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Perceived service quality and student satisfaction in higher learning institutions in Tanzania

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Despite policy efforts to promote higher learning in Tanzania, reports show persistent student dissatisfaction, revealing the extant inadequate quality measurement models. The study examined the fundamental elements causing dissatisfaction using an extended SERVQUAL model with additional variables, perceived transparency mediated by trust. Researchers collected quantitative data from 398 third-year higher learning students. The structural equations modelling result shows that reliability, perceived transparency, and trust in an institution significantly predict satisfaction. Further, trust partially mediates the influence of perceived transparency on student satisfaction. Evidence from this study suggests that education policy geared to promote the expertise of service providers and punctuality of service offering, transparency in service offering, and social responsibility of service provision is adequate for student satisfaction. Future research can look into a cross-level of economic development, groups of students—analysis of satisfaction determinants, and test the transparency—trust-based SERVIQUAL Model in quality struggling sectors in Tanzania and other developing countries. Also, studies can test how satisfaction mediates the effect of quality on academic performance.

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Introduction

Higher education is the cornerstone of a knowledge-driven economy (Sum and Jessop, 2012). It builds competent human capital and technological capabilities needed for sustainable economic development (Kruss et al. 2015). More excellent human capital quality attracts FDI (Naanwaab and Diarrassouba, 2016), and its resulting income and job creation effects spur innovation and self-employment (Amadeo, 2022; Li et al. 2017). Worldwide, governments, including Tanzania, promote higher learning institutions (HLIs) and education. In Tanzania, the HLIs consist of universities, colleges, and other institutions of higher learning (Tanzania Commission for Universities, [TCU], 2020), offering lower and higher tertiary education.

Tanzania's education sector consists of private HLIs and public HLIs, all operating under the same regulatory and policy framework. For the public HLIs, the government of Tanzania has made several efforts to promote access to and enrolment in higher learning. Among the efforts are establishing new public universities and colleges, expanding the existing infrastructures (Mwapachu, 2010), training a skilled workforce, and providing student loan schemes (Nyahende, 2013). The private HLIs, through private equity and debt, also developed new branches and infrastructures. Institutionally, efforts include establishing flexible learning modes such as distance learning (Mwilongo, 2015), e-learning systems (Tossy, 2017; Kisanga, 2016), and the establishment of evening and executive classes.

Even though the efforts put in place resulted in increased access to tertiary education and student enrolment, there is hardly mention of the quality of education offered (Kessy, 2020). Amutabi (2021) shows that in the government policy reforms, the quality of knowledge created in universities has not been a priority but rather enrolment expansion. As a result, the HLIs lack adequate financial resources for quality enhancement (Johansson and Lundborg, 2021; Mgaiwa, 2018), as required by the standards in Manyaga (2008). Financial resources are needed to improve the quality of learning facilities in lecture rooms, libraries, books, co-curriculum resources, and internet services (Mgaiwa and Poncian 2016).

In response to the service quality issue, the government of Tanzania assigns education policy and regulatory bodies: The Ministry of Education, Science, and Technology (MoEST), the Tanzania Commission for Universities (TCU), and the National Council for Technical and Vocational Education and Training (NACTVET) to improve the HLIs service quality (Mgaiwa, 2018) and to ensure the issue is not jeopardising the quality performance of graduates (Mgaiwa, 2021). Further, the government formulated accreditation and quality assurance policy frameworks in higher learning institutions (Mgaiwa, 2018).

These policy and regulatory frameworks have made positive steps toward improving the quality of education, as TCU (2019) reports the following data. In 2018, more than 50% of the HLIs were closed or suspended due to quality issues related to infrastructure, teaching materials, syllabi, assessment methods, teaching, and learning platforms. TCU reports further explain that in 2018, only 24% of the fully-fledged private universities and 19% of private university colleges had a quality assurance unit or directorate or developed a quality assurance strategy. Also, only 9% of private university colleges had developed a quality assurance policy. Despite the steps, the report shows that students' dissatisfaction with the quality of education services provided by HLIs persists (TCU, 2019).

The critical challenge in monitoring the quality of education service is the lack of clear and specific indicators of student's perceptions of the service quality (Akman and Kopuz, 2020; Magasi et al. 2022; Njau, 2019). The SERVQUAL Model is vital

for measuring quality perception (Saravanan and Rao, 2007). However, the setting, culture, service type, and level of development affect how the SERVQUAL Model and customer satisfaction are measured and evaluated (Magasi et al. 2022). This suggests that the relationship between the SQ model and student satisfaction is context, culture, and service type specific. Thus, empirical findings from certain settings may not be relevant and applicable in other contexts.

Previous studies measured service quality and student satisfaction using the traditional SERVQUAL MODEL (Mashenene, 2019). Few studies have attempted to enrich the SERVQUAL Model in industries like banking (Ali & Raza, 2017). Studies propound incorporating other variables into the SERVQUAL Model to establish a more comprehensive research model (Medina and Rufin, 2015; Onditi and Wenchuli, 2017), which is context relevant for effective policy action.

As described in the methodology, preliminary analysis of students' perception of education quality from their institutions has found tangibility, reliability, responsiveness, assurance, empathy, perceived transparency of student services, and trust in the institution to matter to students' satisfaction. As a result, the authors modified the SERVQUAL Model by including two more constructs; perceived transparency and students' trust in an institution. This research problem is scientifically justified through a preliminary survey, and the chosen variables are based on the students' perception of service quality.

Scant empirical evidence points to the association of transparency, trust, and satisfaction in government and banking sectors in South Korea and Denmark (Kim and Lee, 2012; Eskildsen and Kristensen, 2007; Park and Blenkinsopp, 2011; Porumbescu, 2017). The transparency and trust constructs in the education sector have not been studied as one of the SQ model dimensions. This study seeks to contribute to knowledge by testing how a modified SQ model relates to service quality and HLI's customer satisfaction in education.

