The Role of E-Service Quality in Shaping User Loyalty on Educational Platforms: Mediating Effects of User Satisfaction

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Abstract:

With the increasing reliance on digital platforms for education, the quality of online services has become a critical factor in user retention and satisfaction. In the rapidly evolving educational platform landscape, ensuring high E-Service Quality is key to fostering long-term user engagement and loyalty. The purpose of this paper is to evaluate the e-service quality of educational platforms and to analyse the Mediating Role of user satisfaction between E-Service Quality and User Loyalty. The technique used in the current study is Structural Equation Modelling using SMART PLS. The Findings of the study indicated that service quality is significantly reflected through content quality, efficiency, privacy & security, reliability, technical support, and user interface/design. It was further found that e-service quality has a significant total effect on user loyalty, and user satisfaction mediates the relationship between E-service quality and user loyalty. The findings aim to shape strategies that improve online education quality, benefiting both learners and educators in the digital learning era.

Keywords: E-service quality, Mediation Analysis.

Introduction:

The fierce rivalry among educational services related to investment and financial literacy is evident in the surge of new enterprises that have embraced identical business models. Educational platform companies must take prompt action and make adjustments to enhance their competitive standing. The minimal entry hurdles for internet enterprises will facilitate rapid competition within the market. Moreover, users incur little conversion costs when switching from one internet technology service to another. Moreover, the education platform industry faces competition not just from direct rivals but also from indirect competitors that offer comprehensive educational resources at no cost via established internet platforms. The competitive intensity in this business is quite strong. The primary issue for internet-based services is to deliver and maintain enduring consumer pleasure and loyalty. Consequently, an investigation of the company's service quality is essential to determine the subsequent objective of enhancing customer utilization and loyalty. The education sector is frequently perceived as a service business. Consequently, the performance quality of the service business must be perpetually enhanced

through management methodologies and quality benchmarks. Customer service quality is defined as "the disparity between customer expectations and actual service received. Service quality is the degree to which customer requirements and wishes are met and aligns with consumer expectations." It is essential for a firm to ascertain its service quality level to understand its standing from the customer's perspective and to determine whether the services rendered have fulfilled the customer's requirements. An elevated standard of "service quality is characterised by a business's ability to meet customer demands and beyond customer expectations." Numerous studies indicate that service quality is a critical determinant of client loyalty, as enhanced service quality may significantly bolster consumer allegiance. Endwia, S. M. (2021).

Educational Platform

Access to information and technology has changed many facets of our everyday lives, including education, in the digital age we live in. With the advent of digital technologies and educational platforms, the teaching-learning process has been completely transformed, offering instructors and students worldwide new resources and possibilities.

Educational platforms are online spaces created specially to help and enhance the process of teaching and learning. These platforms offer an online environment where students may connect with their classmates, access educational resources, engage in interactive exercises, and get teacher feedback. Teachers may utilise these platforms to plan and present lessons, evaluate students' progress, and encourage engagement and communication in the virtual classroom. The flexibility that educational platforms provide is one of their key benefits. Because they may access materials and services at any time and from any location, students can customise their education to meet their own requirements and pace. Additionally, these platforms' integrated digital tools—such as interactive films, educational games, simulations, and online tests—make learning more interesting and inspiring for students, which promotes their active engagement and the capacity of educational platforms to promote interaction and cooperation between instructors and students is another crucial feature.

Students may communicate with their professors and one another, exchange ideas, ask questions, and get personalised advice using discussion boards, online chats, and collaborative tools. This encourages knowledge sharing and collaborative problem solving in a more positive and engaging learning environment. Similar to this, educational platforms give teachers a variety of tools to monitor and evaluate their students' learning. They are able to record each student's actions and assignments, follow their progress, and give immediate feedback. These platforms also give teachers the option to create reports and data on student performance, which enables them to pinpoint areas in need of development and modify their teaching strategies to suit the needs of each unique student. In conclusion, digital tools and educational platforms have revolutionised the field of education by providing fresh materials and chances for the teaching-learning process.

