Evaluating Student Satisfaction with DTEF's E-Platform for Financing Applications in Botswana Using the RATER Model

Evaluación de la satisfacción estudiantil con la plataforma electrónica de DTEF para solicitudes de financiación en Botswana mediante el modelo RATER

Avaliação da satisfação dos estudantes com a plataforma electrónica da DTEF para pedidos de financiamento no Botswana utilizando o modelo RATER.

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ABSTRACT

The Department of Tertiary Education Financing (DTEF), a partially government-owned parastatal in Botswana, provides funding for tertiary students via its e-service platform, which facilitates direct interaction with applicants and students. Launched as part of the government's vision to establish a knowledge-based economy by 2036, the platform's rollout was accelerated by the COVID-19 pandemic's push for digital transformation in public services. This study aimed to evaluate the effectiveness of the DTEF e-service platform in enhancing student satisfaction. Employing a positivist philosophy and a quantitative research design, data were collected through structured questionnaires from 225 first-year students at BA ISAGO University, Gaborone Campus. Statistical analyses, including central tendency measures, regression, and correlation, were performed using SPSS Version 21. Results indicated a weak positive correlation between assurance, reliability, and tangibles and student satisfaction, while responsiveness and empathy demonstrated a stronger positive impact. The study recommends that DTEF prioritize improvements in assurance, reliability, and tangibles to elevate overall satisfaction. It concludes that continuous enhancement across all service quality dimensions is essential and encourages further research to pinpoint specific areas for platform development.

Keywords: e-service platforms, student satisfaction, SERVQUAL, tertiary education, Botswana

RESUMEN

El Departamento de Financiamiento de la Educación Terciaria (DTEF), una entidad paraestatal parcialmente estatal de Botsuana, financia la educación superior a través de su plataforma de servicios electrónicos, la cual facilita la interacción directa entre solicitantes y estudiantes. Lanzada como parte de la visión gubernamental de establecer una economía basada en el conocimiento para 2036,

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la implementación de la plataforma se aceleró debido al impulso que la pandemia de COVID-19 dio a la transformación digital de los servicios públicos. Este estudio tuvo como objetivo evaluar la efectividad de la plataforma de servicios electrónicos del DTEF para mejorar la satisfacción estudiantil. Empleando una filosofía positivista y un diseño de investigación cuantitativa, se recopilaron datos mediante cuestionarios estructurados aplicados a 225 estudiantes de primer año de la Universidad BA ISAGO, Campus Gaborone. Se realizaron análisis estadísticos, incluyendo medidas de tendencia central, regresión y correlación, utilizando SPSS versión 21. Los resultados indicaron una correlación positiva débil entre la seguridad, la confiabilidad y los elementos tangibles y la satisfacción estudiantil, mientras que la capacidad de respuesta y la empatía demostraron un impacto positivo más fuerte. El estudio recomienda que DTEF priorice mejoras en la garantía, la fiabilidad y los elementos tangibles para elevar la satisfacción general. Concluye que la mejora continua en todas las dimensiones de la calidad del servicio es esencial y anima a realizar más investigaciones para identificar áreas específicas para el desarrollo de la plataforma.

Palabras clave: plataformas de servicios electrónicos, satisfacción estudiantil, SERVQUAL, educación superior, Botsuana

RESUMO

O Departamento de Financiamento do Ensino Superior (DTEF), uma entidade semipública parcialmente estatal do Botswana, financia o ensino superior através da sua plataforma de serviços eletrónicos, que facilita a interação direta entre candidatos e estudantes. Lançada como parte da visão do governo de estabelecer uma economia baseada no conhecimento até 2036, a implementação da plataforma foi acelerada pelo impulso dado pela pandemia de COVID-19 à transformação digital dos serviços públicos. Este estudo teve como objetivo avaliar a eficácia da plataforma de serviços eletrónicos do DTEF na melhoria da satisfação dos alunos. Empregando uma abordagem positivista e um desenho de investigação quantitativa, os dados foram recolhidos através de questionários estruturados aplicados a 225 estudantes do primeiro ano da Universidade BA ISAGO, Campus de Gaborone. As análises estatísticas, incluindo medidas de tendência central, regressão e correlação, foram realizadas utilizando o SPSS versão 21. Os resultados indicaram uma fraca correlação positiva entre a segurança, a fiabilidade e a tangibilidade e a satisfação dos alunos, enquanto a capacidade de resposta e a empatia mostraram um impacto positivo mais forte. O estudo recomenda que a DTEF priorize melhorias na segurança, fiabilidade e aspetos tangíveis para aumentar a satisfação global. Conclui que a melhoria contínua em todas as dimensões da qualidade do serviço é essencial e incentiva a investigação adicional para identificar áreas específicas para o desenvolvimento da plataforma.

Palavras-chave: plataformas de serviços eletrónicos, satisfação dos estudantes, SERVQUAL, ensino superior, Botswana

1. Introduction

In today's fast-paced world, technology-facilitated transactions have become a defining feature of many industries, including higher education. Increasingly, customers (students, in this case) engage with technology directly to create service outcomes, rather than interacting with service employees (Rahi et al., 2020). Educational institutions have embraced technology as a means of enhancing student satisfaction by simplifying and improving access to their services. Technology adoption is particularly crucial for providing up-to-date and relevant information that meets students' evolving needs. The internet, for example, has enabled universities to rethink how they engage with students, offering more innovative and effective methods of service delivery (Chiguvi, 2018). Beyond serving as a platform for learning, the internet has also revolutionized university administrative services. Universities now leverage electronic service tools and platforms ranging from online learning management systems like WebCT and Blackboard, to virtual help desks delivered via networks such as local area networks, intranets, or the internet itself (Ohwo & Agusomu, 2018). These tools have positioned universities at the forefront of

online service provision, with services such as online enrolment, course delivery, academic support, and digital library lending becoming standard practice within the education sector (Garwe & Thondhlana, 2019). The development of these electronic-based services initially stemmed from the need to automate processes, thereby optimizing efficiency and effectiveness compared to traditional manual systems.