This study explains how the Tanzanian context can enhance HLI students' satisfaction. Specifically, this paper suggests a direct impact of service quality dimensions related to HLI services on students' satisfaction, and direct and indirect effects are generated by the perceived transparency of student services and trust in students' satisfaction. The study uses a modified SQ model to determine the relationship between perceived service quality and student satisfaction among HLI students in Tanzania.

Review of literature

Despite the government's efforts to address the service quality issues, students' complaints are persistent (Jamii Forum, 2020). Many studies relating perceived service quality and student satisfaction in Tanzania target diploma and second and third-year degree students from one institution (Magasi et al. 2022; Mashenene, 2019; Mbise, 2015; Mwangoso et al. 2015; Mbise et al., 2013; Mbise and Tuninga, 2013). To the authors' knowledge, one study in Tanzania studied five HLIs (Magasi et al. 2022). Most service quality and satisfaction studies were conducted only in one or two local colleges (Mashenene, 2019). Hence, extant studies' results cannot represent the HLIs' student population. The current study targeted students from fourteen (14) HLIs located in the coastal zone of Tanzania, improving the sample's representativeness to the population of HLIs in the country.

Many extant studies acknowledge the link between service quality and customer satisfaction. Mashenene (2019), Mbise (2015), and Mwangoso et al. (2015) used the traditional SERVQUAL Model. Other studies modified the Model with the

new variables in banking and education (Ali and Raza, 2017; Raza et al. 2020; Hwang and Choi, 2019; Magasi et al. 2022). Researchers used transparency and trust in studies on citizens' satisfaction with government services in South Korea (Kim and Lee, 2012; Porumbescu, 2017) and European banking services (Eskildsen and Kristensen, 2007). To the researchers' knowledge, this is the first study to enrich the SERVQUAL Model with variables, perceived transparency, and trust in education.

Hwang and Choi (2019) evaluated the structural links between service quality, student satisfaction, institutional image, and behavioural intention at higher education institutions in South Korea. The SEM analysis revealed that students were happy with tangibles, dependabilities, responsiveness, empathy, and certainty. In addition, the findings revealed that student satisfaction and perceived institutional image were directly impacted by service quality. The results also showed that behavioural intention was directly influenced by students' perceptions of the institutional image and level of satisfaction.

Magasi et al. (2022) re-examined the traditional SERVQUAL Model by adding a new variable, compliance in Tanzanian higher education, and all variables were significant predictors. In banking, Ali and Raza (2017) demonstrated that compliance positively affects customer satisfaction in the Pakistani banking sector by integrating it into the five traditional SERVQUAL characteristics. The justification is that improving the quality of the services depends on effective and accurate compliance with the established industry laws and standards, including policies, regulations, procedures, and architectures. In Pakistan, Raza et al. (2020) found that service quality is the foundation for how customers perceive online banking and how it interacts and functions with other online services.

Some studies related transparency and trust with citizen satisfaction with government services in South Korea and European banking products. Kim and Lee (2012) found a positive association between government transparency and citizens' trust and a positive association between satisfaction and citizens' assessment of government performance. Eskildsen and Kristensen (2007) found that perceived transparency of banking products and services may influence customers' satisfaction. Park and Blenkinsopp (2011) found that trust mediates the relationship between corruption and citizens' satisfaction. Porumbescu (2017) found that increased exposure to transparency is negatively associated with citizens' satisfaction with public service provision.

The past studies examined the additional variables based on the location of their studies, culture, and nationalities. Magasi et al. (2022) researched Tanzania, a developing country where the HLLs must comply with laws, regulations, policies, and procedures to deliver quality education. Ali and Raza (2017) conducted their study in Pakistan since, in a Muslim-majority country, complying with Sharia laws is required; hence they added the compliance variable into the SERVQUAL. In South Korea, studies were done (Kim and Lee, 2012; Park and Blenkinsopp, 2011; Porumbescu (2017) because the government was adopting various programmes to ensure accountability, transparency, and trust in government (Kim et al. 2018).

For the current study, incorporating transparency and trust variables into the SERVQUAL Model will create knowledge helpful in improving the quality of tertiary education in Tanzania. Given the situation, the modified Model informs solutions for the persisting tertiary education quality problems. Empirical evidence from other sectors suggests that customers need information about services and build trust in the service providers' performance (Park and Blenkinsopp, 2011). Therefore, the logic and premise behind including transparency and trust in the current study to extend the SERVQUAL Model is empirically founded. Regarding perceived transparency and trust in an institution, the

logic is that openness to customers about the service process wins their trust, which leads to satisfaction.

The current study fills the research gap by applying the traditional SERVQUAL Model with two more variables (perceived transparency and trust) relating to perceived service quality and satisfaction in education. It modified the SERVQUAL Model to address the research questions by establishing two objectives: to examine the direct effect of service quality dimensions (tangibility, reliability, responsiveness, assurance, and empathy) on students' satisfaction with the services provided by the HLL; and to examine the direct and indirect effects generated by the perceived transparency of student services and trust in the institution on students' satisfaction with the student services provided by the HLL.

Research conceptual framework and hypotheses development

There exist several models for measuring service quality in the service industry. Grönroos (1984) claimed that the service quality model is a technical and functional quality-based approach to measuring service quality. Cronin and Taylor's (1992) SERVPERF model is a performance-based approach to measuring service quality, and the SERVQUAL Model (Parasuraman et al. 1988) aims to close the gap between customer-perceived performance (P) and expectations-based (E).

The original Grönroos's (1984) service quality model identifies technical and functional quality as the two primary components of service quality. Technical quality is related to the availability of competent people, the ability to solve technical problems, and the provision of quality computerised systems (Magasi et al. 2022; Ramzi et al. 2022; and Yılmaz and Temizkan, 2022). Functional quality refers to how service providers in the HLLs deliver the service, which includes attitude, friendliness, promptness, courtesy, attentiveness, responsiveness, confidence, and communication (Ali et al. 2017; Magasi et al. 2022; Grönroos, 1984).

