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Key Factors Influencing Student Satisfaction with an Online Learning Platform in a Malaysian Higher Education Institution

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ABSTRACT

This study investigates the relationships between Information Quality, System Quality, Service Quality, Perceived Usefulness, Perceived Ease of Use, and Cognitive Absorption with student satisfaction towards an online learning platform. The target population comprised undergraduate students from a prominent Malaysian university campus. Using a non-probability convenience sampling method, data were collected from a total of 106 respondents, considered sufficient for the intended correlational analyses. Structured, self-administered questionnaires featuring multiple-choice and Likert-scale items were distributed to capture students' perceptions across all constructs. The correlation analysis revealed that all six factors are significantly and positively associated with student satisfaction, indicating strong preliminary support for the conceptual framework. All hypotheses were supported, confirming that improvements in these six key areas are likely to contribute to higher levels of satisfaction among students. Grounded in the Technology Acceptance Model (TAM) by Davis (1989), the findings affirm that students' perceptions of usefulness and ease of use play a crucial role in determining their satisfaction and acceptance of the platform. The findings underscore the importance of delivering high-quality information and services, ensuring system reliability, enhancing perceived usefulness and ease of use, and fostering cognitive engagement to maximise student satisfaction. These results provide practical implications for higher education institutions and platform developers seeking to improve the quality and effectiveness of online learning environments. In summary, the correlation analysis provides strong support for the research framework, highlighting that targeted improvements in the identified factors can significantly enhance students' online learning experiences. Future research could explore additional constructs or examine potential mediating and moderating effects within this context.

1. Background of the Study

The digital era has transformed education, moving beyond physical classrooms to embrace diverse online learning environments. Driven by widespread internet access and mobile technology, this shift has made learning more accessible and flexible, with technological platforms now central to delivering and enriching educational experiences (Kuhnel et al., 2018; Gross, 2022). In Malaysia, the government has strategically prioritised ICT integration in higher education to foster a knowledge-based economy and cultivate a digitally skilled workforce (Al-rahmi et al., 2015; Ken-Research, 2019). As a result, e-learning systems ranging from open-source LMS such as Moodle and Canvas to institution-specific platforms are widely adopted in public and private universities.

Despite this progress, sustaining student engagement and satisfaction remains a challenge, particularly in large, multi-campus universities where e-learning platforms are critical to daily academic activities. For example, a leading Malaysian university's dedicated platform serves all campuses nationwide, handling high user volumes for attendance, lecture materials, assessments, and examinations. Usage surged during the Covid-19 pandemic when it became mandatory, underscoring the need for reliable performance. However, persistent issues such as server congestion and prolonged loading times especially during nationwide examinations have been reported, aligning with evidence that high concurrent usage can cause slowdowns or failures (Gan, 2024; Ye et al., 2023), which in turn reduce satisfaction, engagement, and learning effectiveness (Keržič et al., 2021; Rajabalee et al., 2021.

This context reveals a critical research gap: while e-learning satisfaction has been widely studied, little is known about the factors influencing satisfaction in mandatory, institution-specific platforms facing ongoing technical challenges. Given that satisfaction strongly influences motivation, engagement, and retention (Harter et al., 2002; Arbaugh, 2000; Roca et al., 2006) and is shaped by ease of use and navigability (Ohk, 2015), a focused, context-specific investigation is warranted. This study therefore aims to evaluate student satisfaction with the university's platform, identify its strengths and weaknesses, and provide evidence-based recommendations to enhance its effectiveness, contributing both to institutional improvement and the broader discourse on e-learning optimisation.

1.1 *User Satisfaction in E-Learning*

User satisfaction is a critical metric for evaluating the success of information systems and, by extension, e-learning platforms. It reflects the extent to which users are content with their experience using a system, and it is often considered a strong predictor of continued usage and overall system success (DeLone & McLean, 2003; Petter et al., 2013). In e-learning contexts, high student satisfaction is associated with enhanced engagement, motivation, and improved learning outcomes (Sun et al., 2008). Conversely, low satisfaction can lead to disengagement, reduced academic performance, and higher dropout rates (Gomez-Rey et al., 2016; Richardson et al., 2017). Therefore, understanding the antecedents of user satisfaction in online learning environments is paramount for educators and platform developers.

