The Influence of Information System Quality and Perceived Cybersecurity on Students' Continued Usage, with Trust as a Mediating Variable

Muh. Rivaldi[a1*], Irwan Syarifuddin[a2], Hari Yeni[a3], Muhammad Aqil[a4]

[a] *Universitas Muhammadiyah Mamuju, Jln. Baharuddin Lopa No. 2, Mamuju Sulawesi Barat – 91511, Indonesia*
[1]*mhdrvll93@gmail.com, [2]irwansyarifuddin1@gmail.com, [3]hari_yeni@unimaju.ac.id, [4]muh_aqil@unimaju.ac.id
* corresponding author: mhdrvll93@gmail.com*

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ABSTRACT

Digital transformation in higher education requires the availability of academic information systems that are not only high quality but also capable of protecting students' digital data and activities. This study aims to analyze the influence of information system quality and cybersecurity perceptions on student continuance usage, both directly and indirectly through trust as a mediating variable. The study used a quantitative approach with a survey design on 216 active students of the Muhammadiyah Polman Institute of Technology and Business who have used the Academic Information System. Respondents were selected using a purposive sampling technique. Data were collected through a five-point Likert-scale questionnaire and analyzed using Partial Least Squares–Structural Equation Modeling with the help of SmartPLS 4. The results showed that information system quality had a positive and significant effect on trust (β=0.339; t=6.325; p<0.001) and continuance usage (β=0.222; t=3.903; p<0.001). Cybersecurity perceptions also had a positive and significant effect on trust (β=0.387; t=6.174; p<0.001) and continuance usage (β=0.275; t=5.528; p<0.001). Trust exerted the strongest influence on continuance usage (β=0.427; t=7.745; p<0.001). Furthermore, trust was shown to partially mediate the effect of information system quality on continuance usage, with an indirect effect of 0.145 and a VAF of 39.4%, and the effect of cybersecurity perceptions on continuance usage, with an indirect effect of 0.165 and a VAF of 37.6%. This study concluded that the continued use of academic information systems is determined by technical quality, cybersecurity assurance, and especially student trust. Universities need to improve system reliability, data protection, security transparency, and service responsiveness to maintain continued system use.

I. Introduction (*Heading 1*) (bold, 11 pt)

Digital transformation has positioned information systems as strategic infrastructure in the delivery of higher education. Academic Information Systems (SIAKAD), Learning Management Systems, student portals, digital libraries, and integrated payment services no longer function merely as administrative tools; instead, they have become primary mediums for student interaction with the university. This situation requires institutions to provide systems that are user-friendly, responsive, stable, integrated, and capable of delivering accurate information. Previous studies indicate that technical quality, information quality, and service quality determine the success of learning systems and digital services in higher education (Al-Fraihat et al., 2020; Almaiah et al., 2020; Alyoussef, 2023; Li et al., 2021). Poor system quality—manifested in slow response times, access failures, complex navigation, data processing inaccuracies, and disruptions during critical academic service

periods—can degrade the user experience and diminish students' willingness to continue using the system.

Consequently, the success of an information system cannot be judged solely by initial acceptance or usage. A new system is deemed successful only if students are willing to use it consistently after gaining firsthand experience. From a post-adoption perspective, "continuance usage" reflects a user's commitment to maintaining system use because its benefits and performance align with their needs. Findings by Ermilinda et al. (2024), Soria-Barreto et al. (2021), and Herzallah et al. (2025) demonstrate that the sustained use of educational technology is influenced by user evaluations regarding benefits, confirmation of expectations, habits, satisfaction, and the experience of interacting with the system. Therefore, a high number of registered users does not automatically prove a system's success if usage is driven merely by administrative mandates.

These issues are further complicated by the fact that the digitalization of academic services also increases exposure to cybersecurity risks. SIAKAD manages student identity data, academic history, grades, administrative documents, account credentials, and payment information. Concerns regarding data confidentiality, user authentication, information integrity, access security, and the institution's ability to handle security incidents can diminish student trust. Users may continue to access the system out of obligation but limit their interactions, avoid storing data, or seek alternative service channels if the system is perceived as insecure. Thus, the central issue of this research is not merely whether the system is usable, but whether its technical quality and perceived security protections can foster trust and sustain continued student usage.

