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Customer satisfaction as a mediator between electronic services quality and customer engagement of XXX Private University customers in Yogyakarta

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ABSTRACT

One of the primary concerns in the ongoing economic recession is the decline in the enrolment of students continuing their studies on campus. Consequently, various strategies are necessary to increase the quantity and the extent of customer engagement, in this case, students, thereby fostering their resilience within universities. This study aims to examine the role of service quality in customer engagement, with or without the mediating effect of customer satisfaction. This research employs a cross-sectional study design. The participants in this study are active students at XXX University in Yogyakarta. Data collection instruments include customer engagement, service quality, and customer satisfaction questionnaires. Path analysis is used, specifically Partial Least Squares Structural Equation Modeling (PLS-SEM), facilitated by SmartPLS 3.0. The results of the path analysis in this study indicate that the quality of electronic services plays a significant role in customer engagement through customer satisfaction. This finding is evidenced by a path coefficient of 0.526, which is considered relatively strong ($p = 0.000, < 0.01$). Additionally, the quality of electronic services has a direct and significant impact on customer engagement, as demonstrated by a path coefficient of 0.159, which is regarded as relatively weak ($p = 0.015, < 0.05$). This study concludes that customer satisfaction effectively mediates the relationship between electronic service quality and customer engagement.

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Introduction

The shock caused by the COVID-19 pandemic a few years ago has significantly impacted education sector, including universities. One of the critical issues affecting private universities is the high dropout rate among current students, coupled with a decrease in the number of new student enrollments. This unfortunate reality is not experienced by just one institution but by many private campuses across Indonesia. The decline in new student enrollments has reached as high as 50% yearly (Purnomo, 2024).

The decline in enrollment at private universities, including the retention of existing students, can be attributed to several factors. One significant issue is the relatively high cost of education, which is often accompanied by facilities perceived as inadequate compared to public universities (Telkom University, 2024). The current economic crisis affecting the Indonesian population plays a crucial role. A recession can lead to inflation and rising prices,

ultimately diminishing people's purchasing power and ability to afford private universities' relatively high tuition fees.

Based on the current phenomenon, it show that private universities are currently in a "not okay" state. However, not all private universities in Indonesia encounter these issues. Nevertheless, the prevailing circumstances necessitate private universities to employ diverse initiatives and strategies to enhance student loyalty and foster a sense of campus engagement.

Universities implement many strategies to enhance student engagement, which is crucial for ensuring their sustainability and financial stability in the future. Efforts to maintain private universities' sustainability and financial stability are linked to student engagement. Customer engagement, in this context, refers to the active participation of students in campus life, and it is a strategic approach that universities can adopt to foster long-term relationships with their students. Pride and Ferrell (2011) define customer engagement as the motivation that drives people to seek information about a particular product or brand. This definition illustrates that customers who feel connected to a brand or product are likelier to purchase, promote the brand, and demonstrate loyalty.

Customer engagement has emerged as a significant construct in marketing literature, particularly in contemporary psychological studies. It is a novel approach to maintaining consumer value and understanding the dynamics of modern marketing (Kumar et al., 2019; Rather, 2020). Consequently, many practitioners face challenges in fostering relationships and developing provider-consumer bonds (Rather & Camilleri, 2019). Hollebeek et al. (2014) define customer engagement as an individual's motivation related to a brand, characterized by a context-dependent state of mind that encompasses specific cognitive, emotional, and behavioral interactions with brands. Furthermore, Pride and Ferrell (2011) describe customer engagement as the driving force behind customers' motivation to seek information about a particular product or brand. This explanation indicates that customers who feel connected to a brand or product tend to purchase more and actively promote and demonstrate loyalty to it.

Jaakkola and Alexander (2014) explain that customer engagement refers to behavior that voluntarily contributes to a particular company or brand beyond mere transactions. Customer engagement is a customer's relationship with the brand, manifested through cognitive, affective, and behavioral responses extending beyond purchasing activities (So et al., 2014). Brodie et al. (2013) further elaborated that customer engagement is a psychological process that fosters customer loyalty and encourages connections among customers, companies, and specific brands, ultimately enhancing brand loyalty. These signs indicate that customer engagement is a potential antecedent to loyalty, driven by a strong internal disposition over time.