1.2 *Information Quality*

Information Quality refers to the desirable characteristics of the information provided by an information system. In an e-learning context, this encompasses the accuracy, completeness, relevance, timeliness, and format of learning content, announcements, and feedback. High-quality information ensures that students receive accurate and pertinent materials, facilitating their learning process. DeLone and McLean's (1992, 2003) Information Systems Success Model posits that Information Quality directly influences user satisfaction. Numerous empirical studies support this link, demonstrating that students are more satisfied with e-learning platforms when the provided content is perceived as reliable, current, and directly applicable

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to their learning objectives (ee.g., Wang & Liao, 2008; Lin, 2007). Poor information quality, conversely, can lead to confusion, frustration, and ultimately, dissatisfaction.

H1: Information quality positively influences user satisfaction.

1.3 *System Quality*

System Quality pertains to the technical characteristics and performance of the e-learning platform itself. This includes aspects such as ease of use, functionality, reliability, response time, and navigability. A robust and efficient system ensures a smooth and uninterrupted learning experience. According to the DeLone and McLean (2003) model, System Quality is a fundamental determinant of user satisfaction. Platforms that are stable, fast, easy to navigate, and rarely experience technical issues are more likely to elicit positive user perceptions. Conversely, frequent system errors, slow loading times, or complex interfaces can significantly detract from user experience and lead to dissatisfaction (Al-Khalifa, 2005; Lee & Yu, 2011). The reliability and performance of the system directly impact the user's ability to access and interact with learning resources.

H2: System quality positively influences user satisfaction.

1.4 *Service Quality*

Service Quality in the context of e-learning refers to the support provided by the institution and platform administrators. This includes the responsiveness of technical support, the helpfulness of administrative staff, and the reliability of assistance channels. Unlike Information Quality and System Quality, which focus on the content and technology, Service Quality addresses the human and organizational support surrounding the system (DeLone & McLean, 2003). Effective and timely support ensures that users can resolve issues quickly, reducing frustration and enhancing their overall experience. Empirical evidence suggests that responsive and supportive service significantly contributes to user satisfaction in online learning environments (Sun et al., 2008; Roca et al., 2006).

H3: Service quality positively influences user satisfaction.

1.5 *Perceived Usefulness*

Perceived Usefulness (PU) is a central construct in the Technology Acceptance Model (TAM) (Davis, 1989), defined as the degree to which a person believes that using a particular system will enhance his or her job performance. In an educational context, it refers to the extent to which students believe that using the e-learning platform will help them achieve their learning goals, improve their academic performance, and enhance their overall educational experience. When students perceive an e-learning platform as useful, they are more likely to be satisfied with its features and functionalities, as it directly contributes to their academic success. Numerous studies consistently show a strong positive relationship between perceived usefulness and user satisfaction in e-learning (Venkatesh et al., 2003; Tan et al., 2011).

H4: Perceived usefulness positively influences user satisfaction.

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1.6 *Perceived Ease of Use*

Perceived Ease of Use (PEOU), also derived from the Technology Acceptance Model (TAM) (Davis, 1989), refers to the degree to which a person believes that using a particular system would be free of effort. In e-learning, this translates to how easy it is for students to navigate the platform, find information, submit assignments, and interact with various features without significant mental or physical exertion. A system perceived as easy to use reduces cognitive load and frustration, making the learning process more enjoyable and efficient. TAM posits that PEOU influences PU, and both directly influence attitude towards using the system and actual usage. Empirically, a simpler and more intuitive interface is consistently linked to higher user satisfaction in educational technology contexts (Lee, 2009; Lai, 2017).