As students increasingly expect to perform administrative tasks independently, universities are responding to this demand by providing e-services that allow students to manage their academic and administrative affairs with minimal intervention from university staff. Nyamnjoh (2019) emphasized that academic work now extends beyond the classroom, with quality service delivery incorporating both intellectual and technical skills that are necessary to meet the competitive demands of the modern university. Thus, e-services represent a "win-win" situation for both students and universities, facilitating improved service access and delivery for students while reducing the administrative burden on universities (Chiguvi, 2018; Mthethwa et al., 2021).

The Botswana government has taken several initiatives to address poor customer satisfaction in the civil service such as Work Improvement Teams (WITS), setting up the Botswana National Productivity Centre (BNPC), implementing a performance-based reward system, developing good information and communication technology infrastructure in government departments (Jaiyeoba, Chimbise and Roberts-Lombard, 2018). Some of these intervention measures yielded expected results according to Chiguvi (2023), however, the problem of service quality delivery is still going on, despite interventions by both the government and the private sector.

A report by Okike and Small (2022) further stated that there has been concern about the improvement of productivity of the public or parastatals service in Botswana with concern often raised by government ministers and senior government officials. Unfortunately, there is a lack of in-depth empirical studies on this problem, particularly regarding the effectiveness of e-service delivery systems in improving service quality and measuring student satisfaction within Botswana's tertiary education sector. The absence of detailed studies to verify the existence and impact of e-customer service delivery in Botswana therefore remains a significant research gap.

Accordingly, since independence in 1966, Botswana has invested heavily on educating its citizens at tertiary education and training level. Spending an average of 4.5% of its Gross Domestic Product annually, the country is among the world's leading spenders on education. The Government has spent millions of dollars sending its young people in large numbers to study in diverse countries such as South Africa, Kenya, Ghana, Nigeria, Malaysia, China, Australia, Canada, the United States, the United Kingdom, Germany, Russia and many others. However, considering the high costs involved in these external placements and in light of growing demands for tertiary education among citizens as well as a projected decline in revenue, the Government has since the mid-2000s started to search for alternative measures to continue training at a reduced cost (Okike and Lobadi, 2019). The current system of financing tertiary education is found to be both inefficient and unsustainable. Therefore, a new initiative on reforming the tertiary education funding policy has been initiated and it is intended to inculcate a strong culture of efficiency and accountability in the institutions as well as to

come up with alternative financing strategies that involve parents, learners and private sector (Okike and Small, 2022). Studies have been done to determine how e-customer services affect customer satisfaction in the banking business, health care, insurance, as well as the educational sector (Rita et al., 2019; Ohwo and Agusomu, 2018; Melubo and Musau, 2020). Unfortunately, to the best knowledge of the researcher, no studies have been conducted to determine how the quality of e-customer service affects customer satisfaction with the Department of Tertiary Education Financing (DTEF), which is the financial backbone of Botswana's education sector. Specifically, there is limited understanding of how the DTEF's online platforms, such as, its student loan application portal, sponsorship management system, and communication interfaces contribute to students' overall satisfaction with service accessibility, responsiveness, reliability, and efficiency. Therefore, it is against this background that the present study seeks to analyze the effectiveness of DTEF's e-service platforms in enhancing student satisfaction, with the aim of identifying key dimensions of service quality that influence students' perceptions and experiences.

2. Literature Review

2.1 Service quality

Service quality refers to the customer's overall assessment of the excellence or superiority of a service (Chiguvi, 2021). Service quality is commonly defined as a customer's perception of how well a service meets or exceeds their expectations (Abadi et al., 2020). According to Alabboodi (2019), services are characterized by unique attributes that make performance evaluation particularly challenging. Due to their intangible nature, services are difficult to quantify, especially for first-time users who may struggle to assess the value being offered. The delivery of services is further complicated by the human element involved; each employee may deliver the same service differently, and even the same employee's performance can vary depending on external factors such as time of day or workload (Tompkins & Neale, 2018; Masud, 2019). Understanding customers' perceptions across key dimensions is crucial, as it enables managers to align service delivery with client expectations and enhance satisfaction. As Adam et al. (2022) note, when customer requirements are clearly identified and understood, service providers are better equipped to meet their needs effectively. Over the years, various scholars have offered definitions of service quality. For instance, Alauddin et al. (2021) describe it as a comparative function that bridges customer expectations and the actual service provided. Foster and Gardner (2022) view service quality as the foundational capability of an organization to meet desired customer expectations, while Chikazhe et al. (2023) frame it as a long-term evaluative judgment. Among these, the definition by Raza et al. (2020) remains one of the most widely accepted, emphasizing the perceptual nature of service quality as a customer-driven assessment of performance over time. It is a critical factor in determining customer satisfaction, loyalty, and competitive advantage. Service quality is often evaluated based on the gap between customer expectations and their actual experiences.

