follows:

H_1: There is a significant positive relationship between tangibles and student satisfaction

H_2: There is a significant positive relationship between service reliability and student satisfaction

H_3: There is a significant positive relationship between responsiveness and student satisfaction

H_4: There is a significant positive relationship between service assurance and student satisfaction

H_5: There is a significant positive relationship between empathy and student satisfaction

The emphasized SQ model strengths include: to be standard and suitable for evaluating the service quality, in various service situations, ironically reliable, its data collection instruments are easy to fill due to a few items and it has a standardized data analysis procedure (Rohini and Mahadevappa, 2006). Despite the argument given, the administration of the SQ is, however, difficult due to its sample composition and lack of sensitivity on product ownership, customer's optimal preference, and service encounter (Newman, 2001; Yılmaz and Temizkan, 2022). Besides, the use of an unweighted SQ measure fails to determine the priorities of customers across its five quality dimensions. Also, the SQ model inclines much on the functional quality side of the service delivery process and neglects the technical facet of a service and its outcomes (Padma et al., 2009). Moreover, the SQ model ignores the dynamism aspect of customer expectations and as a consequence, it becomes tricky to confine other new evolving dimensions that are discernible to fit into the model. Table 2 summarizes further criticisms of the SQ model by different authors and scholars.

Following aforesaid criticisms, Ali and Raza (2015) integrated compliance into the five traditional SQ dimensions and proved it to have a positive relationship with customer satisfaction in the banking sector. However, the compliance construct has not been studied as one of the SQ model dimensions in the education sector. Therefore, this study states that:

H_6: There is a significant positive relationship between compliance and student satisfaction.

Regarding compliance, the assumption is that if higher learning institutions systematically and accurately comply with the set education sector laws and standards such as quality assurance (QA) policy, regulations, procedures, standards, and architectures, the quality of education provided will be improved. This study, therefore, fills the research gap by applying the six dimensions of a modified SQ model, namely compliance, tangibility, reliability, responsiveness, assurance, empathy in measuring the students' perceived service quality in Tanzania's HE system as indicated in the conceptual framework Figure 2.

Table 1: SERVQUAL model dimensions

A dimension	Definition of a dimension
Tangibles	Physical facilities, equipment, and appearance of personnel
Reliability	Ability to perform the promised service dependably and accurately
Responsiveness	Willingness to help customers and provide prompt service
Assurance	Knowledge and courtesy of employees and their ability to inspire trust and confidence
Empathy	Caring, individualized attention the firm provides its customers

Figure 1: Adapted from Parasuraman et al. (1988) SERVQUAL model

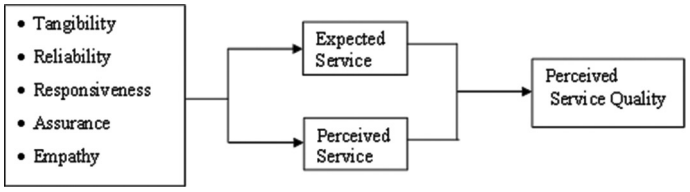
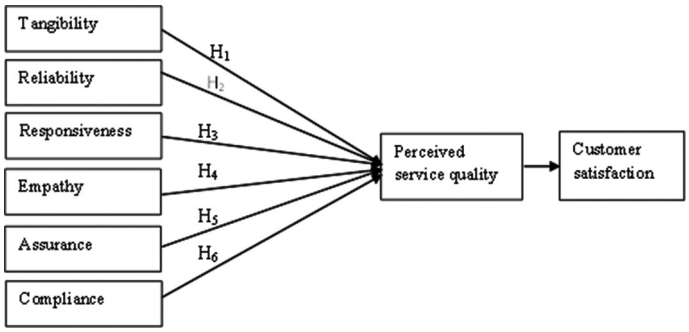