Hollebeek et al. (2014) and Brodie (2011) identified three dimensions of customer engagement: cognitive, emotional, and behavioral traits. Consumers who interact with a brand that they ideally use will be cognitively and emotionally invested, exhibiting engaged behaviors. Additionally, five dimensions can be used to measure customer engagement: enthusiasm, attention, absorption, interaction, and identification (So et al., 2014). Enthusiasm reflects the level of excitement and interest that customers have in a brand. Attention describes the degree of direct focus customers have on the brand. Absorption indicates a state in which customers become so immersed in their thoughts about the brand that they lose track of time. Interaction refers to the exchanges between customers and brands and among customers themselves. Finally, identification captures customers' sense of unity toward the brand.

Furthermore, numerous factors influence customer engagement; however, this study focuses on two key elements that are believed to be strong predictors of customer engagement: service quality and customer satisfaction. These two factors have been identified as the most fundamental challenges to marketing theory and practice to date (Sureshchandar et al., 2002).

Preliminary studies of previous research define service quality as a comparison made by customers regarding what a company should provide. It relates to customer expectations concerning the actual service performance of the company (Lewis & Booms, 1983;

Parasuraman et al., 1985; Sasser et al., 1978). Service quality represents a comprehensive evaluation conducted by customers of the services they receive (Martin, 2011; George, 2013).

In light of technological advancements, the concept of traditional service quality has evolved into electronic service quality. Currently, the quality of electronic services is crucial for companies, as it can lead to increased click-through rates on websites and higher customer retention rates (Santos, 2003). Pasuraman et al. (2005) explain that electronic service quality encompasses all phases of customer interaction with websites. It assesses how much a website can facilitate efficient and effective customer shopping, purchasing, and delivery. According to Santos (2003), electronic service quality is a customer evaluation that pertains to the overall assessment of the excellence and quality of electronic service offerings in the virtual domain.

Essentially, the definition of quality in electronic services and traditional services is based on the same principles. Both concepts relate to customer assessment of the value derived from a particular brand. The delivery of optimal service quality in an electronic context emphasizes the website's effectiveness, particularly because customers can easily compare a company's services online/electronically at a relatively low cost.

The dimensions of service quality, as identified by Parasuraman et al. (1986), include reliability, assurance, tangibles, empathy, and responsiveness. Reliability refers to the ability to deliver services consistently and accurately following what has been promised. Assurance pertains to the knowledge and courtesy of employees, as well as their capacity to instill trust and confidence in customers. Tangibles, or physical evidence, relate to the physical facilities of the service environment, equipment quality, human resources performance, and corporate communication materials. Empathy demonstrates that the company understands customer issues and acts in the best interests of its clients by providing personal attention and maintaining convenient operating hours. Finally, responsiveness is associated with the willingness and ability of service providers to assist customers and promptly address their requests.

Furthermore, Zeithaml et al. (2002) and Parasuraman et al. (2005) critically reviewed the existing literature on online and electronic service quality, identifying seven dimensions that contribute to this quality. These dimensions include efficiency, reliability (also referred to as system availability) as noted by Parasuraman et al. (2005), fulfillment, privacy, responsiveness, compensation, and contact. Efficiency pertains to the ease and speed of accessing and using the website. Reliability or availability refers to the correct technical functions of the site. Fulfillment relates to the extent to which the site meets its promises regarding order delivery and product availability. Privacy concerns the site's security and its ability to protect customer information. Responsiveness involves the effective handling of issues and returns through the site. Compensation addresses the extent to which the site offers remedies to customers for any problems encountered. Finally, contact refers to the availability of assistance through telephone or online representatives.