Later, Gronroos (1990) modified the Model by explaining the relationship between technical quality, functional quality, and service provider image to assess the existing gap between customer expectations of the service and customer experience while receiving assistance. Nonetheless, considering the technical quality of service is not easy for the customer (Magasi et al. 2022). For example, to the students, evaluating the teacher's technical competence is tricky for the student (Gronroos, 1990). Despite the shortcomings of Grönroos' (1984) service quality model, the scholar's seminal work is a foundation for developing other service quality models.

Parasuraman et al. (1988) introduced the SERVQUAL Model to explain how respondents rate the service provider's tangible and intangible service performance—from the perspective dimensions of tangibility, reliability, responsiveness, assurance, and empathy. In the study context, the SERVQUAL Model assesses respondents' reactions to the sufficiency of tangible equipment such as computers, classrooms, labs, and substantial resources like library resources, printing materials, internet connections, and other teaching aids to help students learn curricular and non-curricular knowledge. In adapting the dimension's definition explained by the SERVQUAL Model, this study defines service quality dimensions as shown in Table 1.

This study adopts the SERVQUAL framework due to the Model's capability to solve most of the problems related to current respondents' satisfaction and adds transparency and trust to modify it. The transparency of an organisation in offering its service builds customers' trust, which eventually influences their satisfaction directly and indirectly (Medina and Rufin, 2015). Few studies have examined how transparency, trust, and satisfaction

Table 1 SERVQUAL model dimensions.

SQ. Dimension	Definition of a dimension
Tangibility	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, individualised attention the firm provides its customers

Note: SQ. Refers to service quality.

related to SERVQUAL variables cohesively (Alzahrani et al. 2018; Anantha et al., 2012; Arshad and Khurram, 2020; Denhardt and Denhardt, 2009; Gracia and Arino, 2015; Hwang and Choi, 2019; Medina and Rufin, 2015; Sfenrianto et al. 2018; Thomas et al. 2015).

Tangibility, reliability, responsiveness, assurance, empathy, and satisfaction

Researchers categorise tangibility in tangible equipment (such as computers, projectors, and labs), material resources (constructions, fixtures, teaching space, location), and actual reading and learning resources (such as library resources, internet access, and printed university materials). Since services are, by their very nature, intangible, physical elements allow people to judge a service by what they see. The term "tangibility features" in HLIs refers to the items that students can observe to evaluate a service since they can contribute to their satisfaction (Magasi et al. 2022; Mashenene, 2019). Similarly, the student will feel more fulfilled if perceived tangibility is higher. The current authors, therefore, predict that,

H1: Tangibles relate to student satisfaction positively.

Students in HLIs hope that their institutions will keep their promises and provide error-free services, as evidenced by studies conducted in Indonesia (Wijaya et al. 2021); Malaysia (Nicholas et al. 2022) and Tanzania (Magasi et al. 2022; Mashenene, 2019). Similarly, the current authors anticipate a positive relationship between reliability and satisfaction or,

H2: Reliability relates to student satisfaction positively.

The results of past studies carried out in Indonesia (Wijaya et al. 2021); Malaysia (Nicholas et al. 2022), and Tanzania (Magasi et al. 2022; Mashenene, 2019) show that student's satisfaction increase when the HLIs academic and administrative staffs are willing to provide valuable and quick service to students. Therefore, the currently studied HLIs staff's responsiveness is expected to be positively related to student satisfaction or,

H3: Responsiveness relates to student satisfaction positively.

In the SERVQUAL Model, assurance relates to the respondent's assessment of the service provider's knowledge, courtesy, and capacity to motivate the respondents to establish trust and confidence (Parasuraman et al. 1988). In other words, a service provider's graciousness, courtesy, approachability, and knowledge capacity are important (Pollack, 2008) for the service providers to build consumer trust and confidence (Zeithaml et al. 2006). The following service quality studies in HLIs support the positive relationship—Wijaya et al. 2021; Nicholas et al. 2022; Magasi et al. 2022; Mashenene, 2019; as such, this study predicts that,

H4: Assurance relates to student satisfaction positively.

Empathy is a concept that expresses the care and personalised attention that service providers can provide to their clients (Parasuraman et al. 1988). When a consumer requires customised

attention, the customer expects the service provider to become caring. Past service quality studies result in Indonesia (Wijaya et al. 2021), Malaysia (Nicholas et al. 2022), and Tanzania (Magasi et al. 2022; Mashenene, 2019) support the positive relationship between empathy and satisfaction. Similarly, the current study foresees that the HLIs' service provider's willingness to provide individualised attention to those students who need particular attention increases student satisfaction or,

H5: Empathy positively influences student satisfaction

Transparency, trust in the institution, and satisfaction

Citizens who are satisfied and their trust are dependable predictors of successful government (Van de Walle, 2018). Past studies' results support that satisfaction and trust are related to transparency. For example, service quality studies in Greek (Solakis et al. 2022); Spain (Ramírez and Tejada, 2022); Chile (Thelen, and Formanchuk, 2022); Indonesia (Honora et al. 2022); Finland (Kumar et al. 2021); German (Hofmann and Strobel, 2020); Libya (Vandewalle, 2018); and Spain (Medina and Rufin, 2015) show that transparency related to satisfaction positively. Researchers generally define transparency as the extent to which an organisation discloses information to its stakeholders about its decisions, procedures, and performance (Honora et al. 2022). Transparency, therefore, is helpful in the academic industry in a developing country like Tanzania.