Table 2: Critiques on SERVQUAL model

Author and study title	Criticisms	Findings/Suggestions
Cronin and Taylor (1992) Measuring service quality: a re-examination and extension	The use of the disconfirmation paradigm to measure service quality is inappropriate	In a psychological sense, an attitudinal model of service quality is the best model to measure perceived service quality
Andersson (1992) Another model of service quality: a model of causes and effects of service quality tested on a case within the restaurant industry	• SERVQUAL model ignores the costs that are incurred to improve service quality • SERVQUAL model originates from the data collected using ordinal scale methods which are not suitable for factor analysis	• Utilize statistical, economic, and psychological theories to support the development of the SERVQUAL model • Use interval scale methods to collect data while using the SERVQUAL model since they fit the factor analysis
Buttle (1995) SERVQUAL: review, critique, research agenda	• Disconfirmation paradigm than an attitudinal paradigm • Little evidence on whether consumers' service quality is solely measured based on the E-P gap approach • Based on service quality delivery process and ignore service encounter outcomes • The SERVQUAL five dimensions are rather contextual than universal	• Consider consumer attitudes since the evaluation of service quality changes over time depending on the moments of truth • Consumers also use standards other than expectations to assess service quality • Modify the SERVQUAL model dimensions depending on the context and the industry type being measured
Sureshchandar et al. (2001); Customer perceptions of service quality: a critique	• SERVQUAL model ignores important facets such as service product/core service, and standardization/systemization of service quality	• Improve service product or core service as the antecedents to service quality • Standardization/systematization of the service being delivered will improve the service quality
Brady et al. (2002); Performance-only measures of service quality: quality: a replication and extension	SERVQUAL ignores the physical environment and other uncontrollable factors which affect service quality	• Improve the SERVQUAL model by considering the aspect of the physical environment where the service is being delivered • Improve SERVQUAL model by including uncontrollable factors such as emotions and behaviour
Coulthard (2004); A review and critique of research using SERVQUAL	• The existing SERVQUAL model and its extensions by other researchers are still not satisfactory in measuring the service quality • The existence of relatively weak SERVQUAL model extended disconfirmation measures as well as Likert scale and questionnaire formats	• Conduct further more research on the use of disconfirmation measures, extended Likert scale formats and, questionnaire formats
Ali and Raza (2015) Service quality perception and customer satisfaction in Islamic banks of Pakistan: the modified SERVQUAL model	It is much more difficult to measure the service quality in Islamic Banks if compliance with Sharia procedures is not considered	Compliance has a positive relationship with customer satisfaction. Include compliance dimension in the SERVQUAL model dimensions while measuring the service quality in Islamic Banks

Figure 2: A modified SERVQUAL model



Source: Adapted from Ali and Raza (2015)

3. METHODS

3.1. Sampling, Questionnaire Design and Data Collection

The study was conducted in Dodoma city in five HE institutions, namely, the University of Dodoma, College of Business Education, St. John's University of Tanzania, Institute of Rural Development and Planning and Local Government Training Institute. Dodoma city was selected because it has a big number of higher learning institutions both public and private. The population of the study was all students who had spent at least 2 years of study at the institution i.e. 2nd-year diploma, 2nd year and 3rd-year bachelor's degree students. This population was selected because such students had been at such institutions for a long period and thus are at least able to understand and assess service quality issues in their institutions. A stratified random sampling was employed in selecting a sample that reflected the study population. A sample of 326 was involved in the analysis which was computed by Cochran's (1997) formula as indicated in equation (1).

$$n = \frac{Z^2}{e^2} * pq \quad (1)$$

Whereby: n stands for sample size, Z refers to the critical value of suitable confidence level (in this case being 1.96 for a 95%), p stands for the proportion in the population of interest (in this case being 50%), q is 1-p and e is the acceptable margin of error often set at 0.05.

Then, $n = \frac{1.96^2}{0.05^2} * \frac{0.5 * 0.5}{} = 384$ respondents

The sample first estimated from the formula was 384 but due to some questionnaires being unreturned and data cleaning, the sample size decreased to 326 which was 84.9% of the previously estimated sample size. To capture respondents' service expectations and perceptions, respondents were subjected to rate their expectations and perceptions using a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree) since Schwab et al. (2022) adopted a similar approach. Likert –scales questions for the first time were developed by Rensis Likert and globally they have been widely used by several researchers particularly in measuring attitudes and perceptions (Mashenene, 2019; Mashenene, 2016; Mbise, 2015). The survey instrument was divided into six dimensions according to the modified SQ model.