Service quality plays a significant role in determining student satisfaction, particularly in the context of digital service delivery in higher education financing (Zaheer, et al., 2015; Lu & Khan, 2024). In Botswana, the Department of Tertiary Education Financing (DTEF) has adopted e-service platforms to streamline the application process for government sponsorships to tertiary institutions. These

platforms are intended to enhance efficiency, accessibility, and transparency in processing student funding applications. However, the effectiveness of these digital systems is often judged by the students based on dimensions such as system reliability, ease of use, responsiveness of support, and clarity of communication. When service quality falls short, for example, through delayed responses, technical glitches, or lack of user-friendly features among other reasons, students may experience frustration and reduced satisfaction. Conversely, when the e-platform performs reliably and meets their expectations, students tend to express greater satisfaction and trust in the system. Evaluating the service quality of DTEF's e-service platforms is therefore critical in understanding how well these tools meet the needs of students and contribute to a positive experience in accessing tertiary education funding.

Several models and frameworks have been applied by researchers to uplift students' satisfactions in higher education literature. One of the most widely used models for measuring service quality is the SERVQUAL model, developed by Parasuraman, Zeithaml, and Berry (1988). SERVQUAL is a most popular widely used service quality model which has been applied to measure students' satisfaction around the world. SERVQUAL is a questionnaire designed, developed, and tested in the business environment by Parasuraman (1985) to measure the service quality and customer satisfaction of a business based on five dimensions: tangibility, reliability, empathy, responsiveness, and assurance. The conceptual model in Figure 1 displays the independent variables (Responsiveness, Assurance, Reliability, Tangible, and Empathy) and the dependent variable (student satisfaction).

Figure 1. Conceptual framework
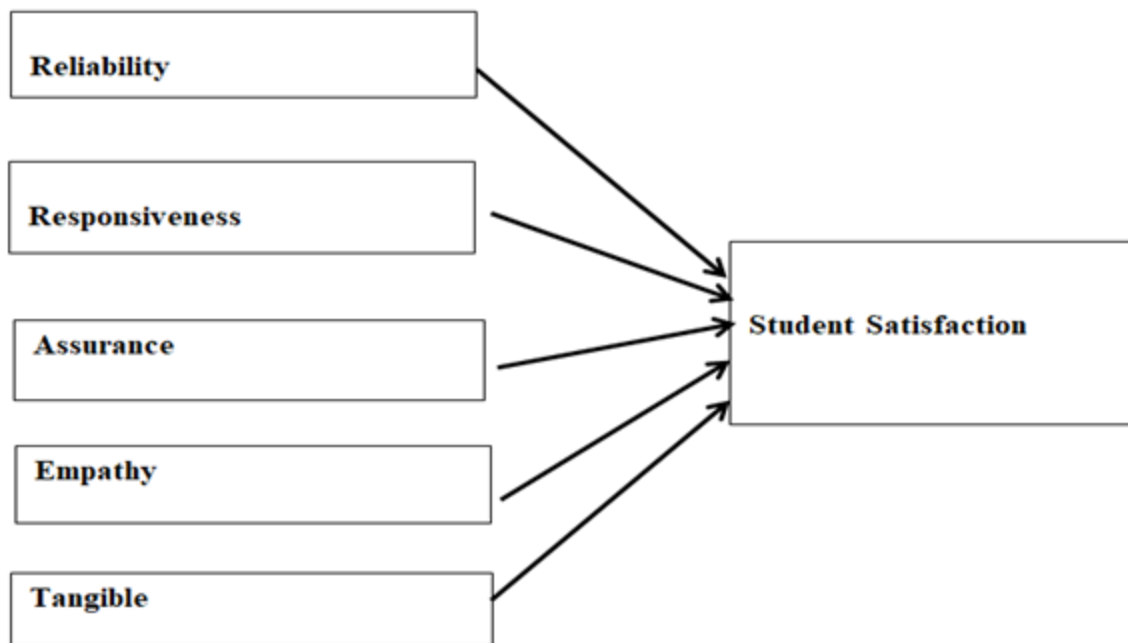
2.1.1 Electronic Service Quality

The researchers acknowledges that while service quality has been extensively explored in marketing literature over the past three decades, its application to e-commerce platforms, particularly in Botswana, remains relatively novel. In transitioning from traditional to digital environments, the concept of e-service quality has emerged to address the distinct dynamics of online service delivery. Ardani et al. (2019) define e-service quality as the consumer's overall evaluation of the excellence and value of services offered in virtual environments. More specifically, Zeithaml, as cited in Aremu et al. (2018), describes e-service quality as the extent to which a website enables efficient and effective browsing, purchasing, and delivery of goods and services. This definition is widely accepted due to its relevance in today's digital consumer landscape. Unlike traditional commerce, where many service elements remain unnoticed or are mediated by frontline staff, online platforms expose every stage of the service process to the consumer. As noted by Arora and Narula (2018), consumers can navigate e-retail platforms at their own pace, without the guidance of sales representatives. This autonomy leads customers to evaluate each step of the e-service journey in detail from website navigation and information accuracy to checkout efficiency and delivery reliability. Consequently, consumers perceive e-service not just as an outcome, but as an integrated process involving multiple interrelated components. Furthermore, Aung (2016) found that online consumers are more sensitive to negative service incidents than they are positively influenced by efficient performance. This means that service failures or technical disruptions can significantly diminish customer trust and satisfaction. The ease with which customers can compare services across different e-retailers online further amplifies the importance of maintaining high-quality e-service delivery. In the digital marketplace, e-service quality becomes a crucial differentiator, shaping consumer choices and loyalty. For service providers in Botswana, especially government-related entities like the Department of Tertiary Education Financing (DTEF), ensuring excellence in digital service delivery is essential to fostering trust, improving accessibility, and enhancing student satisfaction in the online application process.

