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The Influence of Service Quality, Information Quality, and System Quality on Perceived Value on Customer Satisfaction

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ABSTRACT

This study aims to evaluate the influence of Service Quality, Information Quality, and System Quality on Customer Satisfaction mediated by Perceived Value in the context of e-learning usage among students in Java. The research background highlights the importance of enhancing student satisfaction with e-learning to support the effectiveness of online learning processes. This research employed a quantitative approach using Structural Equation Modeling – Partial Least Squares (SEM-PLS). The research sample comprised 137 active students utilizing e-learning platforms from universities in Java. The results indicated that Service Quality, Information Quality, and System Quality significantly influenced Perceived Value. Service Quality and System Quality had a significant effect on Customer Satisfaction, whereas Information Quality did not directly impact Customer Satisfaction significantly. The study recommends that universities improve system and service quality and enhance information quality in e-learning platforms to increase Perceived Value and student satisfaction. This research contributes deeper insights for university management to effectively manage e-learning platforms and enhance student satisfaction.

Keywords: Service Quality, Information Quality, System Quality, Perceived Value, Customer Satisfaction, E-learning.

INTRODUCTION

Rapid technology utilization significantly impacts the education sector, particularly universities implementing face-to-face and online or e-learning systems (Saputra et al., 2023). To support educational institutions effectively, e-learning platforms must exhibit good service quality, making it essential to understand user satisfaction to improve future systems (Kurniawan et al., 2023). Enhancing customer satisfaction is crucial, as service-based organizations succeed when customer satisfaction consistently increases (Hadi & Indradewa, 2019). Customer satisfaction levels in information system usage depend on platform quality aspects, specifically service quality, information quality, and system quality (Salamah et al., 2022). Service providers must develop and maintain their service quality while offering additional value to customers to surpass competitors (Hadi & Indradewa, 2019).

Another critical aspect influencing customer satisfaction is information quality. Increasing availability of digital resources for critical decision-making highlights the importance of information quality for organizations (Lukyanenko et al., 2020). Information quality becomes significant since learning content, feedback for learning activities, and mentor access substantially impact overall quality, influencing customer satisfaction (Pham et al., 2019). The final quality aspect affecting customer satisfaction is system quality. System quality is crucial to system success, strongly influencing students' perceptions regarding the platform's usability (Alkhawaja et al., 2022). According to Subali Patma, perceived value is a vital factor in measuring customer satisfaction (Polytechnic & Polytechnic, 2021). Perceived value is defined as the customers' perceived difference between all costs and benefits from alternative offerings (Asri, 2021). Additionally, perceived value influences customer satisfaction, initially driven by service quality (Leon et al., 2020). Other research findings also indicate perceived value is influenced by information quality (Polytechnic & Polytechnic, 2021).

The next paragraph explains the urgency of research on previously discussed variables. Understanding customer satisfaction is essential to continuously improve services, encouraging sustained customer usage (Kurniawan et al., 2023). The three variables influencing customer satisfaction are derived from De Lone and McLean's model, indicating that e-learning system success depends on service quality, information quality, and system quality (Pham et al., 2019). Perceived value serves as an intervening variable between service quality and customer satisfaction (Leon et al., 2020). Additionally, perceived value acts as an intervening variable between information quality and customer satisfaction (Polytechnic & Polytechnic, 2021). This study combines three variables—service quality, information quality, and system quality from (Salamah et al., 2022) with two variables, perceived value and customer satisfaction, from (Hossain et al., 2024) said that product and service quality directly increases customer satisfaction, while the role of social media strengthens this influence in the context of household electronics in Bangladesh. (Prihanto & Annas, 2023). Subsequently, data processing and analysis are conducted to identify inter-variable relationships based on initial hypotheses. Structural Equation Modeling is employed as the analytical technique to test the causal model (Putlely et al., 2021).