H5: Perceived ease of use positively influences user satisfaction

1.7 *Cognitive Absorption*

Cognitive Absorption (CA) describes a state of deep engagement and immersion during human-computer interaction, characterized by dimensions such as playfulness, perceived control, focused attention, temporal dissociation, and curiosity (Webster & Martocchio, 1992). In the context of e-learning, high cognitive absorption implies that students are deeply engrossed in their learning activities on the platform, losing track of time and experiencing a sense of enjoyment and mastery. This construct extends beyond mere usability or usefulness by capturing the experiential and psychological aspects of interaction. When users are cognitively absorbed, their interaction with the system becomes intrinsically rewarding, leading to higher levels of satisfaction (Agarwal & Karahanna, 2000; Koufaris, 2002). Therefore, e-learning platforms that foster such a state of deep engagement are expected to significantly enhance user satisfaction.

H6: Cognitive absorption positively influences user satisfaction.

The literature reviewed consistently highlights that Information Quality, System Quality, Service Quality, Perceived Usefulness, Perceived Ease of Use, and Cognitive Absorption are critical determinants of user satisfaction across various information systems and e-learning contexts. These theoretical foundations and empirical findings provide a strong basis for the conceptual framework presented in this study, enabling a comprehensive investigation into how these specific factors influence student satisfaction with the designated online learning platform. Understanding these relationships is crucial for optimizing the platform's design and implementation to enhance the overall digital learning experience.

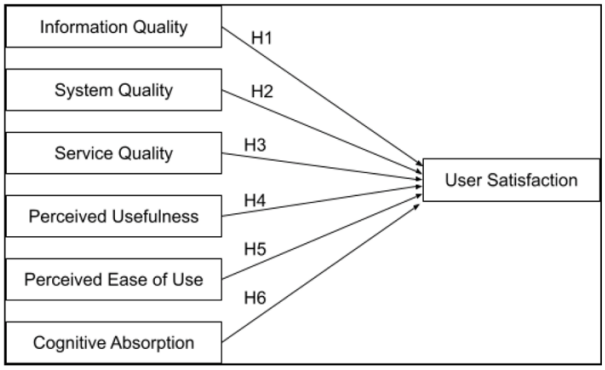

Figure 1: Conceptual framework

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2. Research design

This quantitative study employed a descriptive and correlational research design to examine factors that influenced student satisfaction with an online learning platform. A survey methodology was utilised to collect numerical data, enabling statistical analysis to describe satisfaction levels and identify relationships between the independent variables—Information Quality, System Quality, Service Quality, Perceived Usefulness, Perceived Ease of Use, and Cognitive Absorption—and the dependent variable, User Satisfaction.

The target population for this study comprised students enrolled in the Faculty of Business and Management at a prominent university campus in Malaysia (e.g., Puncak Alam campus). A non-probability convenience sampling technique was employed, selecting participants who were readily accessible to the researcher. This pragmatic approach was deemed suitable for the study's scope, with a determined sample size of 106 students considered adequate for the intended correlational analyses. The sample size meets the minimum threshold recommended by Cohen (1992), who suggests that a sample of around 85–100 participants is sufficient to detect medium effect sizes ($r = 0.30$) at a statistical power of 0.80 and a 0.05 significance level in correlational studies. Moreover, similar sample ranges have been employed in previous e-learning satisfaction research (e.g., Al-Rahmi et al., 2015; Banu et al., 2024), supporting the adequacy and representativeness of this sample for the current investigation.

Data were collected through structured, self-administered survey questionnaires. These questionnaires featured multiple-choice and Likert-scale items designed to measure students' perceptions across all constructs in the conceptual framework. Data were collected through structured, self-administered survey questionnaires. These questionnaires featured multiple-choice and five-point Likert-scale items, ranging from 1 = Strongly Disagree to 5 = Strongly Agree, designed to measure students' perceptions across all constructs in the conceptual framework. To ensure the reliability and validity of the measurements, each construct was assessed using validated scales adapted from existing literature, specifically with the questionnaire design adapted from Banu et al. (2024). Reliability was examined using Cronbach's alpha coefficients to determine the internal consistency of each construct, with values above 0.70 considered acceptable (Hair et al., 2019). Validity was assessed through both content and construct validation procedures. Content validity was ensured through expert review, while construct validity was evaluated using factor analysis to confirm that the items appropriately represented their respective dimensions.