These platforms enable students to acquire critical skills in a dynamic digital environment by promoting flexibility, engagement, cooperation, and personalisation of learning. In addition, they give instructors effective tools for monitoring and evaluating students' progress, enabling them to adjust to the demands of modern education and equip pupils to handle the problems of the twenty-first century.

E-Service Quality

A vital component of our everyday lives and a significant portion of all economies is the service sector (Ejigu, 2016). As a result, one of the main concerns in service management is service quality. A service that meets the demands and expectations of its clients is considered to be of high quality (Sadaf & Rahela, 2019). Another way to put it is the subjective comparison that consumers make between the quality of a service they expect and what they actually get. As a result, it is a type of mindset that results from contrasting performance with expectations. Customers' pre-service expectations have been found to influence how well they perceive the quality of the services they receive (Zeithaml, Parasuraman & Malhotra, 2000). According to Jayaraman, Shankar, and Hor (2010), customers will rate a service's quality as poor if it falls short of their expectations and as high if it meets them. In order to attain customer satisfaction and reduce consumer switching behaviour, managers and academics are eager to measure service quality precisely to comprehend its effects and develop methods for enhancing quality (Mohammad, Asaad & Ihab, 2018).

There has been a rise in e-service techniques since 2000. As the internet expanded and was used in business, the term "e-service" was born. E-service quality was brought about by this evolution, and different writers have provided different definitions. Zeithaml et al. (2000) defined e-service quality as the degree to which a website makes shopping, buying, and service delivery quick and easy. "According to Parasuraman et al. (2005), e-service quality encompasses every stage of a client's online interactions. Zeithaml et al. (2002) examined the gap model of service quality and presented the gap model of e-service quality, which is an improvement on the previously established and widely used gap model of service quality, in order to better comprehend the nature of e-services." This modification was required as e-services are provided

to clients via technology, and human-technology interaction had to be included.

This study has significant societal relevance since it examines the sustainability and quality of online education, a field that has grown in importance in the digital age. Through the identification and enhancement of essential elements of e-service quality, the research aids educational platforms in providing more dependable, user-centred, and accessible learning experiences. By lowering dropout rates and improving long-term educational results, the insights into user happiness and loyalty help guarantee that students stay motivated and involved. Furthermore, the study promotes inclusive and equal access to education by identifying areas of service quality that are most important to users, therefore helping to close the gap in digital education.

Review of Literature:

According to Endwia, S. M., et al. (2021), customer satisfaction and customer loyalty are positively correlated with the e-service quality characteristics of efficiency, fulfilment, and privacy. According to Jameel, A. S. et al. (2021), "students' e-satisfaction was positively and significantly impacted by responsiveness, privacy, and security.' However, students' "e-satisfaction was not significantly impacted by efficiency, dependability, or convenience of use." The findings showed that the most crucial element that raised students' e-satisfaction was response. A. Demir et al (2021) while e-service quality has no direct impact on willingness to pay, it does have a direct impact on perceived value and satisfaction. Second, the associations between "willingness to pay and service quality were mediated by perceived value and pleasure." Nonetheless, it has been found that the desire to pay is more "significantly influenced by perceived value than by contentment. According to other reports, one of the factors that precedes contentment is perceived value. Yum, K., and J. Kim (2024). Customer happiness, e-trust, and the intention to continue using an e-service are all strongly and favourably impacted by its quality. E-trust and the decision to continue using a service are significantly and favourably impacted by consumer satisfaction. Continuous usage intention is

significantly and favourably impacted by e-trust. Lastly, the link between e-service quality and the desire to continue using it is significantly mediated by both customer satisfaction and e-trust.