The seven service quality dimensions are categorized into the core service scale and the service recovery scale. The core service scale measures customer perceptions of e-tailer service quality when no issues arise on the site, encompassing efficiency, reliability, fulfillment, and privacy. In contrast, the service recovery scale assesses the effectiveness of e-tailer services when problems occur, focusing on responsiveness, compensation, and contact. Research indicates that efficiency and fulfillment are the most critical dimensions of website service quality, while privacy is considered the least important among the four dimensions of E-S-QUAL (Pasuraman et al., 2005).

Previous research indicates that service quality has a positive and significant effect on customer satisfaction (Abror et al., 2020; Chang et al., 2021). Additionally, these researches have explored the mediating role of customer satisfaction between perceived service quality and customer engagement. The findings revealed that customer satisfaction serves as a mediator between service quality and customer engagement. These insights offer valuable implications for the banking sector to enhance customer satisfaction and engagement (Ananda

et al., 2022).

Customer satisfaction can be defined as customers' emotional response—whether satisfaction or disappointment—after comparing the actual performance of a product or service with their expectations (Kotler & Keller, 2009). According to Giese and Cote (2000), customer satisfaction is primarily an affective response that reflects a holistic evaluative outcome. Furthermore, Gerson (2010) explained that customer satisfaction is closely linked to customer perceptions regarding whether their expectations are met or exceeded. Customers who are satisfied with a brand's (or company's) performance are likely to demonstrate strong trust in that company (Ha & Perks, 2005)

Fornell (1992) explained that customer satisfaction can be measured through three key aspects: overall satisfaction, confirmation of expectations, and comparison to an ideal standard. Giese and Cote (2000) identified three components of customer satisfaction: 1) Response, which refers to the affective response of varying intensities; 2) Focus, which pertains to a specific aspect of the customer experience (such as expectations, the product itself, or the consumption experience); and 3) Response time, which indicates that responses occur at specific moments (such as after consumption, following product or service selection, or based on cumulative experiences). Kotler (2009) further elaborated on the characteristics of satisfied customers, which include 1) Loyalty to the product, as satisfied consumers are more likely to remain loyal and repurchase from the same manufacturer; 2) Positive word-of-mouth communication, where satisfied customers recommend the company's products to potential consumers and speak favorably about them; and 3) The company being a primary consideration when purchasing other brands, as customers are likely to prioritize companies that have previously provided them with satisfaction when considering new products.

The research conducted by Abror et al. (2020) and Hapsari et al. (2017) demonstrates that customer satisfaction is a significant antecedent to customer engagement. Customer satisfaction serves as a crucial driver and determinant of indispensable customer engagement (Palmatier et al., 2006; Dessart et al., 2015; Cambra-Fierro et al., 2016; Agyei et al., 2021), and therefore, it must be sustained over time (Higgins & Scholer, 2009)

Numerous factors influence customer engagement; however, this study focuses on two key predictors that are believed to impact customer engagement significantly: the electronic services quality and customer satisfaction. These two factors have been identified as fundamental elements in marketing theory and practice (Sureshchandar et al., 2002), including within psychological research. Notably, research examining these factors in the education sector in Indonesia has not been conducted previously. Therefore, this study presents a valuable opportunity to contribute to this field. It is classified as pioneering research within the Indonesian education sector, as no prior studies have addressed this topic. Consequently, it is essential to uncover the underlying aspects of customer engagement in the education sector to address existing gaps in the literature. The primary objective of this study is to empirically test the role of service quality in customer engagement, both directly and indirectly through customer satisfaction.

Method

This study employs a quantitative approach utilizing a cross-sectional study design. The participants in this research are current students at XXX University in Yogyakarta. The data collection instrument used in this study was a questionnaire. The measurement tool for customer engagement was developed based on five dimensions proposed by So et al. (2014), i.e., enthusiasm, attention, absorption, interaction, and identification. The service quality measurement tool in this study was adapted from Parasuraman et al. (2005) and is based on the seven dimensions of online/electronic service quality identified by Parasuraman et al. (2005), which include efficiency, reliability/system availability, fulfillment, privacy, responsiveness, compensation, and contact. These seven dimensions were organized by