Trust is essential for the overall system's seamless operation in online and offline information systems research (Capistrano, 2020). The population's faith in government bodies increases, and they are likelier to obey the rules and regulations when the trust elements exist (Cheng et al. 2017). Past empirical study results support the positive relationship between transparency and trust in Indonesia (Honora et al. 2022); Pakistan (Mansoor, 2021); Pakistan (Arshad and Khurram, 2020); and Pakistan (Arshad and Khurram, 2020). Studies carried out by Inan and Çelik (2018); Shin (2020); Sökmen (2019); Yuan et al. (2020) support the positive relationship between trust and satisfaction. In the review of past studies works, this study; therefore, transparency, trust, and satisfaction are interrelated, or,

H6: Perceived transparency positively influences student satisfaction.

H6a: Perceived transparency positively influences trust in an institution.

H6b: Trust in an institution positively influence student satisfaction.

Regardless of the ability to monitor or control the other party, researchers define trust as "the readiness of a party to be vulnerable to the acts of another party based on the anticipation that the other will perform a specific action significant to the trustor" (Trivedi and Yadav, 2020). According to the researchers' best knowledge, previous studies indicating that trust is a mediator

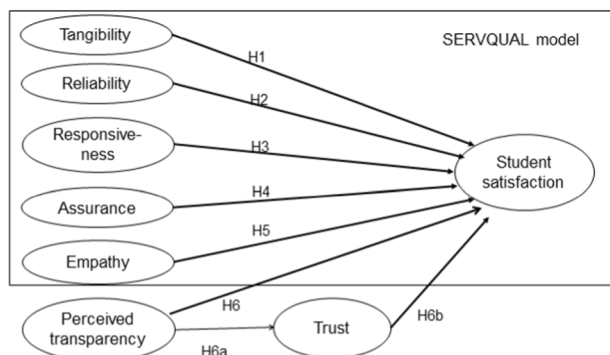


Fig. 1 A proposed modified SERVQUAL model that shows new constructs and relations between them, in addition to five traditional constructs.

The new constructs are perceived transparency that affect satisfaction directly and indirectly via a mediation of trust which also directly affects satisfaction.

between transparency and satisfaction in HLIs are rare. Given the scarcity of literature on trust as a mediator, the consensus in the literature is that student satisfaction is significantly impacted by trust and transparency. A student who trusts a particular HLI can recommend that HLI to other students; hence, HLIs can identify a positive relation between trust, perceived transparency, and student satisfaction (Medina and Rufin, 2015). Thus, trust in the context of Tanzanian HLIs is a mediator between perceived transparency and students’ satisfaction. Therefore, this study hypothesised the following:

H7: Trust can mediate the effect between perceived transparency and students’ satisfaction.

After developing the study’s hypotheses, the researchers show the conceptual framework in Fig. 1.

Research methodology

Paradigm, approach, and design. This study follows a positivist paradigm because it uses objectively observable and measurable data and data analysis techniques (Taylor and Medina, 2011). Unlike the qualitative approach, this study is quantitative as it uses numerical data analysed using statistical methods (Quick and Hall, 2015). Further, an experimental survey design examines cause–effect relations based on data from many sample units (Tharenou et al. 2007; Cox and Battey, 2017).

Sampling frame. The study’s target population is students pursuing Bachelor’s degree programmes from HLIs in Tanzania. The bachelor students are representative of tertiary education as it consists of also the former lower tertiary students, who then joined for degree level. According to TCU statistics for 2023, the study population is 79,600 students. To obtain the sample, researchers used a clustering approach with a multi-stage sampling method in selecting the HLIs and respondents’ samples. Three stages involved a selection of the coastal zone, Dar es Salaam city, and Ilala municipality ending with 14 HLIs, each following criteria of the most significant number of HLIs. HLIs from the coastal zone sufficiently represent institutions nationwide due to most Dar es Salaam-based institutions in other regions as branches or constituent colleges. At the final stage, the selected HLIs were contacted for the lists of registered students and systematically selected 398 final-year students. The universities and colleges in the Eastern zone, particularly Dar es Salaam have constituent colleges and branches in different regions of the country, giving an adequate level of representativeness of the study. The sample size for this

study is 398 student respondents, using Yamane’s (1967) sample size formulation, with an error rate of 5%.

Data and variables. The study used primary, quantitative, and cross-sectional data that researchers collected with a structured questionnaire. The questionnaire measured the variables of the study using seven-point Likert scale items. Service quality was measured using the extended SERVIQUAL Model with perceived transparency and trust. The appendix section describes a preliminary study that resulted in the two new variables in the Model. Five items were used as indicators of perceived transparency (Park and Blenkinsopp, 2011), three items for trust (Venkatesh et al. 2011; Medina and Ruffin, 2015), and eight items to measure satisfaction (Venkatesh et al. 2011).

Data validity and reliability. The researcher ensured data validity through a questionnaire review by experts and a pilot survey of 30 respondents in one of the sampled HLIs. Further, Cronbach’s alpha coefficient was used to assess the questionnaire’s reliability by scale reliability. This assesses how closely the scores for each item on a scale correlate and is validated using Cronbach’s alpha coefficient. A high Cronbach’s alpha score implies that the items in the scale level were internally consistent if the scale was unidimensional (Chow, 2020). The researchers used Cronbach’s alpha test on all 40 questionnaire items in this study. The computed reliability score is greater than the threshold value of 0.6, implying the items in the scale level were internally consistent (Fornell and Larcker, 1981).

Data Analysis. The structural relationship between variables was measured using Partial Least Squares-Structural Equation Modelling (PLS-SEM) processes. Under the PLS-SEM process, researchers developed two assessment models (the outer and inner models). The outer Model is a measurement model that predicts the correlation between indicators or parameters estimated with their latent variables. Measurement model evaluation seeks to ensure the validity and reliability of the concept measures, supporting the merit of including them in the path model (Hair et al. 2022). After that, a second model, the inner Model, is a structural model that predicts the causality relationship between latent variables.