According to KANG, M. J. (2024), learning satisfaction is strongly influenced by the quality of e-services, including both content and services. Perceived personalisation and consistency had moderately significant mediation effects. Additionally, it was shown that the association between learning satisfaction and material quality was considerably moderated by online learning self-efficacy, highlighting its crucial role in raising user pleasure and engagement. The most significant characteristics, according to Delgado, B. C., et al. (2022), were associated with the "empathy, assurance, and tangibility quality dimensions, with a focus on the excellent quality of resolving user doubts and the audio and video resources that aided students in their educational journey." In summary, for several SERVQUAL aspects, the perceived quality exceeded expectations. Lebzar, B., and A. Imane (2024). Although they express displeasure with technological challenges and lack of customisation, students admire e-services that offer personalised help and simple access to materials. Professors raise worries on the sufficiency of resources while underlining the significance of user-friendly platforms and effective communication tools. Although they acknowledge enduring issues like resource constraints, administrators understand the importance of e-service quality in preserving institutional reputation.

The findings of Sivakumar, B. (2025) demonstrate that enhancing service quality requires more than just using digital twin technology or its characteristics. Rather, the technology's integration and successful application are essential. According to the report, by tackling these issues, businesses may improve their e-service offerings, which will boost overall performance, customer happiness, and service delivery. According to Lu, Y., & Khan, M. S. (2024), the independent variable is the five e-services aspects (the greater, the better the students' satisfaction). Digital literacy was the moderating variable that moderated every other component; the only one that did not have a significant moderating

impact was the association between accountability and e-learning student happiness. E-service quality has a significant influence on students' satisfaction levels, which ultimately affects their retention in the e-learning environment (Kundu, A., 2022). Most interviewees said that their degree of happiness is influenced by all four aspects of e-service quality: system availability, efficiency, fulfilment, and privacy. Happy students have a higher retention rate. According to Ataburo, H., et al. (2017), contentment is the only way that E-SQ significantly increases usage frequency. These findings suggest that businesses offering better e-services have a greater chance of satisfying their clients, which in turn affects their propensity to buy and make additional purchases. Wati, M., & Putranto, D. (2024) found a strong positive relationship between student happiness and the quality of the information and e-services.

Objectives of the Study:

1. To Evaluate Factors Reflecting E-Service Quality of Educational Platforms.
2. To Analyze Mediating Role of Users satisfaction between E-Service Quality and User Loyalty.

Research Methodology:

Table No: 1 Research Methodology

Aspect	Details
Sample Size	450 Users of Educational Programs (Minimum necessary sample size: 226, See Figure No: 1)
Sampling Method	Non-random purposive sampling
Data Gathering Methods	Primary and secondary data
Analytical Method	Structural Equation Model (SEM)
Analytical Tool	SMART PLS

Figure No: 1 A-Priori Sample Size Calculator for SEM

Data Analysis and Interpretation:

Table No: 2 Reliability and Validity

Construct	Cronbach's Alpha	Composite reliability	AVE
Content validity	0.882	0.882	0.601
E-Service Quality	0.964	0.965	0.502
Efficiency	0.860	0.860	0.552
Privacy and security	0.855	0.856	0.545
Reliability	0.902	0.902	0.649
Technical support	0.873	0.872	0.578
User loyalty	0.912	0.912	0.674
User satisfaction	0.926	0.926	0.714
User interface	0.903	0.903	0.651

The table presents the results of the reliability and validity analysis for different constructs. Cronbach's Alpha values range from 0.855 to 0.964, indicating high internal consistency across all constructs, with the E-Service Quality construct having the highest value. Composite reliability values are similarly strong, all above the threshold of 0.7, ensuring that the constructs consistently measure the intended concepts. The Average Variance Extracted (AVE) values vary from 0.502 to 0.714, indicating that most constructs exceed the commonly accepted threshold of 0.50, suggesting adequate convergent validity. Constructs such as User Satisfaction (0.714) and User Loyalty (0.674) show strong validity, while E-Service Quality and Privacy & Security, with AVE values of 0.502 and 0.545 respectively, show acceptable levels of convergent validity. Overall, the measures demonstrate good reliability and validity, confirming the robustness of the scales used.