Parasuraman et al. (2005) into two scales: the core service scale (E-S-QUAL), which includes efficiency, reliability/system availability, fulfillment, and privacy; and the recovery service scale (E-RecS-QUAL), which consists of responsiveness, compensation, and contact. Finally, customer satisfaction is defined based on the work of Giese and Cote (2000), who identify three key components: 1) customer satisfaction is an affective response that can vary in intensity; 2) customer responses are focused on specific aspects, such as expectations, products, and consumption experiences; and 3) these responses occur at particular times, including after consumption, following the selection of products or services, and based on cumulative experiences. The validity of the three measurement instruments was assessed using convergent and discriminant validity, estimated through Confirmatory Factor Analysis (CFA) and Average Variance Extracted (AVE) values. The reliability of the instruments was evaluated using the Cronbach's Alpha benchmark.

The analytical technique used in this study is path analysis, which serves as an extension of multiple linear regression analysis. Path analysis utilizes correlation and regression to determine how dependent variables are influenced directly or through intervening variables. In this study, path analysis is conducted using the Partial Least Squares Structural Equation Modeling (PLS-SEM) tool, facilitated by SmartPLS 3.0. The first step in path analysis involves conducting an outer model test, followed by a structural model test (inner model), and ultimately testing the hypotheses regarding each variable's direct and indirect effects.

Results

The synthesis of the fifteen selected articles revealed four key themes: (1) types of love and brain activation, (2) hormonal processes in love, (3) brain activity in response to the face of a loved one, and (4) the unique characteristics of love. A complete list of the selected articles is presented in Table 1.

Table 1. Convergent and Discriminant Validity of Customer Engagement Questionnaires

Item	Loading factor value	AVE Value	Fornell-Lacker
KTRP1	0.671		
KTRP2	0.649		
KTRP3	0.579		
KTRP5	0.701		
KTRP6	0.814		
KTRP7	0.788	0.509	0.714
KTRP8	0.725		
KTRP9	0.537		
KTRP10	0.756		
KTRP11	0.826		
KTRP12	0.783		
KTRP13	0.607		
KTRP15	0.767		

An evaluation of the outer model preceded the testing in this study. The results of the convergent validity analysis from the customer engagement questionnaire, as shown in Table 1, indicated that two items had loading factors below 0.50: item no. 4, with a loading factor of 0.484, and item no. 14, with a loading factor of 0.495. Consequently, both items were removed from the analysis. Following the elimination of these items, the subsequent analysis revealed that the lowest loading factor was found in item no. 9, which had a loading factor of 0.537, while the highest loading factor was in item no. 6, which was 0.826. The Average Variance Extracted (AVE) score for this questionnaire was 0.509. Additionally, the acquisition of discriminant validity, as indicated by the Fornell-Larcker criterion, was 0.714. Based on the validity assessments—both convergent and discriminant—it can be deduced that the items on the

customer engagement questionnaire are valid. This result aligns with Hair's (2010) assertion that the criteria for validity in Confirmatory Factor Analysis (CFA) require a loading factor greater than 0.30.

Table 2. Convergent and Discriminant Validity of Customer Satisfaction Questionnaires

Item	Loading factor value	AVE Value	Fornell-Lacker
KP1	0.835		
KP2	0.798		
KP3	0.859		
KP4	0.828		
FP5	0.836	0.702	0.803
KP6	0.874		
KP7	0.874		
FP8	0.827		
KP9	0.825		
KP10	0.837		
KP11	0.803		
KP12	0.852		