2.1.2 Elements of Service Quality

Service quality is a multi-dimensional factor. E-service quality has been defined as the extent to which a Web site facilitates efficient and effective shopping, purchasing, and delivery (Ayele et al., 2020). However, academics argue that this definition is too narrow and e-service quality should cover the complete spectrum of service offerings, rather than focusing exclusively on transaction-specific elements. Thus, service quality now can be defined as the consumer's evaluation of the process and outcome quality of the interaction with the service provider's electronic channels (Bambale et al., 2020). Several different dimensions (tangibility, reliability, responsiveness, assurance, and empathy) have been taken into account by academics in order to measure e-service quality. The researcher has gone through a large pool of literature's and summed up the exploratory study in order to come up with a limited set of dimensions which will adequately encompass the service quality.

Table 2.1 Analysis of Service Quality Dimensions

Author	Dimension of Service Quality
Chiguvi 2023, Johnson & Karlay, (2018); Nguyen et al., (2018); Barusman, (2019); Anwar, (2017)	Tangibility
Chiguvi 2023, Zhang et al., (2018); Izogo, (2017); Idayati et al., (2020); Uppal, Ali, and Gulliver, (2018)	**Reliability**
Chiguvi 2023, Pakurár et al., (2019); Farooq et al., (2018); Othman et al., (2019)	Responsiveness
Chiguvi 2023, Ramya et al., (2019); Izogo, (2017); Meesala and Paul, (2018); Janahi et al., (2017)	**Assurance**
Chiguvi 2023, Bahadur et al., (2018); Balinado et al., (2019); Ali et al., (2019); Fida et al., (2019)	Empathy

2.2. Student satisfaction

Student satisfaction remains a critical indicator of institutional performance in higher education, and its significance is amplified when public funding mechanisms are involved. In Botswana, the Department of Tertiary Education Financing (DTEF) plays a central role in facilitating access to higher education by offering financial sponsorships to eligible students. Given this mandate, the quality of DTEF's services particularly through its digital platforms has a direct impact on students' educational journeys, from application and approval processes to the receipt of allowances and academic monitoring. The growing body of international research underscores the importance of student satisfaction, as seen in the breadth of studies, conceptual models, and geographical diversity of scholarship (Ikram & Kenayathulla, 2022; Rossini et al., 2021; Cai et al., 2016). Within this broader context, measuring student satisfaction with DTEF services provides valuable insights into the efficacy, transparency, and user-friendliness of government-supported educational financing.

Feifei et al. (2021) argue that student satisfaction can be examined from two angles: as a longitudinal evaluation of the student experience from sponsorship application to graduation or as a post-service assessment, similar to how consumers evaluate purchased products. Both perspectives are relevant in the case of DTEF. Students engage with the department at multiple touchpoints, including online application portals, physical follow-ups, communication with officers, and the timely disbursement of living allowances. Each of these components contributes to the overall satisfaction with the service provided. In this sense, DTEF is not only a funding body but also a service provider whose effectiveness impacts academic access, retention, and success.

Students, as the primary stakeholders and beneficiaries of DTEF's services, are essential evaluators of the department's performance. Ikram and Kenayathulla (2022) and Elliott and Shin (2002) assert that students are

central to institutional outcomes and must be understood in terms of what they value most. In the DTEF context, these values include timely processing of applications, clarity of communication, responsiveness to queries, and seamless integration of digital systems. A study conducted in the U.S. found that student satisfaction significantly influences university reputation and prospective applicant interest (Visipoint.com, 2023) a finding that can be extended to public bodies like DTEF, whose reputation can affect public trust and student morale.

Kanwar and Sanjeeva (2022) define student satisfaction as an attitudinal response based on the overall educational experience, including service provision and institutional support. Applied to DTEF, this definition highlights the importance of service delivery as a determinant of satisfaction. From a service marketing perspective, Hakim (2014) suggests that satisfaction results from the perceived quality of services delivered. Oliver (1989) further defines student satisfaction as "the favorability of a student's subjective judgment of the many outcomes and experiences involved with education." In the case of DTEF, these outcomes extend beyond the classroom to include the student's experience with accessing public sponsorship, a crucial enabler of tertiary education in Botswana. Thus, periodic evaluation of student satisfaction with DTEF services especially in the increasingly digitalized application and communication environment is not only necessary but strategic. Such evaluations enable the department to identify gaps, streamline service processes, and align digital platforms with user needs. Ultimately, high student satisfaction enhances the credibility of DTEF, improves operational efficiency, and supports Botswana's broader goals of equitable access and excellence in higher education.

2.3 Hypotheses Development

Responsiveness

Responsiveness requires the service providers able to respond sharply to requests and suggestions, and to give assistance for customers in case of problems (Pitchayadejanant, 2019). Customers have recognized a fast response as a tool for high-quality service (Nguyen et al., 2018), but in practice, many companies fail in this dimension. Here, responsiveness is defined as the magnitude to which customer feedback is taken into attention and the promptness of reply. Consumers expect that e-retailers must respond to their inquiries promptly. Though Changchit and Klaus, (2021) has observed that in comparison to physical service providers, e-retailers often lack real-time interaction with the customers. Two important aspects regarding responsiveness are the speed of information retrieval and the load time of website. Consumers want to find accurate information quickly. If the loading time of the website is delayed, the consumer might look for another provider (Ibrahim, 2018). Since responsiveness reflects customer's perceptions of the service provider's ability and willingness to respond to customer needs, it is also expected to impact loyalty. As a consequence, the researcher hypothesizes that;

H1: There is a significant relationship between Responsiveness and Student Satisfaction.