3.2. Data Analysis

Quantitative data analysis was carried out in two approaches. The first approach involved computation of the difference of the means between perceptions (P) and expectation (E) to estimate service quality (i.e. SQ = P – E). Then, to obtain the index score for each SQ dimension the sum of P – E were divided by the number of items in each dimension. The sum of all SQ index scores was further computed and divided by the total number of SQ dimensions (6 SQ dimensions). A binary logistic regression model in the second approach was used to determine the effect of SQ dimensions on students' satisfaction in HE. Using mean score, the transformation of data from 7 Likert scale questions on students' satisfaction was carried out into index score. Then, dichotomous responses of students' satisfaction (1 = satisfied, 0 = unsatisfied) were created. The binary logistic regression model was used to estimate the effect of service quality on customer satisfaction. The binary logistic regression was preferably used since the dependent variable (customer satisfaction) was treated in a dichotomous fashion. The binary logistic regression equation was as follows:

$$\frac{P_i}{1-P_i} = \beta_0 + \beta_1 Ta_1 + \beta_2 \mathrm{Re}_i + \beta_3 Rs_i + \beta_4 Em_i + \beta_5 As_i + \beta_6 Co_i + \varepsilon_i \quad (2)$$

Where by:
Y = Students' Satisfaction
Ta = Tangibles
Re = Reliability
Rs = Responsiveness
Em = Empathy
As = Assurance
Co = Compliance

To ensure the reliability of data, Cronbach's Alpha was performed and the output was as follows (Table 3). Cronbach's Alpha test was performed to test the reliability of data in the study. The results indicated that the Cronbach's Alpha for all variables was above 0.7, implying that data were reliably good (Lawson, 2014).

To ensure the validity of data, the questionnaire was pre-tested to a sample of 15 students from another HE Institution which was not involved in the full range of questionnaire administration. The results from pre-testing were used to improve the tool accordingly. In addition, permissions for data collection were granted by the authorities of the institutions from which data were collected.#

4. RESULTS AND DISCUSSION

4.1. Tests for Assumptions of Binary Logistic Regression

4.1.1. Sample size adequacy

To arrive at sample size adequacy, the variables in independent variables are multiplied by 50 (Pallant, 2011). This study had 6 independent variables, namely, tangibles, reliability, responsiveness, empathy, assurance and compliance. In this regard, the sample size for this study was supposed to be 300 but it used a sample size of 326 since respondents were easily accessed.

4.1.2. Multi-collinearity

Multi-collinearity in this study was measured using two approaches. First, the standard error (SE) determined from the binary logistic regression was <2.0 (Table 4), suggesting that no multi-collinearity existed in the data collected (Mashenene, 2016). Second, no existence of multi-collinearity was revealed due to less correlations among variables in the correlation matrix (Table 4) (Abbasi, 2011).

4.1.3. Accuracy percentage

Another test for assumptions of binary logistic regression was the use of accuracy percentage. Field (2013) argues that the results of a logit model when performed without independent variables are higher than when performed with independent variables, this implies model fitness to the data. The results show a decrease

Table 3: Reliability test output

Variables	Cronbach's Alpha	Number of items
Tangibles	0.931	16
Reliability	0.826	7
Responsiveness	0.942	9
Empathy	0.763	6
Assurance	0.791	7
Compliance	0.806	12

Table 4: Correlation matrix

	R1	R2	R3	R4	R5	R6	R7
R1	1.000						
R2	0.675	1.000					
R3	0.437	0.496	1.000				
R	0.246	0.271	0.293	1.000			
R1	0.345	0.503	0.510	0.328	1.000		
R1	0.440	0.513	0.410	0.393	0.428	1.000	
R1	0.330	0.359	0.272	0.497	0.404	0.546	1.000

R1=Constant, R2=Tangibles, T3=Reliability, R4=Responsiveness, R5=Empathy, R6=Assurance, R7=Compliance

in -2Log likelihood from 215.362 to 144.706 when independent variables were entered into the model. Such a decrease of -2Log likelihood after independent variables were entered in a model suggesting the fitness of data entered in the model (Tundui, 2012). Model fitness was also predicted by the significance value of the Chi-square after all independent variables were entered into the model i.e. χ^2 (6) of 81.22, p=0.010. Such significant value of the Chi-square implied data were fit for the model.

4.2. Factor Analysis

Exploratory factor analysis was performed to reduce the number of factors from 57 to 6 factors namely tangibles (16), reliability (7), responsiveness (9), empathy (6), assurance (7) and compliance (12). According to Bengesi (2013), exploratory factor analysis was applied since it is suitable for establishing interrelationship among variables and reducing such variables to fewer variables that are easy to manage and manipulate. Factor analysis was appropriate in this study as it was measured y KMO and Bartlett's tests (Table 5). The results of the KMO test indicated a value of 0.914 which is interpreted as superb and Bartlett's test with p=0.000 shows relevance for factor analysis (Field, 2013).