Recent studies on the sustained use of technology generally integrate the Information Systems Success Model and the Expectation-Confirmation Model. Within this framework, system quality represents the technology's ability to provide reliability, ease of use, accessibility, flexibility, responsiveness, and service availability. Meanwhile, sustained usage emerges after users compare their initial expectations with their actual experiences. Gu et al. (2021) demonstrated that system, information, and service quality serve as antecedents to expectation confirmation among MOOC platform users, subsequently enhancing perceived usefulness, satisfaction, and the intention to continue usage. Li et al. (2022) also showed that system availability, feedback accuracy, functionality, and interactivity contribute to the user experience and the sustainability of virtual classroom usage. Similar findings have been reported by Zheng et al. (2023), Alkhuwaylidee (2025), Yakubu and Dasuki (2018), Binyamin et al. (2019), and Mehrolia et al. (2021), all of whom identify technological characteristics as the foundation for forming positive user evaluations.

Beyond system quality, cybersecurity perception has emerged as a crucial determinant in the use of digital services. This perception reflects a user's subjective assessment of a system's ability to maintain confidentiality, integrity, availability, privacy, and secure access. Shao et al. (2019) found that platform security contributes to building trust and ensuring the continued use of digital payment services. Maqableh et al. (2021) demonstrated that trust and satisfaction mediate the impact of perceived security on continuance intention. In the Indonesian context, Sasongko et al. (2022) found that technological safeguards, security policies, and service provider commitment shape perceptions of security and trust among electronic money users. Furthermore, Prawira et al. (2024) established that privacy, encryption, transaction processes, and information quality influence security perceptions regarding the continued use of digital wallets. These findings underscore that security is not merely a technical attribute but also an institutional signal that determines a user's willingness to entrust their data and activities to a system.

In this context, trust acts as a psychological mechanism bridging system characteristics and post-usage behavior. Trust develops when users believe the system possesses competence, integrity, and consistency, and is capable of protecting their interests. A meta-analysis by Mishra et al. (2023) indicates that trust represents a significant extension of information system post-acceptance models. Other empirical evidence shows that trust can mitigate uncertainty and perceived risk while reinforcing the decision to reuse digital services (Bhaskar et al., 2024; Dang et al., 2025; Jiang et al., 2021). In higher education, the role of trust is particularly relevant, as students interact with systems that not only provide information but also store personal data and determine the smooth execution of academic activities.

Research on educational technology also indicates that continued usage is multidimensional. Ramadhan et al. (2022) found that satisfaction and perceived enjoyment determine the continued use

of online library resources among Indonesian students. Gao et al. (2023) assert that technical attributes and the flow experience influence the continued use of smart education systems. Jo (2024), Salifu et al. (2025), and Holzmann et al. (2025) demonstrate that benefits, risks, ethical considerations, satisfaction, and performance expectations determine students' continued use of AI-based technologies. Meanwhile, Franque et al. (2021), Yan et al. (2021), and Mishra et al. (2023) confirm that integrating system quality, expectation confirmation, satisfaction, trust, and benefits yields greater explanatory power than applying a single theory in isolation.

Although the literature on continuance usage is expanding rapidly, there are several gaps that have not received adequate attention. First, the majority of studies have been conducted in the contexts of e-learning, MOOCs, virtual classrooms, online libraries, social media, digital payments, and artificial intelligence (Gu et al., 2021; Li et al., 2022; Maqableh et al., 2021; Ramadhan et al., 2022). Academic Information Systems (SIAKAD) possess distinct characteristics, as their usage is institutional, repetitive, integrated with various services, and—in many situations—mandatory. Consequently, findings regarding commercial services or voluntary learning activities cannot be directly generalized to the use of SIAKAD.

Second, previous research has predominantly positioned satisfaction, perceived benefits, expectation confirmation, and habit as the primary mediators or predictors of continued usage (Ermilinda et al., 2024; Herzallah et al., 2025; Soria-Barreto et al., 2021). Trust has been examined less frequently as a mediating mechanism explaining how information system quality leads to continued usage. Third, security is generally positioned as an aspect of system quality, perceived risk, or technical characteristics, rather than as an independent variable specifically representing cybersecurity perceptions. This approach risks obscuring the contribution of data protection and privacy to user trust.

Fourth, most studies measure *continuance intention* rather than *continuance usage*, which reflects commitment, consistency, and the tendency toward actual usage. Fifth, empirical evidence simultaneously examining information system quality, cybersecurity perceptions, trust, and the continued use of SIAKAD among Indonesian students remains limited. This gap highlights the need for a model capable of explaining technical and security aspects as two distinct yet complementary sources of trust.