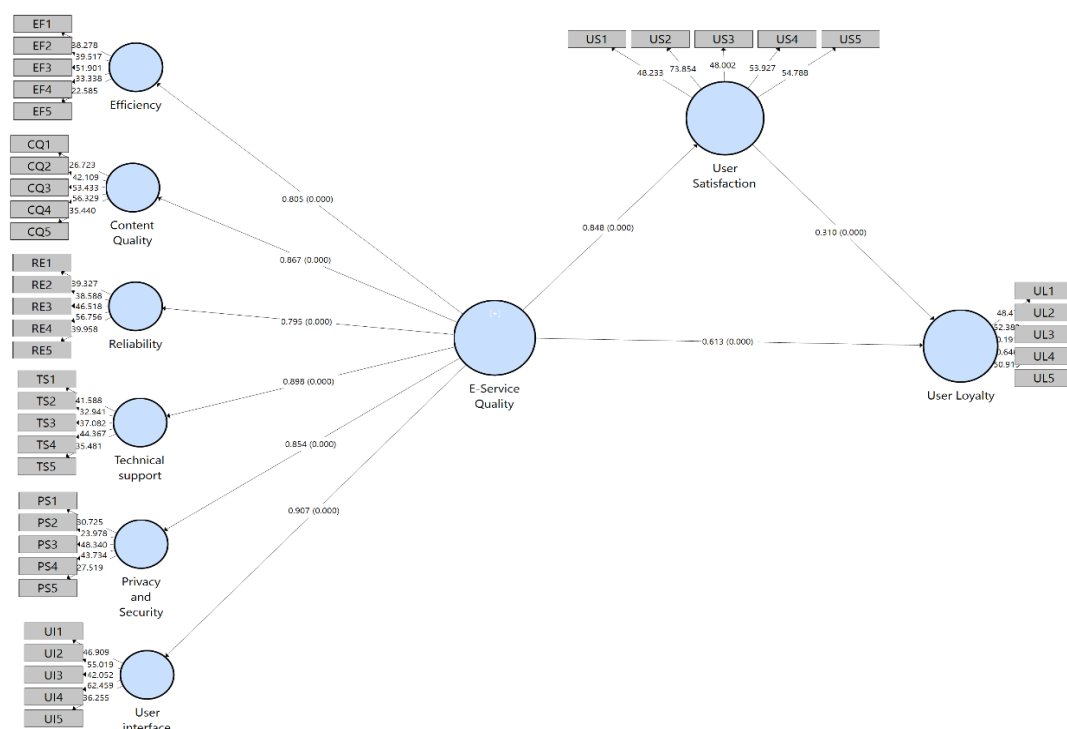**Figure No: 2 Structural Equation Model**

Table No: 3 Hypothesis Testing

Path	Beta coefficient	T – statistics	P-value
E-Service Quality→Content Quality	0.867	48.94	0.000
E-Service Quality→Efficiency	0.805	32.56	0.000
E-Service Quality→Privacy and Security	0.854	48.62	0.000
E-Service Quality→Reliability	0.795	34.73	0.000
E-Service Quality→Technical support	0.898	68.72	0.000
E-Service Quality→User interface	0.907	96.45	0.000

As per Table No. 2, it can be concluded that E-Service Quality, as a second-order construct, is significantly reflected through various first-order dimensions, including Content Quality, Efficiency, Privacy and Security, Reliability, Technical Support, and User Interface. The beta coefficients for all paths are strong, ranging from 0.795 to 0.907, indicating that E-Service Quality has a substantial influence on each dimension. The T-statistics for all paths are well above the critical value, with values between 32.56 and 96.45, confirming the statistical significance of these relationships. All P-values are 0.000, further supporting the robustness of the findings. Among the dimensions, User Interface and Technical Support exhibit the strongest effects, highlighting their critical role in shaping the overall perception of E-Service Quality.