Identifying customer satisfaction with service products is critical for organizational sustainability, as customers constitute the key to organizational success (Prihanto & Annas, 2023). Thus, this research aims to determine factors influencing student satisfaction with e-learning usage at University, ensuring future e-learning aligns with student expectations. E-learning implementation will continue due to technological advancements (Saputra et al., 2023). Student satisfaction is vital for improving educational services (Kurniawan et al., 2023). Universities benefit from enhanced

educational services, improving accreditation ratings and positively influencing the institution's reputation among prospective students.

RESEARCH METHOD

The variables measured in this research are Service Quality, Information Quality, System Quality, Perceived Value, and Customer Satisfaction. The questionnaire used for measurement is adapted from previous studies, aligned with each variable's dimensions. The Service Quality variable questionnaire employs the SERVQUAL dimensions consisting of five dimensions, each having two questions, totaling 10 questions, referenced from the study by (Kester et al., 2023). The Information Quality questionnaire utilizes dimensions of content adequacy and content usefulness, each containing two questions, totaling four questions, adapted from (Salamah et al., 2022). The System Quality questionnaire includes dimensions of web innovativeness, web interactivity, ease of use, and accessibility, each having two questions, resulting in a total of eight questions, referenced from (Salamah et al., 2022). The Perceived Value questionnaire consists of two questions based on (Prihanto & Annas, 2023), while the Customer Satisfaction questionnaire comprises three questions, also based on (Prihanto & Annas, 2023). The total number of questionnaire items used in this research is 27.

The research applies a quantitative method using a survey to determine factors influencing student satisfaction with e-learning at universities in Java. The respondents targeted are active university students in Java utilizing e-learning for educational purposes. After formulating the questionnaire items, the questionnaires are distributed online through Google Forms, allowing respondents to answer independently. Google Forms are selected to minimize costs and reach a broader audience accessible via mobile phones and computers (Prihanto & Annas, 2023).The sample size calculation is based on the number of questionnaire items multiplied by five, resulting in a minimum of 135 respondents (27 questions x 5), aligning with the recommended threshold for PLS-SEM usage (Hair, J., Black, W., Babin, B., & Anderson, 2018); (Salamah et al., 2022). This research uses 137 respondents from students in Java. Questionnaire responses are collected using a Likert scale ranging from 1 to 5, following (Salamah et al., 2022) and (Hadi & Indradewa, 2019), where 1 indicates strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree. Questionnaires are distributed from June 2025 to July 2025.

This research employs statistical calculations using Structural Equation Modeling (SEM), consistent with (Prihanto & Annas, 2023).and PLS-SEM with Smart PLS 3.29 software, conducting reliability and validity tests. Reliability criteria require Cronbach’s alpha values above 0.7, while validity is determined by the Average Variance Extracted (AVE) values exceeding 0.50 (Hair, J., Black, W., Babin, B., & Anderson, 2018). PLS-SEM serves as a tool to investigate multivariate relationships by evaluating construct path models, characterized as causal-predictive for complex models. SEM methodology

identifies factors affecting human behavior (Kester et al., 2023). Data evaluation in PLS-SEM involves assessing each research construct and testing hypotheses at a significance level. Model evaluation uses R^2, Q^2, and the f^2 effect size, explaining the path effects of exogenous constructs on endogenous constructs (Hair, J., Black, W., Babin, B., & Anderson, 2018). Mediation analysis assesses hypothetical relationships, evaluating indirect connections between independent variables and outcome variables using bootstrapping and distribution sampling to detect mediation effects. Bootstrapping results provide detailed evaluations of mediation by examining the lower and upper confidence interval values; if zero is within the interval, the mediation is not statistically significant, adhering to (Hair, J., Black, W., Babin, B., & Anderson, 2018).