Reliability

Reliability means the correctness of order fulfillment, prompt delivery, and billing accuracy (Taherdoost, 2018). Reliability is a widely used dimension of service quality and its prolific use made it an essential component of the quality. Reliability is a

dominant dimension of traditional service quality. In the case of e-service quality, it has no less importance. Meesala and Paul, (2018) found out that customer loyalty and/or intentions to repurchase can be predicted from reliability ratings. Arora and Narula, (2018) suggested that reliability is formed from on-time and accurate delivery, accurate product representation, and other fulfillment issues. It may also reflect technical reliability such as the proper functioning of the website. As a consequence, the researcher hypothesizes that;

H2: There is a significant relationship between Reliability and Student Satisfaction

Assurance

According to Mhlanga and Siyongwana, (2018), assurance is the extent to which service providers are able to inspire trust and confidence by being knowledgeable and courteous when performing a service. Assurance is also described as the ability to build trust in customers about services, staff's knowledge, and skills (Rai, and Prabhu, 2022). The dimensions used to measure assurance are comfort, politeness, confidence, no complaint, and belief (Kebede, 2020). It's because of such that guarantee is also used as a term that defines assurances; a guarantee - an expressed or implied assurance of the quality of goods offered for sale or the length of satisfactory use to be expected from a product (Oyuko, 2022). The importance of assurance as one of the five dimensions of the SERVQUAL model on customer satisfaction is also outlined as follow from previous research. Thus the researcher hypothesizes that;

H3: There is a significant relationship between Assurance and Student Satisfaction

Empathy

Parasuraman, Zeithaml and Beryl (1985) defined empathy as a caring and individual attention that the firm provides to its clients. It involves giving individual attention to employees who understand the needs of their customers and customer facilities during business hours (Tuncer et al., 2021). Empathy is the provision of caring, individualized attention to customers which entails informing the customers in a language they can understand, understanding the customer's specific needs, and providing individualized attention (Raza et al., 2020). Also, Song, (2020) defined empathy as the ability to make customers feel welcome, 34 especially by staff contacts. These definitions have similarities in 'caring' and individualized attention the firm provides its customers. Further, this is an application where the employees search for solutions (Masud, 2019). Empathy is related to how the service providers are keen to care for customers' attention and the level of understanding they demonstrate relative to customer needs (Gopi and Samat, 2020). The researcher hypothesizes that;

H4: There is a significant relationship between Empathy and Student Satisfaction

Tangible

Developed as one of the five dimensions of SERVQUAL, tangibility represents physical facilities, equipment, and appearance of staff (Tan, 2019). According to Wahid et al., (2017), tangibility of a service describes the way a client perceives physical facilities, equipment, personnel, and material. It includes anything that can be sensed by the five basic human senses. According to previous studies, tangibility is one of the factors that influence service quality and have a direct impact on customer expectations in the service industry. One of the key differences between services

and goods is that goods are tangible and services are intangible. The intangible nature of service can complicate the measurement of service to understand the factors that must be improved to achieve the highest standards of quality (Bambale et al., 2020). Thus the researcher hypothesizes that;

H5: There is a significant relationship between Tangibles and Student Satisfaction

3. Research and Methodology

Research philosophy

This study employed a positivist research paradigm. Jansen (2023) argues that positivism is rooted in the belief that knowledge can be obtained through objective observations and measurements. In other words, the positivist philosophy assumes that answers can be found by carefully measuring and analyzing data, particularly numerical data. This philosophy fits well in this study because it assisted the researcher in measuring the structural relationship between the independent and dependent variables of the study.

Respondents

This study's targeted population comprised all first-year students at BA ISAGO University Gaborone campus, Botswana. BA ISAGO University is one of the leading private universities in Botswana and according to DTEF 2023 statistics; BA ISAGO University has received 930 new students for the July–August 2023 intake. A total of 300 questionnaires were distributed to students funded by the Department of Tertiary Education Financing (DTEF). Of these, 225 were fully completed and returned, representing a 75% response rate. The remaining 75 questionnaires were either incomplete or not returned. Therefore, data analysis was based on the 225 valid responses received.

Data Collection

A structured questionnaire was used to collect data. To check the internal consistency of the questionnaire, Cronbach's Alpha was used and calculated. For internal validity, the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy was conducted through SPSS. Nunnally and Bernstein (1994) mentioned that the validity of variables which are close to or above the value of 0.6 can be acceptable and deemed effective for conducting the study.

Data Analysis

The collected data was statistically analyzed using the Statistical Package for the Social Sciences (SPSS) version 21. Measures of central tendency were employed to analyze the data using descriptive statistics. After determining the descriptive statistics of the study, inferential statistics was used to test the research hypotheses to determine the effectiveness of e-service platform on student satisfaction.

4. Findings and Discussions

Statistical Reliability

Table 1: Shows the results of Cronbach's Alpha of the study variables

Cronbach's Alpha for variables	Cronbach Alpha	Conclusion
Assurance	0.808	Reliable
Responsiveness	0.976	Reliable
Reliability	0.894	Reliable
Empathy	0.886	Reliable
Tangibles	0822	Reliable

The study results in Table 1 shows Cronbach's Alpha for the variables of the study and the alpha coefficient for all of the multiple-item measures are higher than 0.7, which proves that all of the items have relatively high internal reliability in this study. Furthermore, all of the Cronbach's alpha results are above 0.8 which is really good score of being reliable and indicates a very high level of internal consistency of the scale of the study. Therefore, all the measurement items are considered acceptable and deemed effective to conduct the study.