Table 3. Convergent and Discriminant Validity of E-S-QUAL and E-RecS-QUAL

Item	Loading factor value	AVE Value	Fornell-Lacker
KLE1	0.791		
KLE2	0.850		
KLE3	0.835		
KLE4	0.799		
KLE5	0.836		
KLE6	0.838		
KLE7	0.809		
KLE8	0.793		
KLE9	0.769		
KLE10	0.658		
KLE11	0.814		
KLE12	0.808		
KLE13	0.841	0.639	0.799
KLE14	0.631		
KLE15	0.848		
KLE16	0.783		
KLE17	0.822		
KLE18	0.825		
KLE19	0.756		
KLE20	0.838		
KLE21	0.817		
KLE22	0.853		
KLE23	0.784		
KLE24	0.786		
KLE25	0.771		
KLE26	0.856		
KLE27	0.795		
KLE28	0.776		
KLE29	0.813		
KLE30	0.764		
KLE31	0.765		
KLE32	0.807		
KLE33	0.791		

The results of the convergent validity test analysis from the customer satisfaction questionnaire, as presented in Table 2, indicate that the loading factors obtained are all above 0.7. The analysis revealed that the lowest loading factor was associated with item number 2, which had a value of 0.798, while the highest loading factors were found in items 6 and 7, which had a value of 0.874. The AVE score for this customer satisfaction questionnaire is 0.702. Additionally, the acquisition of discriminant validity, as measured by the Fornell-Larcker criterion, is 0.803. Based on the results of both convergent and discriminant validity, it can be concluded that the items on the customer satisfaction questionnaire are valid.

The results of the analysis of the convergent validity test for E-S-QUAL and E-RecS-QUAL, as presented in Table 3, indicate that the loading factors obtained are all above 0.6. Specifically, the lowest loading factor is found in item 14, which is 0.631, while the highest is in item 26, which is 0.856. The AVE score for both E-S-QUAL and E-RecS-QUAL is 0.639. Additionally, the acquisition of discriminant validity, as measured by the Fornell-Larcker criterion, is 0.799. Based on the results of both convergent and discriminant validity analyses, it can be concluded that the items in E-S-QUAL and E-RecS-QUAL are valid.

The reliability analysis results presented in Table 4 indicate that the measurement tools used in this research exhibit high-reliability coefficients. The customer engagement questionnaire has a Cronbach's alpha of α=0.918, while the customer satisfaction questionnaire demonstrates a reliability coefficient of α=0.961. Additionally, the E-S-QUAL and E-RecS-QUAL instruments, which assess the quality of electronic services, achieved a reliability coefficient of α=0.982.

Table 4. Reliability

Variable	Cronbach's Alpha	Composite Reliability	Remark
Customer Engagement	0.918	0.930	Reliable
Customer Satisfaction	0.961	0.966	Reliable
Quality of Electronic Services	0.982	0.983	Reliable

The results of the model conformity analysis presented in Table 5 indicate that the quality of electronic services contributes 71.1% to customer engagement. Additionally, service quality accounts for 53.4% of customer satisfaction. Furthermore, the Standardized Root Mean Square Residual (SRMR) serves as a measure of model fit. As shown in Table 5, the SRMR value of 0.063 (less than 0.08) suggests that the model demonstrates an acceptable fit, thereby effectively explaining the relationships between the variables and the model.

Table 5. Structural Model (Inner Model)

	R-square	Q-square	SRMR
Customer Engagement	0.711	0.708	0.063
Customer Satisfaction	0.534	0.531	

The results of the path analysis conducted in this study, both directly and indirectly, are presented in Table 6. The findings indicate that the quality of electronic services plays a significant role in customer engagement through customer satisfaction, as evidenced by a path coefficient of 0.526, which is considered relatively strong, with a p-value of 0.000 ($p<0.01$). Furthermore, the quality of electronic services has a direct and significant impact on customer engagement, demonstrated by a path coefficient of 0.159, which is regarded as relatively weak, with a p-value of 0.015 ($p<0.05$). Additionally, the quality of electronic services significantly affects customer satisfaction, with a path coefficient of 0.730, which is classified as very strong, accompanied by a p-value of 0.000 ($p<0.01$). Finally, customer satisfaction plays a crucial role in customer engagement, as indicated by a path coefficient of 0.720, which is also considered very strong, with a p-value of 0.000 ($p<0.01$).