RESULTS AND DISCUSSION

The respondents in this study are students who remain actively enrolled during the distribution of the questionnaire. The respondent profile consists of students currently studying in the Java Island region. The total number of respondents collected during June–July 2025 reaches 137. The respondent profile is predominantly in the age group of 21–25 years, comprising 45 individuals. Most of them pursue undergraduate degrees (Strata 1), totaling 101 respondents. Furthermore, the Faculty of Engineering contributes the most respondents, with 75 individuals. Details are presented in Table 1 below:

Tabel 1. Respondent Characteristics

Characteristic	Criteria	Respondent Frequency	Presentation
Age (Year)	15 - 20	23	17%
	21 - 25	45	33%
	26 – 30	31	23%
	31 – 35	13	9%
	36 – 40	8	6%
	> 40	17	12%
Education Level	Strata 1	101	74%
	Strata 2	32	23%
	Strata 3	4	3%
Faculty	Economic & Business	40	29.20%
	Faculty of Social and Political Sciences	1	0.73%
	Teaching and Education Faculty	4	2.92%
	Law	3	2.19%
	Medicine	7	5.11%
	Communication	4	2.92%
	Science and Mathematics	2	1.46%
	Agriculture	1	0.73%
	Engineering	75	54.74%
Total Respondent		**137**	

Source: Data processing by author, 2025

Following the survey, data processing is conducted through a measurement model analysis (Outer Model) to examine validity and reliability. Convergent validity is evaluated through the Outer Loadings and Averae Variance Extracted (AVE) of each

construct. Based on the data analysis using PLS in Table 2, all indicators show AVE values greater than 0.5, indicating adequate and acceptable convergent validity.

Table 2. Construct Reliability and Validity

Construct Reliability and Validity	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Customer Satisfaction (Y)	0.895	0.895	0.934	0.826
Information Quality (X2)	0.843	0.843	0.895	0.680
Perceived Value (Z)	0.786	0.788	0.903	0.824
Service Quality (X1)	0.894	0.901	0.913	0.514
System Quality (X3)	0.875	0.880	0.901	0.535

Source: Data processing by author, 2025

The outer loading values for all indicators in this study are above 0.6. Table 3 presents outer loading values ranging from 0.607 to 0.914, which confirms that the indicators fulfill the requirements for convergent validity and are valid for measuring the five research variables.

Table 3. Outer Loadings

Outer Loadings	Customer Satisfaction (Y)	Information Quality (X2)	Perceived Value (Z)	Service Quality (X1)	System Quality (X3)
CSS1	0.901				
CSS2	0.911				
CSS3	0.914				
IFQ1		0.822			
IFQ2		0.840			
IFQ3		0.853			
IFQ4		0.782			
PEV1			0.902		
PEV2			0.913		
SRQ1				0.627	
SRQ10				0.693	
SRQ2				0.755	
SRQ3				0.607	
SRQ4				0.686	
SRQ5				0.728	
SRQ6				0.819	
SRQ7				0.753	
SRQ8				0.780	
SRQ9				0.697	
SYQ1					0.747
SYQ2					0.728
SYQ3					0.764
SYQ4					0.759
SYQ5					0.736
SYQ6					0.784
SYQ7					0.687
SYQ8					0.633

Source: Data processing by author, 2025

Reliability is tested using Composite Reliability (CR) and Cronbach's Alpha (CA). The results indicate that all constructs obtain CR and CA values above 0.7 (See Table 1), which demonstrates that the constructs have good reliability. Discriminant validity is then assessed to determine the extent to which a construct is empirically distinct from other constructs. Three methods are used for this purpose: First, the Fornell-Larcker Criterion requires the square root of AVE (diagonal) to be greater than the correlations among constructs. Table 4 shows that all AVE diagonals are higher than the inter-construct correlations, indicating good discriminant validity.