This study aims to analyze the influence of information system quality and cybersecurity perceptions on students' continued usage, both directly and indirectly through trust. It also examines the impact of information system quality and cybersecurity perceptions on trust, as well as the influence of trust on the continued use of the Academic Information System.

The study’s novelty lies in four aspects. First, it separates cybersecurity perceptions from the system quality construct, allowing for a more precise assessment of each variable's contribution. Second, trust is positioned as a mediating variable that translates technical quality and security assurances into continued usage behavior. Third, the research focuses on post-adoption usage of SIAKAD rather than merely initial technology acceptance. Fourth, the model is tested on students within the Indonesian higher education context, thereby enriching the information systems success literature—which has hitherto been dominated by studies on online learning and commercial digital services.

Based on the foregoing, the continued use of the Academic Information System results from students' evaluations of the system's ability to meet their needs while simultaneously protecting their data and digital activities. High technical quality does not necessarily lead to continued usage if students harbor doubts about system security. Conversely, robust security measures must be accompanied by a system that is reliable, responsive, and user-friendly. Therefore, examining the mediating role of trust is crucial for comprehensively explaining the mechanisms by which information system quality and cybersecurity perceptions influence students' continued usage.

II. Method

This study employs an explanatory quantitative approach with a cross-sectional survey design to examine the influence of information system quality and cybersecurity perceptions on students' continuance usage, both directly and through trust as a mediating variable. A quantitative approach allows theoretical constructs to be operationalized into measurable indicators and enables the statistical testing of relationships between constructs (Creswell & Creswell, 2023). The research was conducted at the Institut Teknologi dan Bisnis Muhammadiyah Polman, involving a population of 542 active students. The sample was selected using purposive sampling, targeting active students from the Digital Business study program cluster (classes of 2023–2025) who had utilized the Academic Information System. A total of 216 respondents participated; this sample size was deemed adequate based on model complexity, statistical power requirements, and PLS-SEM sampling recommendations (Kock & Hadaya, 2018; Hair et al., 2022). Selecting respondents based on usage experience was essential to ensure that assessments of quality, security, trust, and continuance usage were grounded in actual experience rather than hypothetical perceptions (Sugiyono, 2023).

Primary data were collected via a closed-ended questionnaire using a five-point Likert scale—ranging from 1 ("strongly disagree") to 5 ("strongly agree")—while secondary data were obtained from institutional documents and relevant scholarly literature (Sekaran & Bougie, 2020). Information system quality was measured in terms of ease of use, reliability, response speed, security, and accessibility; cybersecurity perceptions encompassed confidentiality, integrity, availability, privacy, and access security. Trust was measured through reliability, integrity, competence, security, and confidence in the system, whereas continuance usage covered the intention to reuse, consistency of use, commitment, and willingness to recommend. All items were adapted from existing instruments, assessed for content validity, and pilot-tested prior to main data collection to ensure measurement clarity and consistency (Hair et al., 2020).

Analysis was conducted using SmartPLS 4 in two stages. Measurement model evaluation involved outer loadings ≥0.708, Average Variance Extracted ≥0.50, composite reliability and Cronbach's alpha values between 0.70 and 0.95, and discriminant validity via HTMT <0.90 (Franke & Sarstedt, 2019; Benitez et al., 2020). The structural model was evaluated based on collinearity, path coefficients, R^2, f^2, Q^2, and predictive capability using PLSpredict (Shmueli et al., 2019; Guenther et al., 2023). Hypothesis testing and indirect effects were assessed via bootstrapping; relationships were considered significant if the t-statistic exceeded 1.96 and the p-value was less than 0.05. Trust mediation was determined based on the significance of the specific indirect effect and the pattern of direct influence observed after the mediator was introduced into the model.

III. Results and Discussion

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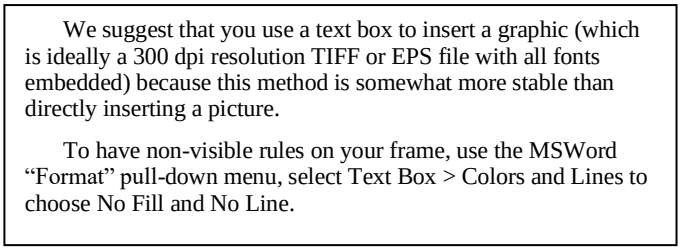

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IV. Conclusion

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