Results

From the deployed tools, the researcher returned all 398 filled questionnaires fit for statistical analysis, 100% response rate. Of these responses, 242 (or 61%) were males, and 156 (or 39%) were females. Male dominance explains the still-existing gender gap in access to tertiary education (Tuomi et al. 2015). Most respondents (87%) were between 18 and 24, and the minority were above 24 because this is a relevant age range for most college students.

Evaluation of measurement model (outer model). The value of the factor loadings indicator, which measured the construct, was used to assess the reliability test for the indicators in the PLS. An indicator is considered valid if the factor loading value exceeds 0.707 (Risher and Hair, 2017). The researcher eliminated three items because their factor loadings were <0.7: ‘Tangibility1’, ‘Reliability1’, and ‘Reliability2’. Table II shows that all the remaining items used to measure the constructs had a value >0.706.

The average variance extracted (AVE) determines convergence validity. Researchers propose that AVE values should be >0.5. The current study’s researchers accept the constructs’ convergent validity within the structural Model in this study (Table 2). As

Table 2 Summary of measurement model.

Dimension/variable	Item	Factor loading	AVE	CR
TANGIBILITY	My university has up-to-date and enough library resources.	Tang2	0.713	0.576 0.871
	My university has physical facilities (e.g. buildings and furniture) that are safe to be used.	Tang3	0.769	
	My university has enough printing materials.	Tang4	0.801	
	My university has up-to-date and accessible internet connections.	Tang5	0.767	
	The materials at my university (e.g. pamphlets and study material) suit the university's image.	Tang6	0.742	
	RELIABILITY	Lecturers have a proven capacity to teach and a high level of proficiency.	Rel3	
Lecturers show their concern in solving student problems.		Rel4	0.84	
My university maintains detailed records (e.g., accounts, academic reports, student results, and so on).		Rel5	0.829	
RESPONSIVENESS	My university tells students when the requested services will be rendered.	Res1	0.776	0.585 0.849
	Students receive fast (prompt) service delivery from university personnel.	Res2	0.827	
	Lecturers at my university are willing to assist students.	Res3	0.737	
	University personnel are not too busy with other kinds of stuff when asked to reply quickly to students' demands.	Res4	0.715	
ASSURANCE	Students can trust the personnel of the university.	As1	0.814	0.683 0.896
	Personnel at my university inspire confidence in students.	As2	0.861	
	Personnel at my university are considerate	As3	0.848	
	Personnel at my university receive adequate support from university management to improve the services rendered.	As4	0.78	
EMPATHY	Students receive individualised attention from administrative personnel (e.g. doing something extra for students).	Emp1	0.784	0.597 0.881
	Lecturers give students individual attention.	Emp2	0.706	
	My university's personnel know their students' needs (e.g. recognising students as clients).	Emp3	0.8	
	The university personnel have the student's best interests at heart.	Emp4	0.81	
	The university personnel are easily accessible to students (e.g. available to see or contact by phone, email, WhatsApp, etc.)	Emp5	0.761	
PERCEIVED TRANSPARENCY	The institution's subjects are implemented transparently	PT1	0.759	0.614 0.888
	The process of specific student services like internships, student exchange, or accessing the library's e-reading materials is transparent.	PT2	0.812	
	The students can see the progress and situations of specific student services like the arrangement for internship/student's exchange or application to change tutorial class/ leave of absence.	PT3	0.785	
	The university transparently handles services like handling student appeals or complaints.	PT4	0.805	
	There is sufficient disclosure of the information related to student services like library resources/ sports activity/ medical services/counselling services	PT5	0.755	
TRUST IN AN INSTITUTION	The student services provided by the university can meet my interest.	TR1	0.83	0.699 0.874
	The university allows students to use/utilise the student services like co-curricular activities/ internet access/ computer and printing facilities.	TR2	0.808	
	The university performs its role of providing student services very well.	TR3	0.869	
STUDENT SATISFACTION	I am satisfied with the student services provided by the institution.	SS1	0.747	0.735 0.957
	My choice to enrol at my university was a wise one	SS2	0.821	
	I am satisfied with my decision to attend this institution.	SS3	0.873	
	In the future, I will recommend my relatives and friends to attend this institution.	SS4	0.876	
	If I had a choice to study again, I would still enrol in this institute.	SS5	0.873	
	I am happy with my decision to enrol in this institute.	SS6	0.902	
	I am happy with my experience as a student at my university	SS7	0.861	
	I did the right thing by choosing my university	SS8	0.894	

Note: Tang1, Rel1 and Rel2 were deleted due to low loadings.

can be seen, all eight constructs vastly exceed the AVE condition, implying that the investigation has established convergent validity.

The researchers used a heterotrait-monotrait correlation ratio (HTMT) to establish discriminant validity, which is superior to the commonly used Fornell-Larker criterion and cross-loading assessments (Ahrholdt et al. 2017; Henseler et al. 2015). According to the findings (Table 3), all the latent variable HTMT values are less than the conservative threshold of .90.

Evaluation of structural model (inner model). After the estimated Model met the Outer Model criteria, the measurement was performed by testing the structural Model (Inner Model) and examining the value of R-Square (R^2) on the variable (Fig. 2). Table 4 displays the R-Square (R^2) values on variables based on the measurement results. Based on the data in Table 4, the R Square value for the Students' Satisfaction variable was 0.569, and the R Square value for trust in an institution was 0.450. These figures of the coefficient of determination (R^2) produced by the Model suggest that 57% of the factors influencing students in Tanzanian HLIs to be satisfied could be accounted for by the study's Model. Also, the perceived transparency could explain 45% (R^2) of the variance in trust in an institution.

Direct effect test result. The research used *t*-statistics (*t*-test) to test hypotheses at a significance level of 5%. If a *p*-value of <0.05 (α 5%) was obtained in this test, it meant that the test was significant, and vice versa; if the *p*-value was more remarkable than >0.05 (α 5%), it told that the test was not significant. In assessing the path coefficient given in Fig. 1 and Table V, the direct effect of test results for each variable could be seen in the SmartPLS algorithm Results Table. Table 5 shows that the coefficient of the perceived transparency aspect is 0.671 as a result of testing the hypothesis, indicating that the transparency aspect positively affects trust in an institution.