Tabel 4. Fornell-Larcker Criterion

Fornell-Larcker Criterion	Customer Satisfaction (Y)	Information Quality (X2)	Perceived Value (Z)	Service Quality (X1)	System Quality (X3)
Customer Satisfaction (Y)	0.909				
Information Quality (X2)	0.656	0.825			
Perceived Value (Z)	0.689	0.611	0.908		
Service Quality (X1)	0.647	0.658	0.581	0.717	
System Quality (X3)	0.700	0.719	0.628	0.659	0.731

Source: Data processing by author, 2025

Second, the Heterotrait- Monotrait Ratio (HTMT) assesses the correlation ratio among constructs, where HTMT values below 0.90 indicate no discriminant validity issue. Table 5 confirms that all HTMT values are less than 0.90 across constructs

Tabel 5. *Heterotrait-Monotrait Ratio* (HTMT)

Heterotrait-Monotrait Ratio (HTMT)	Customer Satisfaction (Y)	Information Quality (X2)	Perceived Value (Z)	Service Quality (X1)	System Quality (X3)
Customer Satisfaction (Y)					
Information Quality (X2)	0.753				
Perceived Value (Z)	0.820	0.751			
Service Quality (X1)	0.717	0.754	0.685		
System Quality (X3)	0.781	0.830	0.750	0.736	

Source: Data processing by author, 2025

Third, the Cross Loadings test requires each indicator to load higher on its respective construct than on other constructs. Table 6 presents that all indicators meet this condition, supporting sufficient discriminant validity.

Tabel 6. Cross Loadings

Cross Loadings	Customer Satisfaction (Y)	Information Quality (X2)	Perceived Value (Z)	Service Quality (X1)	System Quality (X3)
CSS1	0.901	0.554	0.616	0.601	0.682
CSS2	0.911	0.570	0.604	0.576	0.617
CSS3	0.914	0.661	0.657	0.586	0.609
IFQ1	0.507	0.822	0.508	0.535	0.536
IFQ2	0.562	0.840	0.507	0.565	0.601
IFQ3	0.512	0.853	0.515	0.532	0.624
IFQ4	0.576	0.782	0.485	0.536	0.609
PEV1	0.606	0.554	0.902	0.481	0.565
PEV2	0.644	0.556	0.913	0.571	0.576
SRQ1	0.446	0.376	0.363	0.627	0.317
SRQ10	0.425	0.520	0.417	0.693	0.464
SRQ2	0.478	0.452	0.431	0.755	0.407
SRQ3	0.409	0.333	0.313	0.607	0.399
SRQ4	0.406	0.466	0.347	0.686	0.470
SRQ5	0.447	0.506	0.421	0.728	0.507
SRQ6	0.555	0.535	0.447	0.819	0.534
SRQ7	0.440	0.450	0.464	0.753	0.492
SRQ8	0.588	0.576	0.529	0.780	0.631
SRQ9	0.393	0.469	0.382	0.697	0.461
SYQ1	0.592	0.575	0.545	0.485	0.747
SYQ2	0.481	0.490	0.508	0.537	0.728
SYQ3	0.505	0.559	0.425	0.510	0.764
SYQ4	0.477	0.471	0.443	0.442	0.759
SYQ5	0.548	0.512	0.454	0.477	0.736
SYQ6	0.615	0.651	0.474	0.546	0.784
SYQ7	0.402	0.444	0.339	0.398	0.687
SYQ8	0.421	0.467	0.447	0.440	0.633

Source: Data processing by author, 2025

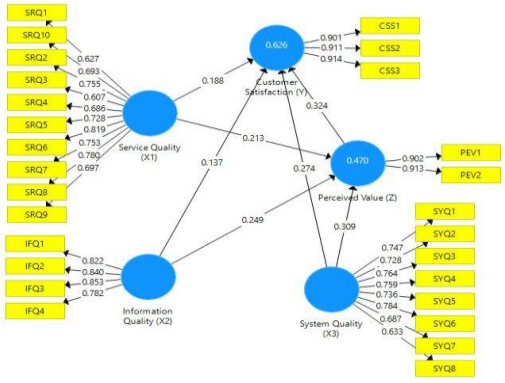

Figure 1. *PLS Algorithm Research Model- SEM-PLS V.3*
Source: Data processing by author, 2025

After processing the data to obtain the results of the outer model, the analysis continues with the evaluation of the structural model (inner model). First, the path coefficients indicate the strength of relationships between latent constructs, where values greater than 0 show significance (See Figure 1). The data analysis results show that all seven relationships in the conceptual research model have path coefficient values above 0, as presented in Table 7.