Validity

Table 2: Kaiser-Meyer-Olkin (KMO) index for variables

Variables	KMO Index	Df	Conclusion
Assurance	0.642	3	Valid
Responsiveness	0.738	2	Valid
Reliability	0.764	2	Valid
Empathy	0.744	2	Valid
Tangibles	0.698	2	Valid

The study set the KMO threshold at 0.6. The analysis from the KMO test indicates that the variables were sufficient for internal validity, as KMO values for all the study variables exceeded 0.6. According to Kaiser (1974) and Hair et al. (2010), KMO values above the threshold suggest that the correlation patterns among variables are compact enough to produce reliable factors, which supports the construct validity of the measurement items. This implies that the items effectively capture the underlying dimensions of service quality (assurance, responsiveness, reliability, empathy, and tangibles) and are theoretically aligned with the constructs they are intended to measure.

Descriptive Statistics

Table 3: Descriptive statistics for the Assurance of the DTEF e-service platform

Item code	Item description	Mean score	Mean response	SD
AS1	The E-service platform performs the service easily the first time.	1.54	Disagree	1.019
AS2	E-service platforms are easily accessible at all times.	3.86	Agree	0.951
AS3	E-service platforms have sufficient information.	4.82	Strongly Agree	0.865
AS4	E-service platform information is easy to understand.	1.87	Disagree	0.832
	Overall	3.02	Agree	0.918

The results in Table 3 indicate that DTEF e-service platforms have sufficient information with a mean score of 4.82 and standard deviation of 0.865. This infers that e-service platform is having much of the information that the prospective student need to know and have when making an online application on the system. However, many students disagreed that the DTEF e-service platform performs the service easily the first time. This was confirmed with a mean score of 1.54. This infers that the e-service platform has got some errors and issues and this need to be improved in the future to reduce too much time and also to minimize repetition. Many students concurred that the DTEF e-service platform is easily accessible all the time, with a mean score of 3.86. This finding is commendable since this improves efficiency and student satisfaction. However, many students disagreed that the DTEF e-service platform information is easy to understand with a mean score of 1.87. This infers that DTEF needs to simply the terminology used in the system and if possible even use vernacular language to make it easier for the students to quickly understand the system.

Table 4: Descriptive statistics for the Responsiveness of the DTEF e-service platform

Item code	Item description	Mean score	Mean response	SD
RE1	E-service platforms give students prompt service.	1.42	Disagree	0.042
RE2	You are conversant with all the stages in the e-service platform	2.36	Neutral	0.651
RE3	The instructions on the system are prompt	3.48	Agree	0.365
	Overall	2.42		

The data findings in table 4 revealed that the responsiveness of the DTEF e-service platforms is not effective. This is confirmed with the overall mean score of 2.42 on all the measurement items which were measured. The students disagreed that DTEF e-service

platform give them prompt service and this was confirmed with a mean score of 1.42. However, the students have agreed that the instructions on the system are prompt with a mean score of 3.48. The majority of the students were neutral on the statement that they were conversant in all the stages of the e-service platform. This infers that more educational campaigns are needed to ensure full utilization of the system and increase the degree of responsiveness to the users of the system.

Table 5: Descriptive statistics for the Reliability of the DTEF e-service platform

Item code	Item description	Mean score	Mean response	SD
REL1	DTEF e-service staff call back the students to give instructions	3.34	Agree	0.234
REL2	The DTEF system is consistent throughout the process	1.82	Disagree	0.874
REL3	DTEF e-service platforms are always error-free.	2.34	Neutral	0.965
	Overall	2.50		

Majority of the students are neutral on this variable with an overall mean score of 2.50 and a standard deviation of 0.691. The respondents disagreed that the DTEF system is consistent throughout the process. This was confirmed with a mean score of 1.82. However, the students agreed that DTEF staff call them back to give instructions or support. The students were neutral on the statement that the DTEF e-service platform is always error-free. This infers that the system has some glitches that require DTEF to investigate to avoid errors.

Table 6: Descriptive statistics for the Empathy of the DTEF e-service platform

Item code	Item description	Mean score	Mean response	SD
EM1	DTEF e-service representatives are on call around-the-clock.	3.69	Agree	0.019
EM2	DTEF staff interacts with me in a respectful and kind manner	4.24	Agree	0.744
EM3	I think DTEF has my best interests in mind.	4.42	Agree	0.684
	Overall	4.12	Agree	0.482

The data findings in Table 6 indicated that the majority of the students agreed that there is empathy at DTEF. The students agreed that DTEF staff interacts with them in a respectful and kind manner with average score of 4.24 and the students also greed that DTEF has the best interest in mind with them with a mean score of 4.42. This result indicates that DTEF is doing well in this regard, although there is still room for improvement in order to give total student satisfaction.

Table 7: Descriptive statistics for the Tangibles of the DTEF e-service platform

Item code	Item description	Mean score	Mean response	SD
TA1	The organization of e-service platform at DTEF is good	4.32	Agree	0.637
TA2	DTEF e-service platforms provide easy-to-understand features for guidance.	2.89	Neutral	0.422
TA3	The navigation on e-service systems is standardized and uniform.	3.64	Agree	0.924
	Overall	3.74	Agree	0.661

The data findings in Table 7 revealed that majority of the students agreed that DTEF tangibles are good with an average score of 3.74. The students agreed that the organization of the e-service platform at DTEF is good and they also believed that the navigation of e-service systems is standardized and uniform. However, the students were neutral on the statement that DTEF e-service platforms provide easy-to-understand features for guidance. This finding is in line with the study results in Tables 5 and 6 respectively where the majority of the students mentioned that they are not conversant with all the stages in the e-service platform.