A study found a significance value of *p* with values 0.000 < 0.05 to be significant, implying that transparency positively and significantly affects trust in an institution. The reliability aspect's coefficient was known to be 0.155, indicating that the reliability aspect positively impacts student satisfaction. A significant value of *p* with values 0.033 < 0.05 was substantial, implying that reliability positively and significantly affects student satisfaction. The coefficient value of the trust in an institution aspect was 0.378, indicating that the element of trust positively impacted students' satisfaction and a significant value of *p* with values 0.000 < 0.05. The coefficient values of the assurance, empathy, responsiveness, and tangibility aspects had a *p*-value of >0.05 (α 5%), indicating that they had a negative effect on student satisfaction. The researchers concluded that these aspects negatively and non-significant impacted student satisfaction. As a result, this study could not scientifically demonstrate that these factors were essential to student satisfaction.

Indirect effect test result. The study used the *t*-statistics test (*t*-test), which had a significance level of 5%; if the test received a *p*-value of <0.05 (α 5%), it meant that the test was significant, and vice versa if the *p*-value was more remarkable than >0.05 (α 5%), it meant that the test was not significant. The indirect test results of the analysed latent variables can be seen in Table VI. The indirect relationship can be seen from the results obtained in Table 6 that the indirect relationship between perceived transparency and students' satisfaction via trust in an institution variable was 0.254; when the *p*-value is 0.000 < 0.005, then the trust variable indirectly and significantly affected the Students'

Table 3 Heterotrait-monotrait (HTMT) criterion results.

	Assurance	Empathy	Perceived transparency	Reliability	Responsive-ness	Student satisfaction	Tangibility	Trust in an Institution
Assurance								
Empathy	0.870							
Perceived Transparency	0.825	0.874						
Reliability	0.795	0.815	0.792					
Responsiveness	0.889	0.901	0.907	0.889				
Student Satisfaction	0.673	0.675	0.708	0.688	0.694			
Tangibility	0.714	0.754	0.790	0.845	0.842	0.671		
Trust in an Institution	0.737	0.784	0.820	0.695	0.849	0.791	0.761	

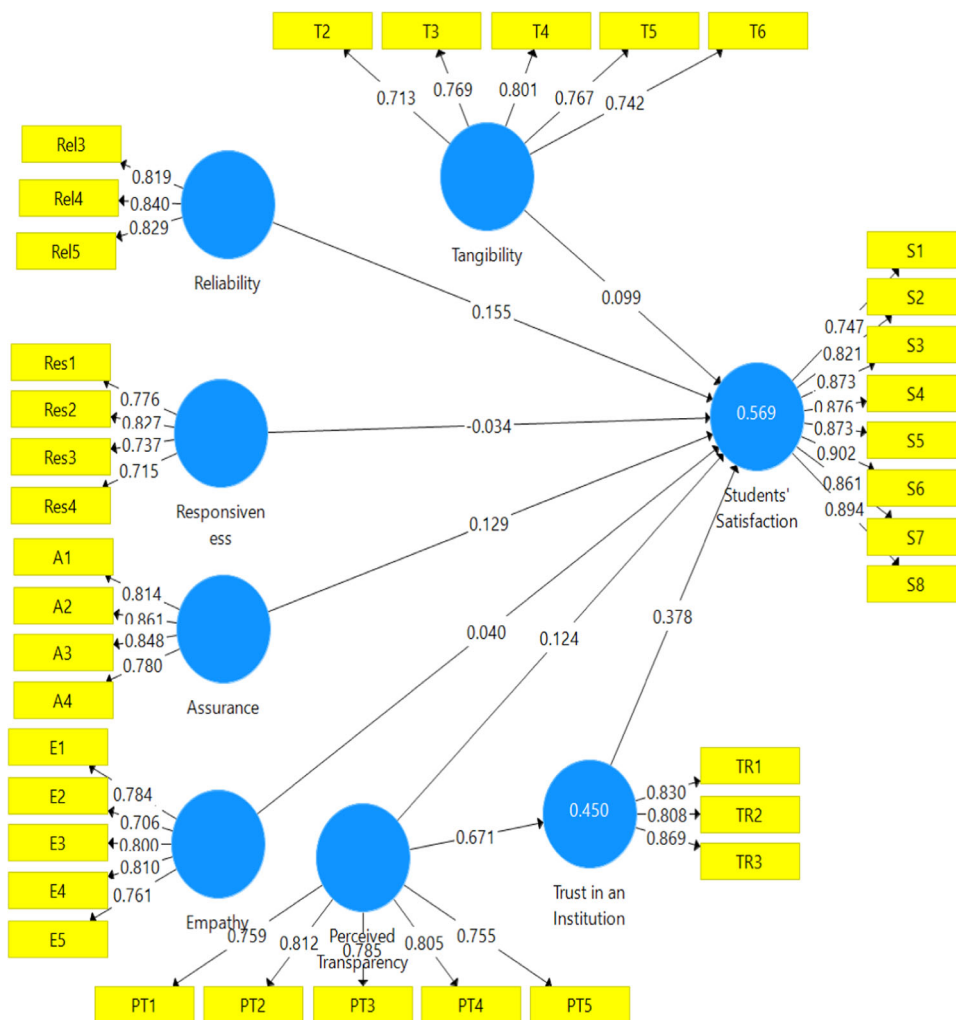


Fig. 2 Illustrated a modified structural equation model with direct and indirect effects. Modified measurement model showing the factor loadings for all variables and their measurement indicators.

Satisfaction. In other words, there is an indirect relationship between perceived transparency and student satisfaction through trust in an institution.