Tabel 7. Path Coefficients

Path Coefficients	Customer Satisfaction (Y)	Information Quality (X2)	Perceived Value (Z)	Service Quality (X1)	System Quality (X3)
Customer Satisfaction (Y)					
Information Quality (X2)	0.137		0.249		
Perceived Value (Z)	0.324				
Service Quality (X1)	0.188		0.213		
System Quality (X3)	0.274		0.309		

Source: Data processing by author, 2025

Next, the coefficient of determination (R^2), which represents the proportion of variance in the dependent variable explained by the independent variables, ranges from 0.25 to 0.75. The R^2 value for the Customer Satisfaction (Y) construct is 0.626, based in Table 8. This means the model explains 62.6% of the variance in Customer Satisfaction, which is considered moderately strong.

Tabel 8. R Square

R Square	R Square	R Square Adjusted
Customer Satisfaction (Y)	0.626	0.615
Perceived Value (Z)	0.470	0.458

Source: Data processing by author, 2025

Multicollinearity is assessed to measure redundancy between constructs using the Variance Inflation Factor (VIF), where ideal values are below 3.3. According to Table 9, all indicators have VIF values less than 3.3, indicating no multicollinearity problem.

Tabel 9.1 Outer VIF Values

Outer VIF Values	VIF
CSS1	2.495
CSS2	2.823
CSS3	2.807
IFQ1	1.978
IFQ2	2.032
IFQ3	2.136
IFQ4	1.649
PEV1	1.724
PEV2	1.724

Outer VIF Values	VIF
SRQ1	1.613
SRQ10	2.100
SRQ2	2.191
SRQ3	1.522
SRQ4	1.739
SRQ5	2.060
SRQ6	2.715
SRQ7	1.997
SRQ8	2.133
SRQ9	2.147
SYQ1	1.856
SYQ2	1.902
SYQ3	2.095
SYQ4	2.303
SYQ5	1.804
SYQ6	2.215
SYQ7	1.940
SYQ8	1.501

Source: Data processing by author, 2025

The effect size (F^2) is used to determine the impact of each predictor variable (X) on the dependent variable (Y). An F^2 value between 0.02 and 0.15 indicates a weak effect, between 0.15 and 0.35 a moderate effect, and above 0.35 a strong effect. According to the data analysis presented in Table 10, the F^2 values for Information Quality (0.020), Perceived Value (0.149), Service Quality (0.245), and System Quality (0.079) indicate weak to moderate effects on Customer Satisfaction in the structural model.

Tabel 10. F-Square

f Square	Customer Satisfaction (Y)	Information Quality (X2)	Perceived Value (Z)	Service Quality (X1)	System Quality (X3)
Customer Satisfaction (Y)					
Information Quality (X2)	0.020		0.050		
Perceived Value (Z)	0.149				
Service Quality (X1)	0.045		0.042		
System Quality (X3)	0.079		0.076		

Source: Data processing by author, 2025

The model fit test uses the Standardized Root Mean Square Residual (SRMR), where a value below 0.08 indicates a good model fit. The SRMR value in this study is 0.067, suggesting a good model fit, as shown in Table 11.

Table 11. Model Fit Test

Fit Summary	Saturated Model	Estimated Model
SRMR	0.067	0.067
d_ULS	1.690	1.690
d_G	0.897	0.897
Chi-Square	657.714	657.714
NFI	0.731	0.731

Source: Data processing by author, 2025

Subsequently, the hypothesis testing is conducted using path coefficients and bootstrapping simulations. In this case, bootstrapping is applied to the sample data. The conceptual model analysis assesses the significance of the relationships between variables through the bootstrapping procedure. Hypotheses are tested by examining the T-statistics and P-values. Hypotheses are accepted if $t > 1.96$ ($p < 0.05$) or $t > 2.58$ ($p < 0.01$). The results show that six hypotheses are significant and one is not significant, as detailed in Table 12, and explained in Table 13.