Hypotheses Testing

Table 8: Regression analysis results for the relationship between assurance and student satisfaction.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.307ᵃ	.841	.841	10.62101
a. Predictors: (Constant), Assurance				

Table 9: Hypothesis test results on the relationship between assurance and students satisfaction

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
B	Std. Error	Beta			
1 (Constant)	18.294	11.467		1.595	.14
Assurance	.421	.396	.307	1.064	.000
a. Dependent Variable: Student Satisfaction					

The data result in Table 8 indicates that there is positive relationship between assurance of the e-service platforms and student satisfaction at DTEF. This infers

degree and extend of the impact of assurance is only positively influencing approximately 30.70 % of student satisfaction at DTEF (β = 0.307, t-value = 1.064, and p-value = 0.000). Table 9 also confirmed that there is a weak or low positive association between assurance of the DTEF e-service platform and student satisfaction (r = 0.307, p-value = 0.000). Therefore, hypothesis one is partially supported in this study.

H1: The assurance of e-service platforms has got significant impact on student satisfaction at DTEF.

5. Discussion of the result

The study results in Table 9 indicate there is a low relationship between assurance and student satisfaction. This result is not in line with the study results from other scholars (Gummerson, 1996; Armstrong, 2004; Kotler and Keller, 2014 and Kinger, 2022) who all postulated that there is a strong relationship between assurance and customer satisfaction. This infers that DTEF needs to improve its system and identify the system gaps to improve student satisfaction. It shows that some system glitches need some attention to enhance service delivery at DTEF.

Table 10: Regression analysis results for the relationship between responsiveness and student satisfaction

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.527[a]	.841	.841	10.62101
a. Predictors: (Constant), Responsiveness				

Table 11: Hypothesis test results on the relationship between responsiveness and students satisfaction

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
B	Std. Error	Beta			
1 (Constant)	13.294	12.467		1.232	.10
Responsiveness	.521	.496	.527	1.038	.000
a. Dependent Variable: Student Satisfaction					

The data result in Table 10 indicates that there is a strong positive relationship between the responsiveness of the e-service platforms and student satisfaction at DTEF. This infers degree and extend of the impact of responsiveness is only positively influencing approximately 52.70 % of student satisfaction at DTEF (β = 0.527, t-value = 1.038, and p-value = 0.000). Table 11 also confirmed that there is a significant positive association between the responsiveness of the DTEF e-service platform and student satisfaction (r = 0.527, p-value = 0.000). Therefore, hypothesis two is supported in this study.

H2: The responsiveness of e-service platforms has got significant impact on student satisfaction at DTEF.

6. Discussion of the result

The study result indicated there is a significant positive association between responsiveness and student satisfaction. This infers that student want an e-service platform that is responsive to their needs and expectations. This finding was also confirmed by many researchers (Chiguvi, 2023; Dube, 2015; Thompson 2022 and Malema 2023) who all concurred that there is a strong association between responsiveness and customer satisfaction. Another study by Chinedu (2019) also indicated that robust e-service platforms increase student satisfaction. This implies that DTEF should enhance its system and make it more responsive at all times.

Table 12: Regression analysis results for the relationship between Reliability and student satisfaction

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.264ᵃ	.841	.841	10.62101
a. Predictors: (Constant), Reliability				

Table 13: Hypothesis test results on the relationship between reliability and students satisfaction

Coefficients					
Model B	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Std. Error	Beta			
1 (Constant)	12.294	10.467		1.495	.14
Reliability	.421	.296	.264	1.022	.000
a. Dependent Variable: Student Satisfaction					

Table 12 revealed that the effectiveness of reliability of e-service platforms are positively linked with student satisfaction at DTEF. This shows that the effectiveness of reliability of e-service platforms are making approximately 26.4% of student satisfaction at DTEF (β = 0.264, t-value = 1.022 and p-value = 0.000). The correlation value (r = 0.264, p-value = 0.000) in Table 11 and Table 12. This result demonstrates that weak positive relationship between the reliability of e-service platforms and student satisfaction at DTEF. Therefore, hypothesis three is partially supported in this study.

H1: The reliability of e-service platforms has got significant impact on student satisfaction at DTEF.

7. Discussion of the result

The study results in Table 12 indicate that there is a weak positive relationship between reliability and student satisfaction at DTEF. This result is not in line with the study findings by Habaragoda (2021) and Hennayake (2017) who all confirmed that there is a strong positive relationship between reliability and customer satisfaction. Felix (2017) also opined that there is a strong positive relationship between reliability and customer satisfaction.

A study by Turner et al (2017) also revealed that reliability had a substantial affirmative influence on customer satisfaction. This was also corroborated by Teshome (2020) who mentioned that there is positive correlation between reliability and customer satisfaction. This implies there is room for improvement in this variable if DTEF is to be competitive and have a sustainable e-service platform.

Table 13: Regression analysis results for the relationship between empathy and student satisfaction

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.678[a]	.841	.841	10.62101
a. Predictors: (Constant), Empathy				

Table 14: Hypothesis test results on the relationship between empathy and students satisfaction

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
B	Std. Error	Beta			
1 (Constant)	11.244	11.488		1.745	.14
Empathy	.621	.496	.678	1.028	.000
a. Dependent Variable: Student Satisfaction					

The data result in Table 13 indicates that there is a strong positive relationship between empathy for the e-service platforms and student satisfaction at DTEF. This infers degree and extend of the impact of empathy is only positively influencing approximately 67.80 % of student satisfaction at DTEF (β = 0.678, t-value = 1.028 and p-value = 0.000). Table 14 also confirmed that there is a significant positive association between empathy for the DTEF e-service platform and student satisfaction (r = 0.678, p-value = 0.000). Therefore, hypothesis four is supported in this study.