Mediation test result. The study used SmartPLS 3.0 to run the mediation test through bootstrapping steps. Hair et al. (2017) described the mediation test step-by-step. The researcher obtained the mediating test due to the "specific indirect effect." The next step

was to assess the level of mediation by examining the variance accounted for (VAF). VAF <20% is considered no mediation, VAF between 20 and 80% is partial mediation, and VAF >80% is regarded as complete mediation. Table 7 depicts the mediation test. As a result, trust in the institution partially mediated the influence of perceived transparency on students' satisfaction. The bootstrapping result indicates (see Table 8) that the indirect effect of perceived transparency on students' satisfaction through trust in an institution is statistically significant at the confidence interval of 95%.

Discussion

In accomplishing the first and second objectives, the researchers formed nine hypotheses for testing, which the study confirms in Table 9.

Supported hypotheses. The support of H2 ($\beta = 0.155, p \leq 0.05$) shows students are satisfied with the reliability of the HLIs service provider in performing the promised service dependably and accurately. This is explained by lecturers' expertise in transferring

knowledge to students and solving students' concerns. In South Africa, reliability is the strongest predictor of satisfaction through instructors' expertise. In addition, reliability in terms of the lecturers' punctuality in class teaching contributes to satisfaction. In Dodoma HLIs, reliability was essential to student satisfaction (Magasi et al. 2022). Higher satisfaction of students in Zambia was influenced by the prompt sympathetic delivery of the promised service (Mwiya et al. 2017). Empirically, the usefulness of expertise and punctuality in service provision as reliability measures in education service quality research are cemented.

The study results also support the relationship between transparency and trust by H6a ($\beta = 0.671, p \leq 0.05$). Students trust their HLI if the institution is transparent in disseminating information about the internship, student exchange, library resources, co-curriculum activities, counselling services, and handling student appeals and complaints. In Malaysia, bank transparency in information dissemination leads to higher trust of customers (Jassem et al. 2021). Furthermore, in the context of customer experience, the relevance of the items within the factors produced and the significantly higher factor loading values, ranging from 0.755 to 0.812, established sufficient validity. Also, the sharing procedures and private terms in the health sector made patients feel more in control and less at risk (Esmaeilzadeh, 2019). Further, greater disclosure, accuracy, and clarity facilitated stakeholder trust in an organisation (Schnackenberg and Tomlinson, 2016). A similar result was found by Medina and Rufin (2015), emphasising the relevance of the used perceived transparency measures for empirical research in education service quality.

The supported hypothesis H6b ($\beta = 0.378, p \leq 0.05$) denotes that the student's trust in the HLI's service providers influences satisfaction. Students believe the services of the HLI are socially responsible and always try to fulfil students' expectations. The social responsibility of education services in Tanzanian HLIs is evidenced by the government's support to students through loan schemes (Moneva et al. (2020). Also, the student-lecturer mentorship programs such as academic advisors and career counselling (Masengeni, 2019) prove social responsibility. The findings support those in Alzahrani et al. (2018); Saleem et al. (2017); and Medina and Rufin (2015) studies.

The bootstrapping result indicates that trust significantly mediates the relationship between perceived transparency and students' satisfaction (H7, $\beta = 0.254, p \leq 0.05$). The association has consistency with previous empirical findings where trust was a significant mediator of service quality. In developing countries, trust strongly mediated the effect of service quality and customer perceived value on satisfaction with home delivery service (Uzir et al. 2021). In Indian higher management education, trust mediated the relationship between staff competence, reputation, and competence on student satisfaction (Singh and Jasial, 2021). Customers' trust mediated banks' Sharia non-compliance and customer commitment to Islamic banks in Pakistan (Usman et al. 2021).

Not supported hypotheses. One of the non-support hypotheses is H1, related to tangibility and satisfaction. The changing trend

Table 4 R square.

	R square	R square adjusted
Student satisfaction	0.569	0.561
Trust on Institution	0.450	0.449

Table 5 Path coefficients.

	Original sample (O)	P values
Assurance -> Students' satisfaction	0.129	0.064
Empathy -> Students' satisfaction	0.040	0.588
Perceived transparency -> Students' satisfaction	0.124	0.134
Perceived transparency -> Trust in an institution	0.671	0.000
Reliability -> Students' satisfaction	0.155	0.033
Responsiveness -> Students' satisfaction	-0.034	0.663
Tangibility -> Students' satisfaction	0.099	0.101
Trust in an institution -> Students' satisfaction	0.378	0.000

Table 6 Indirect relationship assessment.

	Original sample (O)	P values
Perceived transparency -> Trust in an institution -> Students' satisfaction	0.254	0.000

Table 7 Mediation analysis with trust in the institution as the mediator.

Exogenous variable	Direct effect	Indirect effect (H6a*H6)	Total effect [Direct effect + Indirect effect]	V.A.F. range	Mediation
Trust in institution	0.378	0.254	0.632	0.402	Partial

Table 8 Indirect relationship assessment.

Hypothesis relationship		Path coefficient value	Path coefficient error	T statistics	P values	Confidence interval		Decision
						5%	95%	
H6	Perceived transparency -> Trust in an institution -> Students' satisfaction	0.254	0.043	5.858	0.000	0.177	0.345	Supported

Table 9 Confirmation of current hypotheses.