Tabel 12. Mean, STDEV, T-Values, P-Values

Mean, STDEV, T-Values, P-Values	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Information Quality (X2) -> Customer Satisfaction (Y)	0.137	0.145	0.083	1.646	0.100
Information Quality (X2) -> Perceived Value (Z)	0.249	0.248	0.116	2.155	0.032
Perceived Value (Z) -> Customer Satisfaction (Y)	0.324	0.311	0.082	3.939	0.000
Service Quality (X1) -> Customer Satisfaction (Y)	0.188	0.197	0.081	2.318	0.021
Service Quality (X1) -> Perceived Value (Z)	0.213	0.225	0.101	2.104	0.036
System Quality (X3) -> Customer Satisfaction (Y)	0.274	0.270	0.096	2.869	0.004
System Quality (X3) -> Perceived Value (Z)	0.309	0.302	0.099	3.104	0.002

Source: Data processing by author, 2025

Tabel 13. Research Hypothesis Testing Results

Hypothesis	Hypothesis Statement	T-Value	Information
H1	Service Quality (X1) has a significant influence on Perceived Value (Z)	2.104	Data supports the hypothesis

Hypothesis	Hypothesis Statement	T-Value	Information
H2	Information Quality (X2) has a significant influence on Perceived Value (Z),	2.155	Data supports the hypothesis
H3	System Quality (X3) has a significant influence on Perceived Value (Z)	3.104	Data supports the hypothesis
H4	Service Quality (X1) has a significant influence on Customer Satisfaction (Y)	2.318	Data supports the hypothesis
H5	Information Quality (X2) does not have a significant influence on Customer Satisfaction (Y)	1,646	Data do not support the hypothesis
H6	System Quality (X1) has a significant influence on Customer Satisfaction (Y)	2.869	Data supports the hypothesis
H7	Perceived Value (Z) has a significant influence on Customer Satisfaction (Y)	3.939	Data supports the hypothesis

Source: Data processing by author, 2025

DISCUSSION

This study investigated the effects of Service Quality, Information Quality, System Quality, and Perceived Value on Customer Satisfaction among university students using e-learning platforms. The findings from the structural equation modeling using Partial Least Squares (SEM-PLS) provided significant insights into how quality dimensions influenced students' satisfaction through perceived value. The first finding demonstrated that Service Quality had a significant and positive effect on Perceived Value. This result confirmed the traditional SERVQUAL dimensions—reliability, assurance, tangibility, empathy, and responsiveness—as relevant constructs in the context of digital learning. Consistent with (Leon et al., 2020). dan (Mediasi, 2021), the study found that when students perceived the e-learning service to be responsive, reliable, and supportive of their academic needs, they were more likely to perceive high value from the platform. This perceived value reflected the trade-off between the benefits gained and the efforts or resources expended in accessing the platform. Therefore, enhancing service responsiveness, timely feedback, and user-oriented features strengthened students' value perceptions toward the e-learning system.

The second result revealed that Information Quality significantly influenced Perceived Value. High-quality content—defined by its accuracy, timeliness, relevance, and clarity—helped students perceive the platform as more useful and supportive of their learning goals. This finding aligned with prior studies Subali Patma (Polytechnic & Polytechnic, 2021) and Putri & Pujani (Street & Sumatra, 2019) ,which emphasized that when students accessed learning materials that were well-organized, up-to-date, and easy to understand, they developed a stronger appreciation of the platform's value. In this context, Information Quality not only referred to lecture materials but also to

announcements, course descriptions, and other digital communications that supported the academic process. Among all the predictors, System Quality exhibited the strongest effect on Perceived Value. The platform's ease of use, technical reliability, interactivity, and feature richness emerged as the most influential determinants of perceived value. This finding supported prior research by (Ridwandono et al., 2022) and (Masri et al., n.d.), who argued that technical infrastructure plays a central role in user satisfaction. Students perceived higher value from the system when it allowed seamless navigation, provided stability with minimal technical errors, and incorporated engaging, interactive elements. This suggests that investments in system development, including mobile compatibility, uptime reliability, and innovative tools such as quizzes or discussion boards, could greatly enhance user value perception.