H4: The empathy of e-service platforms has got significant impact on student satisfaction at DTEF.

8. Discussion of the result

The study results in table 14 clearly indicated that there is positive relationship between empathy and student satisfaction at DTEF. This result is in line with the study findings by Habaragoda (2021) and Hennayake (2017) who all confirmed that there is a strong positive relationship between empathy and customer satisfaction. Chiguvi (2023) also opined that there is a strong positive relationship between empathy and customer satisfaction. A study by Turner et al (2017) also revealed that empathy had a substantial affirmative influence on customer satisfaction. This was also corroborated by Teshome (2020) who mentioned that there is a positive correlation between empathy and customer satisfaction.

Table 15: Regression analysis results for the relationship between tangibles and student satisfaction

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.442ª	.821	.842	10.7420
a. Predictors: (Constant), Tangibles				

Table 16: Hypothesis test results on the relationship between tangibles and students satisfaction

Coefficients					
Model B	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Std. Error	Beta			
1 (Constant)	16.288	12.654		1.442	.10
Tangibles	.221	.496	.442	1.044	.000
a. Dependent Variable: Student Satisfaction					

Table 15 revealed that the tangibles of DTEF e-service platforms are positively linked with student satisfaction. This shows that the DTEF tangibles are contributing approximately 44.20% of student satisfaction ($\beta = 0.442$, t-value = 1.044 and p-value = 0.000). Correlation value (r = 0.442, p-value = 0.000) in table 15 and table 16 respectively shows that the tangibles of DTEF e-service platforms are significantly positively linked to student satisfaction. This result demonstrates that there is a weak relationship between the tangibles of DTEF e-service platforms and student satisfaction. Therefore, hypothesis five is partially supported in this study.

H5: The tangibles of e-service platforms have got significant impact on student satisfaction at DTEF.

9. Discussion of the result

The study results in Table 16 indicate that there is a positive relationship between tangibles and student satisfaction. This result corroborates the study findings by Mufudza (2022) who also confirmed that there is

tangibles of e-service platforms that are positively linked to customer satisfaction. A study by Hwekete (2020) and Stomps (2023) also confirmed that there is a significant association between tangibles and customer satisfaction. However, the contribution of DTEF tangibles towards student satisfaction is below 50% and this indicates that more work of improvement is needed for the system. The study results in Table 16 shows that the tangibles of e-service platforms are only contributing to 44.20% of student satisfaction.

Theoretical And Practical Implications

This study holds significant theoretical and practical implications for both academia and policy implementation. Theoretically, it contributes to the growing body of literature on service quality and student satisfaction within public sector digital services, particularly in the underexplored context of higher education financing in Sub-Saharan Africa. By applying the RATER model which assesses service quality based on reliability, assurance, tangibles, empathy,

and responsiveness; the study provides a structured and empirically grounded framework for evaluating e-government platforms beyond the traditional private-sector orientation. It extends the application of the RATER model to public digital services, offering a conceptual lens to examine how service quality dimensions affect student satisfaction in a virtual environment. Practically, the findings can guide the Department of Tertiary Education Financing (DTEF) in Botswana to enhance its e-platform's functionality and service delivery by identifying strengths and addressing service gaps perceived by users. Insights from the study may inform targeted policy interventions, improve responsiveness, and foster user-centered design of digital public services. Ultimately, optimizing the student experience with DTEF's e-platform can lead to improved accessibility, transparency, and trust in government-sponsored higher education funding, thereby supporting national goals of equity and efficiency in tertiary education.

10. Conclusion and Recommendations

The study examined the effectiveness of DTEF e-service platforms and their impact on student satisfaction. The results revealed that empathy and responsiveness were the strongest predictors of satisfaction, while assurance, reliability, and tangibles had weaker effects. Although the platform provides sufficient information and reasonable accessibility, challenges such as system glitches, complex terminology, and limited ICT resources reduce its overall effectiveness. The findings provide actionable insights for improving platform usability, technical support, and student training. Enhancing these areas will strengthen service delivery, increase student satisfaction, and

support Botswana's Vision 2036 goal of a knowledge-based economy.

To improve the effectiveness of the DTEF e-service platforms, several measures should be considered. Firstly, the platform should be simplified to ensure it is user-friendly, with clear instructions and, where possible, the use of vernacular language (Setswana) to enhance comprehension and reduce errors. Decentralization of DTEF services is also critical, with additional customer service centers established across the country, particularly in remote areas, to improve accessibility and responsiveness. Increasing the number of technical support staff will further enhance system reliability and provide prompt assistance to students facing challenges. Student training should be prioritized through nationwide workshops for final-year high school students, educating them on system usage, application processes, and technical requirements. Access to ICT resources, such as laptops, smartphones, and internet data, must also be ensured for students in underserved areas. Collaboration with key stakeholders, especially Education Training Providers (ETPs), can leverage their ICT infrastructure to support student training and system utilization. Additionally, continuous upgrades to ICT infrastructure and platform functionality, including mobile-friendly application services, will improve accessibility and overall service quality. Finally, adopting a user-centered approach that regularly incorporates feedback to identify gaps and address system errors will strengthen reliability, responsiveness, and student satisfaction.

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