4.3. Service Quality in HE

Table 6 indicates findings for service quality in HE in Tanzania. Generally, students in HE perceived the quality of services they receive as negative (SQ index score=−0.3996). These findings imply that students as customers in HE do not perceive the quality of services they receive as below their expectations. Surprisingly, even compliance of HE to the regulatory authorities was perceived negative (P–E=−0.4867) and it was ranked the second-highest next to tangibles (P–E=−0.5749) which were ranked the first. These findings are supported by those of Mashenene (2019) who revealed that students in HE in Tanzania perceived quality of services offered to them was below their expectations.

4.4. Logit Results

The purpose of this study was to investigate the relationship between perceived service quality and customer satisfaction among the students in Tanzania's HE by using a modified SQ model. The motivation of the study was to investigate whether the new modified SQ model can lead more to improved perceived service quality and optimal student satisfaction in Tanzania's HE. The modified SQ model consisted of five traditional dimensions, namely, tangibles, reliability, responsiveness, empathy, and assurance and the new dimension, namely, compliance. The study investigated the relationship between each of the aforementioned SQ model dimensions with HE students' satisfaction. The study findings are presented in the next subsections.

Table 5: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.914
Bartlett's Test of Sphericity	Approx. Chi-Square	2078.891
	df	120
	Sig.	0.000

Table 6: Perceived quality of services in higher education

Pairs	Variables	Means	P-E
Pair 1	Perception tangibles	4.8233	−0.5749
	Expectation tangibles	5.3983	
Pair 2	Perception reliability	5.1305	−0.3018
	Expectation reliability	5.4324	
Pair 3	Perception responsiveness	5.2356	−0.1810
	Expectation responsiveness	5.4166	
Pair 4	Perception empathy	5.3556	−0.3702
	Expectation empathy	5.7258	
Pair 5	Perception assurance	5.4248	−0.4829
	Expectation assurance	5.9076	
Pair 6	Perception compliance	5.2547	−0.4867
	Expectation compliance	5.7414	
Overall index score			−0.3996

4.5. Hypothesis 1: Relationship between Tangibles and Students' Satisfaction

The findings (Table 7) indicate that tangibles had a coefficient of −0.494 which was significant at p<0.05. As a result, the null hypothesis (H_1) is accepted. These findings imply that a unit increase in tangibles will result in an increase in students' satisfaction by 49.4%. The results also are supported by the odds ratio (OR) for tangibles of 1.638 which indicates that the contribution of tangibles to change students' satisfaction is 1.64 times. These findings are in harmony with those of Gregory (2019) and Mashenene (2019) which revealed that tangibles were important variables in influencing students' satisfaction in HE and they improve the reputability of an organization's image.

4.6. Hypothesis 2: Relationship between Service Reliability and Students' Satisfaction

The findings (Table 7) indicate that reliability had a coefficient of −0.099 which was significant at p<0.1. Consequently, the null hypothesis (H_2) is accepted. These findings suggest that a unit increase in reliability will cause an increase of 9.9% in students' satisfaction. The OR from these findings was found to be 1.104 which showed the likelihood of changing students' satisfaction was 1.1 times. These findings were also in line with those of Mashenene (2019) which revealed the same results. The findings were also in harmony with those of Mashenene (2019), and Darawong and Widayati (2021) that the reliability dimension of the SQ model has a significant positive relationship with the HE students' satisfaction.

Table 7: Logit results

Variables	B	S.E.	Exp (B)
Age	0.060	0.068	1.062
Sex	0.175	0.482	1.191
Category of higher education	−0.766	0.645	1.465
Tangibles	−0.494**	0.222	1.638
Reliability	−0.099*	0.249	1.104
Responsiveness	−0.253*	0.268	1.288
Empathy	−0.490*	0.268	1.613
Assurance	−0.514**	0.227	1.598
Compliance	−0.477***	0.328	1.611
Constant	−4.191**	0.847	0.015
Chi-square	21.596, df=9, P=0.010		
Cox and Snell R^2	0.064		
Nagelkerke R^2	0.160		
−2 Log Likelihood	144.706		

4.7. Hypothesis 3: Relationship between Responsiveness and Students' Satisfaction

The findings (Table 7) further show that the coefficient of responsiveness was −0.253 and it was significant at $p<0.1$. As a result, the null hypothesis (H_3) is accepted. These findings suggest that a unit increase in responsiveness will result in an increase in students' satisfaction by 25.3%. The OR for responsiveness was found to be 1.288 which was interpreted that its contribution in influencing students' satisfaction was 1.3 times. These findings were revealed to be the same as those of Gregory (2019), Mashenene (2019), and Darawong and Widayati (2021) that the responsiveness dimension of the SQ model has a significant positive relationship with the HE students' satisfaction.