The results also showed that Service Quality significantly influenced Customer Satisfaction. This finding was in line with (Pham et al., 2019), who asserted that well-delivered services lead to higher levels of customer satisfaction. For students, satisfaction stemmed from the platform's ability to deliver services that met or exceeded expectations—such as timely responses from instructors, helpful academic support, and access to a reliable learning environment. This implies that universities should continuously monitor and train service providers—including lecturers, administrators, and technical teams—to ensure that students receive adequate support throughout their learning journey. Interestingly, Information Quality did not have a significant effect on Customer Satisfaction. This result diverged from previous studies, including (Hardiyanto & Firdaus, 2021), which found a significant relationship. One possible explanation is that, in the context of this study, students may have taken information quality for granted, or perceived it as a baseline requirement rather than a satisfaction driver. Additionally, students might prioritize direct interactions and real-time support over passive content quality when assessing their satisfaction. This highlights the evolving expectations of digital learners, where information quality may no longer serve as a competitive differentiator but rather as a minimum standard.

In contrast, System Quality was found to have a significant and positive effect on Customer Satisfaction. This finding reinforced the argument presented by (Almaiah et al., n.d.), who stated that a high-quality system promotes higher satisfaction levels among users. For students, a well-functioning e-learning platform facilitated consistent learning experiences without disruptions. Features such as single sign-on, quick loading time, mobile accessibility, and secure access were valued highly, contributing to positive user experiences and reinforcing overall satisfaction. Lastly, the study confirmed that Perceived Value had a strong and significant effect on Customer Satisfaction. This result echoed the findings of (Prihanto & Annas, 2023), who found that perceived value acted as a critical mediating variable in digital service environments. The more students valued the benefits they obtained from the platform—whether in terms of learning outcomes,

ease of access, or support—the more satisfied they were with the overall service. This highlights the importance of understanding and managing student perceptions of value as a central aspect of e-learning strategy. The model developed in this study explained 62.6% of the variance in Customer Satisfaction, indicating a moderately strong predictive capability. This result confirmed the theoretical validity and practical relevance of the model in assessing the e-learning experience in higher education. From a managerial perspective, these findings offered several implications. Universities should prioritize improvements in System Quality and Service Quality to enhance both perceived value and student satisfaction. Efforts to improve Information Quality should continue but must be complemented by more active, responsive service delivery and robust platform performance. Since technical ease and user engagement were key drivers, IT development teams should focus on interface improvements, troubleshooting support, and personalized learning features. Additionally, value communication strategies—such as demonstrating tangible learning outcomes, offering timely guidance, and maintaining academic integrity—would help improve students' overall satisfaction with digital learning services. **Conclusions** This study highlighted essential dimensions influencing student satisfaction with e-learning. Universities should enhance system stability, innovative features, and responsive services while refining content quality. Future research could broaden geographical scope and consider additional factors influencing student satisfaction.

CONCLUSION

This study faced limitations such as a sample restricted to students in Java, which limits the generalizability of the findings, and the focus on only four main variables, potentially overlooking other important factors influencing e-learning satisfaction. Future research should broaden the participant base to include students from diverse regions and universities to enhance the applicability of results and consider additional variables like personal characteristics, emerging technologies, and new platform features that may impact student satisfaction. Based on the findings, universities are advised to optimize system quality by improving access speed and stability, enhance service quality through specialized staff training, enrich the relevance and clarity of information content, and regularly gather student feedback to drive continuous improvement. Managerially, the study underscores the need for proactive evaluation and enhancement of system and service quality, innovative feature development, and ongoing staff training to boost perceived value, which ultimately enhances student satisfaction, loyalty, and the institution's competitive standing in higher education.

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