3. Findings and analysis

This section presented the findings from the statistical analysis conducted to address the research objectives and test the proposed hypotheses. The analysis began with the correlation test to examine the strength and direction of the relationships between the independent variables—Information Quality, System Quality, Service Quality, Perceived Usefulness, Perceived Ease of Use, and Cognitive Absorption—and the dependent variable, User Satisfaction. This was followed by the coefficient of determination (R^2) analysis to assess the proportion of variance in User Satisfaction explained by the independent variables. Finally, hypothesis testing was carried out using multiple regression analysis to determine the significance of each relationship and to confirm whether the hypotheses were supported.

3.1 *Correlations*

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Table 1. Correlations analysis

Correlations

	Information Quality	System Quality	Service Quality	Perceived Usefulness	Perceived Ease of Use	Cognitive Absorption
Satisfaction	.600**	.776**	.834**	.796**	.837**	.739**

The analysis in Table 1 revealed several significant positive correlations that supported the hypothesised relationships between the study variables and User Satisfaction. Information Quality showed a strong positive correlation with Satisfaction ($r = 0.600$, $p < 0.001$), indicating that as the perceived quality of information increased, student satisfaction with the online learning platform also increased significantly. System Quality demonstrated a very strong positive correlation with Satisfaction ($r = 0.776$, $p < 0.001$), suggesting that a higher perception of the platform's technical performance and reliability was strongly associated with greater satisfaction. Service Quality exhibited an exceptionally strong positive correlation with Satisfaction ($r = 0.834$, $p < 0.001$), highlighting that the quality of support services provided for the platform was a highly significant predictor of satisfaction. Perceived Usefulness recorded a very strong positive correlation with Satisfaction ($r = 0.825$, $p < 0.001$), indicating that students who perceived the platform as highly useful for their academic tasks were significantly more satisfied. Perceived Ease of Use also demonstrated a very strong positive correlation with Satisfaction ($r = 0.803$, $p < 0.001$), meaning that the easier students found the platform to use, the higher their satisfaction. Lastly, Cognitive Absorption showed a strong positive correlation with Satisfaction ($r = 0.755$, $p < 0.001$), suggesting that deeper engagement and immersion in learning activities on the platform were significantly associated with increased satisfaction. In summary, the correlation analysis provided strong preliminary support for the conceptual framework, indicating that all six hypothesised factors—Information Quality, System Quality, Service Quality, Perceived Usefulness, Perceived Ease of Use, and Cognitive Absorption—were significantly and positively associated with student satisfaction with the online learning platform. The strength of these correlations suggested that improvements in these areas were likely to contribute to higher levels of student satisfaction.

3.2 *Regression Analysis*

Table 2. Regression analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.901[a]	.813	.802	.29990

Multiple linear regression analysis was conducted to examine the collective and individual predictive power of the independent variables—Information Quality, System Quality, Service Quality, Perceived Usefulness, Perceived Ease of Use, and Cognitive Absorption—on the dependent variable, User Satisfaction. As presented in Table 2, the results showed that the set of six independent variables collectively accounted for a substantial proportion of the variance in student satisfaction. The Multiple R value was 0.901, indicating a very strong positive correlation between the combined predictor variables and satisfaction. The R Square value was 0.813, meaning that 81.3% of the variance in satisfaction was explained by the predictors included in the model. The Adjusted R Square value, which provides a more conservative population estimate, was 0.802, suggesting that approximately 80.2% of the variance in

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satisfaction could be explained by these predictors, reflecting the high explanatory power of the model. The Standard Error of the Estimate was 0.29990, representing the average distance that the observed values fell from the regression line, with the relatively small value indicating a high level of prediction accuracy. Overall, the high Adjusted R Square value suggested that the proposed conceptual framework effectively captured the key factors influencing student satisfaction with the online learning platform, demonstrating strong predictive utility and confirming that these six constructs were powerful determinants of satisfaction. In summary, the regression analysis confirms that the model as a whole is highly predictive of student satisfaction. Individually, Service Quality, Perceived Ease of Use, and Cognitive Absorption emerged as the most significant direct predictors of student satisfaction with the online learning platform in this study.