Research objective	Hypothesis (variables)	Relationship between studied variables
RO1: To examine how the dimensions of service quality relate to student satisfaction directly	H1 (Tangibility and satisfaction)	Not supported
	H2 (Reliability and satisfaction)	Supported
	H3 (Responsiveness and satisfaction)	Not supported
	H4 (Assurance and satisfaction)	Not supported
	H5 (Empathy and satisfaction)	Not supported
RO2: To examine how the perceived transparency, trust, and satisfaction relate directly and indirectly	H6 (Perceived transparency and satisfaction)	Not supported
	H6a (Perceived transparency and trust)	Supported
	H6b (Trust and satisfaction)	Supported
	H7 (perceived transparency, satisfaction, and trust)	Supported

of quality perception about tangibility in the modern world explains this. The digital revolution has shifted service value from tangibles to digital and online alternatives. In Saudi banks, customers did not consider tangibles an essential predictor of satisfaction because banks upgraded the digital services more than the interiors of the branches (Albarq, 2013). In higher learning, for example, the presence of online repositories lowers the value of physical libraries, and the presence of video lectures (i.e., youtube) degrades the importance of classroom facilities. Haming et al. (2019) found the same (no effect), while Sibai et al. (2021) found a negative impact of tangibility. This evidences the declining role of tangibility as a service quality dimension in services with high growth of ICT use.

The H3 is not supported as the HLI students do not share consistent behaviour towards the responsiveness of the institution’s service providers. The result follows from the absence of frontline staff always available to respond to student queries. This is due to the nature of the HLI, where the lecturer’s availability is limited to a few consultation hours, and the available administrative staff has limited service in academic matters. This result in the education sector is contrary to the case of the Iraq hospitality industry because hotels always have a frontline team to care for guests. While Hamming et al. (2019) found responsiveness to affect satisfaction, Sibai et al. (2021) found no effect. This contradiction calls for further research on determinants of the impact of responsiveness on satisfaction.

The study results do not support the hypothesis regarding the effect of assurance. Referring to it as a service provider’s capacity to guarantee safety and promise of service to win customers’ confidence (Haron et al. 2020), many findings contradict this study’s findings. Despite the teaching excellence, higher learning emphasis by the institutions ends at and is evaluated using students’ examination performance, lowering their assurance of acquired education beyond examinations. In banking, the safety and confidence of customers explained their satisfaction (Haron et al. 2020), and the same case was found in hotels (Ali et al. 2021) and health (Mashenene, 2019). In Yılmaz and Temizkan (2022), assurance affected satisfaction because students attached importance to the international prestige of their colleges in Turkey. This is not the case for Tanzania, a developing country where comparably, students’ international reputation in their institutions is lower. The effect of assurance was also found by Umoke (2020), Koay et al. (2022), and Magasi et al. (2022).

Empathy is not a significant variable, meaning that H5 is not supported because, in higher learning education, lecturers’/institutions’ empathy to customers (students) is limited and governed by rules and principles that demand more customer responsibility to the service provider than the opposite. For example, students’ well-being depends on their class attendance,

finishing assignments on time, and achieving minimum passes in examinations; empathy cannot affect these requirements. The situation is evident in a study by Mashenene (2019), which supports this assertion.

Although perceived transparency indirectly affects satisfaction through trust (H7), it is not significantly related to satisfaction directly (H6). The support of H6a shows students develop trust when they feel their HLIs are transparent in disseminating information. The support of H7 shows the mediation effect generated by the trust is significant. In other words, institutions can only develop trust after the students have experienced the transparency of service. As a result, if a group of respondents has not used an internship or student exchange service, they may be unable to evaluate the service’s transparency from service providers. The explanations explain why H6 is not supported. The finding is consistent with Porumbescu (2017), who found negative transparency concerning citizens’ satisfaction with public service provision because of information asymmetry.

Conclusions

While education service quality matters more, Tanzania’s educational policy reforms focus on enrollment growth (Amutabi, 2021). As a result, infrastructural developments (Mwapachu, 2010) and student financial support (Nahende, 2013) programmes are implemented, while reports show student dissatisfaction with education services persists (TCU, 2019). The dissatisfaction suggests, among other things, flaws in the pre-existing measurement models of service quality in Tanzanian higher education. Through a modified SERVIQUAL framework adopted by the study, evidence is clear that reliability is a significant predictor of student satisfaction. The implications for practice and public policy are profound. Promoting lecturers’ expertise in transferring knowledge and of all staff in solving students’ issues professionally, especially with punctuality, are effective strategies to raise students’ satisfaction with education service.

The evidence further suggests that transparency significantly affects students’ satisfaction through trust mediation. This implies that the Ministry of Education and HLIs must promote openness with which the institutions and employees disseminate information as they serve their customers (students). Particularly, HLIs need to improve transparency in sharing information about internship opportunities, student exchange programmes, co-curriculum activities, counselling services, and handling student complaints. The mediation effect of trust calls for higher education stakeholders to improve the social responsibility of their service and fulfil students’ expectations of the service. Theoretically, the study contributes to reconstructing the transparency

and trust-based service quality–satisfaction model to explain student satisfaction in Tanzanian higher learning institutions.

Future research can test the application of the transparency–trust-based service quality model in other sectors facing service quality problems, particularly public health and utilities. Secondly, while satisfaction is an important goal, much more is students' knowledge gained in the education given, measured by academic performance. Future studies should consider extending the Model by examining how students' satisfaction effects compare to academic performance effects. Thirdly, the non-support of service quality dimensions incorporated in the SERVQUAL Model and supported in other studies deserves close attention. It is crucial to determine which group of students is significantly impacted by particular service quality dimensions to realise the government's goal of encouraging more people to seek tertiary education and to support the sustainability of the local HLLs. For example, suppose the empathy dimension is an essential criterion of interest to the HLLs in developing a niche marketing and operating strategy. In that case, it is helpful for future researchers to explore the sub-dimensions that can explain empathy.

This current study looked into how service quality affects satisfaction, but student satisfaction is not the end goal of education. Using the DeLone and McLean model, future research can examine how satisfaction mediates the quality of the learning process and academic performance.

Data availability

The raw data used for this study is available upon request.

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Competing interests

The authors declare no competing interests.

Ethical approval

The institution's Scientific and Ethical Review Committee (SERC) reviewed and approved the instruments and methodology. Ethical review and approval were required for the study on human participants per UTAR institutional requirements.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Additional information

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