Table No: 4 Hypotheses: PART A

Hypothesis	Result
H1: E-Service Quality is significantly reflected through the Content Quality of educational platforms.	**Supported**
H2: E-Service Quality is significantly reflected through the Efficiency of educational platforms.	**Supported**
H3: E-Service Quality is significantly reflected through the Privacy and Security features of educational platforms.	**Supported**
H4: E-Service Quality is significantly reflected through the Reliability of educational platforms.	**Supported**
H5: E-Service Quality is significantly reflected through the Technical Support services on educational platforms.	**Supported**
H6: E-Service Quality is significantly reflected through the User Interface design of educational platforms.	**Supported**

Table No: 5 Mediation Analysis

Relationship between	Type of Effect	Path coefficient	T – statistics	P- value	Remark
E-Service Quality→User Loyalty	Total Effect	0.876	62.09	0.000	Total Effect found Significant
E-Service Quality→User Satisfaction → User Loyalty	Indirect Effect	0.263	5.799	0.000	Significant mediation exists between E-service quality and Users Loyalty
E-Service Quality→User Loyalty	Direct Effect	0.613	12.346	0.000	Partial mediation exists between E-service quality and Users Loyalty
Strength of Mediation Effect	VAF	**30.02%**			

As per the mediation analysis presented in Table No., E -Service Quality has a significant total effect on User Loyalty with a path coefficient of 0.876, a T -statistic of 62.09, and a P-value of 0.000, confirming the significance of this relationship. The indirect effect of E -Service Quality on User Loyalty, mediated through User Satisfaction, is also significant, with a path coefficient of 0.263, a T-statistic of 5.799, and a P-value of 0.000, indicating that User Satisfaction plays a crucial role in the relationship between E-Service Quality and User Loyalty. Furthermore, the direct effect of E-Service Quality on User Loyalty is 0.613 with a T-statistic of 12.346 and a Pvalue of 0.000, suggesting partial mediation exists. The Strength of Mediation Effect, as indicated by the Variance Accounted For (VAF) value of 30.02%, demonstrates a moderate mediation effect of User Satisfaction in the relationship between E-Service Quality and User Loyalty.

Table No: 6 Hypotheses: PART B

Hypothesis	Result
H7: E-Service Quality has a significant total effect on User Loyalty	**Supported**
H8: User Satisfaction mediates the relationship between E-Service Quality and User Loyalty, representing the indirect effect	**Supported**
H9: E-Service Quality has a significant direct effect on User Loyalty, indicating partial mediation.	**Supported**

Conclusion:

The study comes to the conclusion that, both directly and indirectly through user satisfaction, e-service quality has a major impact on user loyalty on educational platforms. User satisfaction, which accounts for 30.02% of the association between service quality and loyalty, is a moderate but significant mediator, according to the mediation study. These results show that although technical aspects of e-service quality are still crucial, users are more likely to stick around if they are happy with their experience. Therefore, educational platform providers should focus on developing user experiences that promote satisfaction and engagement in addition to improving the practical parts of their services. Prioritising these elements will be essential for creating enduring user relationships, enhancing learning outcomes, and maintaining a competitive advantage in the growing digital learning landscape.

Suggestions:

The platforms must invest in enhancing key components of service quality such as system reliability, personalised content delivery, ease of use and prompt user support. Enhancing the user experience overall should be the focus of efforts as user happiness plays a significant mediating role. This entails including feedback mechanisms, responsive interfaces, and interactive components to make people feel valued and recognised. Additionally, even though the mediation is little, platform providers should realise that boosting pleasure might further boost loyalty. Ongoing interface enhancements based on user behaviour analytics, user satisfaction surveys, and regular service quality assessments can support sustained improvement. By focusing on both functional performance and emotional satisfaction, education platforms may boost user retention, trust and long-term commitment in a competitive digital learning environment.

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