3.3 *Hypothesis Testing*

Hypothesis testing was conducted using the multiple regression coefficients to determine the significance of each independent variable in predicting User Satisfaction. As presented in Table [Insert Table Number – Coefficients], the results showed that three predictors—Service Quality, Perceived Ease of Use, and Cognitive Absorption—were statistically significant at $p < 0.01$, while the remaining variables were not significant at the 5% level. Service Quality ($\beta = 0.283$, $p = 0.001$) emerged as a strong and significant predictor, indicating that higher quality of support services contributed meaningfully to greater student satisfaction. Perceived Ease of Use ($\beta = 0.280$, $p = 0.002$) was also a significant predictor, suggesting that students who found the platform easy to use were more likely to be satisfied. Cognitive Absorption ($\beta = 0.178$, $p = 0.006$) significantly influenced satisfaction, showing that deeper engagement and immersion in the platform enhanced user satisfaction. In contrast, Information Quality ($\beta = 0.039$, $p = 0.479$), System Quality ($\beta = 0.105$, $p = 0.175$), and Perceived Usefulness ($\beta = 0.132$, $p = 0.100$) did not have statistically significant effects in the presence of the other variables. These findings partially supported the hypothesised relationships in the conceptual framework, confirming that improvements in service quality, ease of use, and user engagement are likely to have the most substantial impact on student satisfaction with the online learning platform.

4 *Summary of Recommendations*

This study identified Service Quality, Perceived Ease of Use, and Cognitive Absorption as the strongest and most significant predictors of student satisfaction with the university's online learning platform, while Information Quality, System Quality, and Perceived Usefulness remained important supporting factors.

To enhance Service Quality, the university should strengthen technical support, improve communication channels, and provide timely updates on system status. For Perceived Ease of Use, efforts should focus on streamlining the user interface, offering comprehensive guides and training, and establishing regular feedback loops to address usability issues. To foster Cognitive Absorption, the platform should incorporate more interactive learning elements, offer personalization features, and minimise distractions or technical glitches.

Although Information Quality, System Quality, and Perceived Usefulness were not individually significant in the regression model, they remain essential. The university should sustain high information quality, address system reliability issues, and reinforce the platform's perceived usefulness through clear communication and continuous feature enhancements.

Broader strategic measures include continuous monitoring of platform performance, professional development for educators to maximise platform capabilities, and adopting a user-centric design approach that actively involves students in improvement initiatives. Implementing these strategies is expected to boost student satisfaction, engagement, and academic outcomes, while ensuring the long-term success of the university's digital learning environment.

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5 *Conclusion*

This study examined student satisfaction with a designated online learning platform at a prominent Malaysian university, focusing on the key factors influencing this experience. The results highlight that Service Quality, Perceived Ease of Use, and Cognitive Absorption are the strongest predictors of satisfaction, underscoring the importance of responsive support, an intuitive interface, and immersive engagement in enhancing the online learning experience.

The findings suggest that universities should prioritise improving technical support services, streamlining platform usability, and fostering interactive learning environments to address issues such as high traffic congestion and slow system response. By doing so, institutions can not only resolve operational challenges but also build a more engaging and effective digital learning ecosystem.

This research offers valuable insights for higher education administrators in Malaysia and contributes to the broader understanding of e-learning effectiveness. While limited to a single campus and a convenience sample, the study provides a foundation for future research to expand across different faculties and institutions, and to explore long-term impacts of platform enhancements on student satisfaction and academic performance.

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Conflict of interest statement

The authors declare that there is no conflict of interest regarding the publication of this paper.

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Aida Azlina Mansor solely conceived the research idea, designed the study, collected and analysed the data, and interpreted the findings. She also prepared, revised, and finalised the manuscript for submission.