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Table 6. Path Analysis Results

Hypothesis	Path coefficient	p-value	95% Path Confidence Interval Coefficient		
			Lower limit	Upper limit	
H1. Electronic service quality →, customer satisfaction, → customer engagement	0.526	0.000	0.453	0.610	**Indirect**
H2. Quality of e-service → Customer engagement	0.159	0.015	0.048	0.259	**Direct**
H3. Electronic service quality → Customer satisfaction	0.730	0.000	0.645	0.813	
H4. Customer → satisfaction Customer engagement	0.720	0.000	0.630	0.814	

Discussion

In broad terms, the findings of this study indicate that customer satisfaction—specifically among students—plays a significant partial role in the relationship between the quality of electronic services and their engagement with the institution or campus. These results align with previous research, which suggests that the quality of electronic services serves as a partial mediator in the relationship between the quality of hotel website services and customer engagement behavior in the hospitality industry (Vo et al., 2020). Additionally, the findings of this study support earlier research that demonstrates a positive influence of electronic service quality on customer satisfaction and customer engagement behavior (Sianipar & Simanjuntak, 2024).

The findings of this study indicate that the quality of electronic services plays a limited role in customer engagement. However, these results also support previous research that demonstrates a relationship between service quality and customer engagement (Zeithaml et al., 2000; Parasuraman et al., 2004; Verleye et al., 2014; Roy et al., 2018a; Roy et al., 2018b). A positive experience derived from perceived electronic service quality can enhance customer engagement with the institution or campus, and conversely, a lack of quality may diminish it.

This study demonstrates that the quality of electronic services plays a significant role in customer satisfaction. The findings also corroborate previous research (Zeithaml et al., 2000; Tjiptono & Chandra, 2016; Anggoro & Dermawan, 2024; Sianipar & Simanjuntak, 2024), which indicates that the quality of electronic services positively influences customer satisfaction. This result suggests that the perceived quality of electronic services, as evaluated by customers—specifically students in this context—directly impacts their satisfaction levels. In other words, higher-quality electronic services are more likely to elicit feelings of happiness and satisfaction among customers (Hidayat & Nuzil, 2023)

The findings of this study indicate that customer satisfaction plays a significant role in customer engagement. These results corroborate previous research (Hapsari et al., 2017; Thakur, 2018; Carlson et al., 2018; Abror et al., 2020), which suggests that customer satisfaction is an antecedent to customer engagement. Additionally, the findings of this study are supported by research conducted by Pham et al. (2022), which demonstrates that dissatisfaction among students is a strong predictor of negative engagement behaviors in higher education institutions. Based on the results of this study, it can be concluded that high levels of customer satisfaction will encourage continued engagement with the institution or campus. This engagement may manifest through student engagement on campus, contributing to a positive image of the institution, and expressing concern when they hear negative remarks about the campus.

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The current research is limited to a single Higher Education Institution, suggesting a significant potential for future studies to yield different findings. Therefore, it is recommended that subsequent researchers expand their focus to include a broader range of study subjects. Additionally, this study's limitations stem from its reliance solely on primary data collected through online surveys. Future researchers are encouraged to utilize and analyze other secondary data sources, such as student complaint records, student reviews on social media, or any other relevant secondary data that could enhance the findings of this study.

Conclusion

This study concludes that customer satisfaction mediates the relationship between the quality of electronic services and customer engagement, specifically among students at XXX University in Yogyakarta. The findings indicate that the quality of electronic services has a limited direct impact on customer engagement. This research is one of the pioneering studies that examine the influence of service behavior from electronic platforms on customer satisfaction and customer engagement within the education sector in Indonesia. Additionally, this study supports existing literature in human resource psychology, marketing, and research. Based on the research findings, it is recommended that the institution continue to enhance the quality of electronic services provided to students by improving the performance of employees and educators in their respective roles, particularly those involved in delivering online services. This performance enhancement can be achieved by addressing the training needs of each work unit. The ultimate goal is to increase student satisfaction, subsequently fostering greater student engagement with the institutionStatement of Interest

Statement of Interest

Both authors of the article declare that they have no conflict of interest in the publication of this article.

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