4.8. Hypothesis 4: Relationship between Service Assurance and Students' Satisfaction

Regarding assurance, the findings (Table 7) indicate that assurance had a coefficient of −0.514 which was significant at $p<0.05$, as a result, the null hypothesis (H_4) is supported. The findings imply that any unit increase in assurance will cause an increase in students' satisfaction by 51.4% while the likelihood of OR to raise students' satisfaction will be 1.6 times. The findings are similar to Mashenene's (2019) and Yılmaz and Temizkan's (2022) findings that the assurance dimension of the SQ model had a positive significant positive effect on HE students' satisfaction.

4.9. Hypothesis 5: Relationship between Empathy and Students' Satisfaction

Further, the findings (Table 7) revealed that empathy had a coefficient of −0.490 which was significant. As a result, the null hypothesis (H_5) is accepted. These findings imply that any unit raise in empathy will raise students' satisfaction by 49.0%. These findings are relatively similar to Darawong and Widayati (2021), Gregory (2019), Mashenene (2019), and Yılmaz and Temizkan's (2022) findings that the empathy dimension of the SQ model had the strongest positive effect on students' satisfaction.

4.10. Hypothesis 6: Relationship between Compliance and Students' Satisfaction

Moreover, the findings (Table 6) show that the coefficient of compliance was −0.477 which was significant at $p<0.01$. As a result, the null hypothesis (H_6) is supported. The findings imply that increasing a unit of compliance will increase students' satisfaction by 47.7% while the likelihood of OR to increase students' satisfaction will be 1.6 times. The findings of this study remind HE institutions to strictly comply with the guidelines and standards of HE regulatory bodies such as the Tanzania Commission for Universities (TCU) and the National Council Technical Education (NACTE) to improve students' services and satisfaction. Although previous studies in HE compliance had not been treated compliance as the SQ model dimension, the findings are relatively similar to Ali and Raza's (2015) findings that compliance with Islamic bank laws increases satisfaction. of the banking industry in Pakistan.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

This research is novel and contributes to the body of knowledge in the existing antecedents of customer satisfaction from the perspective of 326 HE students by investigating the effect of SQ model dimensions on their satisfaction by emphasizing a new SQ model variable, namely, compliance. Although the structured questionnaire used in this study was developed to adapt to the context of Tanzanian HE, it was largely adopted from the original framework by Parasuraman et al. (1988) and Ali and Raza (2015) to conceptualize the SQ model dimensions. This study concludes that the perception of students towards the quality of services offered by HE was below their expectations. This implies that HE offers services whose quality is below the students' expectations. Surprisingly, it was also concluded that compliance of HE to standards and guidelines provided by regulatory authorities was perceived below students' expectations. The study also concludes that tangibles, reliability, responsiveness, empathy, assurance, and compliance were important ingredients to students' satisfaction in Tanzanian HE. The findings of this study remind HE institutions to strictly fulfil what they promise to students and also comply with the guidelines and standards of HE regulatory bodies such as the TCU and NACTE to improve students' services and satisfaction.

5.2. Recommendations and Areas for Future Research

This study puts forward the valuable four recommendations that are important in improving HE service qualities and students 'satisfaction. First, the education regulatory bodies such Ministry of Education, Science and Technology, TCU, and NACTE should collectively prioritize the issue of QA in HE by carrying out regular monitoring and evaluation to ensure compliance is enhanced. Second, HE management should consider involving students in the various improvements of service quality dimensions and should consider any improvement made on SQ dimensions and compliance is an investment rather than cost. Third, HE management should consider involving students in various improvements of service quality dimensions and should consider any improvement made on SQ dimensions and compliance as an investment rather than cost. Fourth, HE management should consider involving their alumni in fundraising programmes to solicit adequate funds that can be used to improve SQ dimensions through modernizing tangibles and carrying out training to staff. However, this study employed exclusively a purely quantitative research approach. Another study can be carried out using both qualitative and quantitative approaches for improved findings. Besides, the study covered a single regional and country setting and cultural aspects limiting the transferability of the results to other regions, countries, and cultural settings. The study can be conducted in the future by involving respondents from more than one region.

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