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Evaluating the Acceptance and Use of Education Management Information System (EMIS) 4.0 in a Private Islamic Boarding School Based on the Technology Acceptance Model

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Abstract

The low adoption rate of information systems in Islamic educational institutions highlights a gap between technological advancement and user acceptance, particularly within madrasa management. This study examines the acceptance and effectiveness of EMIS 4.0 in a private Islamic boarding school in Malangbong District, utilizing the Technology Acceptance Model (TAM) as the theoretical framework. A quantitative, ex post facto design was employed, with data collected from madrasa operators through questionnaires and analyzed statistically. The results indicate that management support has a significant influence on both perceived usefulness ($p = 0.016$) and actual system use ($p = 0.022$). In contrast, prior experience and training have a significant effect on perceived ease of use ($p = 0.016$ and $p = 0.007$). Although perceived usefulness does not significantly impact attitude ($p = 0.416$), it affects intention to use ($p = 0.047$), with both attitude ($p = 0.029$) and intention ($p = 0.025$) predicting actual use. This study contributes to the contextual application of TAM and offers practical strategies for sustainable EMIS adoption in faith-based schools.

Keywords: Educational Technology, EMIS 4.0**,** Evaluation, TAM, Islamic Education.

Abstrak

Rendahnya tingkat adopsi sistem informasi di lembaga pendidikan Islam mengindikasikan adanya kesenjangan antara kemajuan teknologi dan penerimaan pengguna, khususnya dalam manajemen madrasah. Penelitian ini mengkaji penerimaan dan efektivitas EMIS 4.0 di sebuah pondok pesantren swasta di Kecamatan Malangbong dengan menggunakan kerangka teori Technology Acceptance Model (TAM). Desain penelitian kuantitatif dengan pendekatan ex post facto digunakan, dengan pengumpulan data melalui kuesioner kepada operator madrasah dan dianalisis secara statistik. Hasil penelitian menunjukkan, dukungan manajemen berpengaruh signifikan terhadap persepsi kegunaan ($p = 0,016$) dan penggunaan sistem aktual ($p = 0,022$), sementara pengalaman sebelumnya dan pelatihan berpengaruh signifikan terhadap persepsi kemudahan penggunaan ($p = 0,016$ dan $p = 0,007$). Meskipun persepsi kegunaan tidak berpengaruh signifikan terhadap sikap ($p = 0,416$), variabel ini memengaruhi niat untuk meng-gunakan ($p = 0,047$), dengan sikap ($p = 0,029$) dan niat ($p = 0,025$) sama-sama memprediksi penggunaan aktual. Studi ini memberikan kontribusi terhadap penerapan kontekstual TAM dan menawarkan strategi praktis untuk adopsi EMIS yang berkelanjutan di sekolah berbasis agama.

***Kata Kunci**: Teknologi Pendidikan, EMIS 4.0, Evaluasi, TAM, Pendidikan Islam.*

INTRODUCTION

The digital revolution has transformed nearly every aspect of human life from how people communicate to how they learn and work (Ahadiyah et al., 2024; Bulturbayevich, 2021; Calora et al., 2023; Fahmi et al., 2024). In the education sector, digitalization has replaced manual, paper-based processes with integrated, technology-driven information systems (Arif et al., 2025; Fathullah et al., 2023; Hafid & Barnoto, 2022). Globally, information management systems are regarded as strategic tools that enhance organizational agility, accountability, and data-driven decision-making (Akter et al., 2021). However, the success of these systems does not rely solely on technological infrastructure but also on human resource readiness, managerial capability, and organizational culture (Azizi et al., 2021; Deng et al., 2023; Musyaffa et al., 2023; Wang et al., 2022).

In Indonesia, the Ministry of Religious Affairs has developed the Education Management Information System (EMIS) as a national platform to strengthen the governance of Islamic education. EMIS was institutionalized through Ministerial Regulation (PMA) No. 90 of 2013 and was upgraded to EMIS 4.0 in 2021 as part of a broader agenda for madrasah education reform. This system aims to improve data accuracy, enhance administrative services, and promote more responsive policy-making. Foundational values such as discipline, coordination, and structured collaboration are also rooted in Islamic principles, as reflected in Surah Ash-Shaff verse 4, which emphasizes the importance of unity in organized action.

Several previous studies have employed the Technology Acceptance Model (TAM) to understand user behavior regarding EMIS and similar educational information systems. Research by Hussain & Shahzad, 2020; Alshamsi et al., 2022; (Kusumadewi et al., 2021; and Adha et al., 2021) has shown that perceived usefulness, ease of use, and user attitude significantly influence technology adoption. However, most of these studies have focused on TAM's core variables and have not deeply explored external factors that may be critical in religious-based institutional contexts like madrasahs.

Despite the national rollout of EMIS 4.0, its practical use in the field still faces considerable challenges. For instance, data from the 2022/2023 academic year shows that only 39.47% of madrasahs in Garut Regency completed their EMIS data submission. This indicates that the barriers to adoption are not solely technological but also include limited training, weak management support, and users' lack of experience operating the system (Purohit et al., 2022). Unfortunately, such external factors remain underexplored within the TAM framework.

This study seeks to fill that gap by extending the TAM model through the inclusion of three external variables: management support, training, and user experience. These were selected for their high relevance to madrasah operations, which are often shaped by hierarchical leadership structures and strong religious values. This approach allows the study to examine not only the core constructs of TAM but also how institutional and cultural factors influence technology acceptance (Purohit et al., 2022).

Theoretically, this research broadens the application of TAM to the domain of religiously based education. Practically, the findings are expected to offer strategic recommendations for madrasah administrators and policymakers, such as the importance of task-oriented technical training, active involvement of school leaders, and continuous provision of technical support. With the right strategy, EMIS 4.0 can be not only successfully implemented but also internalized as an integral part of modern, efficient Islamic educational governance (Deloitte Insights, 2024).

METHOD

This study aims to evaluate the effectiveness of EMIS 4.0 implementation in Madrasah Tsanawiyah located in Malangbong, Garut Regency, by analyzing how external factors such as management support, prior experience, and training affect system adoption. Utilizing the Technology Acceptance Model (TAM) as a theoretical framework, the research extends the original TAM by integrating these external variables alongside its core constructs: perceived usefulness, perceived ease of use, attitude toward use, behavioral intention, and actual use. This contextual adaptation is aligned with recent studies emphasizing that successful information system adoption in education requires not only cognitive evaluation of usefulness and ease but also organizational readiness and leadership support Grandón et al., 2021)

A quantitative *ex post facto* approach was employed, using data collected from madrasa operators through structured Likert-scale questionnaires. The analysis was conducted using SmartPLS software with a Partial Least Squares Structural Equation Modeling (PLS-SEM) technique, enabling the evaluation of both measurement and structural models (Hair et al., 2021). This dual approach provided a comprehensive view of indicator reliability and the strength of causal relationships among variables. By applying this model, the study contributes to the growing body of research that integrates TAM with external factors, particularly in faith-based school contexts, offering practical insights for improving digital system adoption in Islamic educational institutions (Purohit et al., 2022; Bhatt, 2022)

This methodological approach ensured a robust examination of the factors influencing the acceptance and effectiveness of EMIS 4.0.

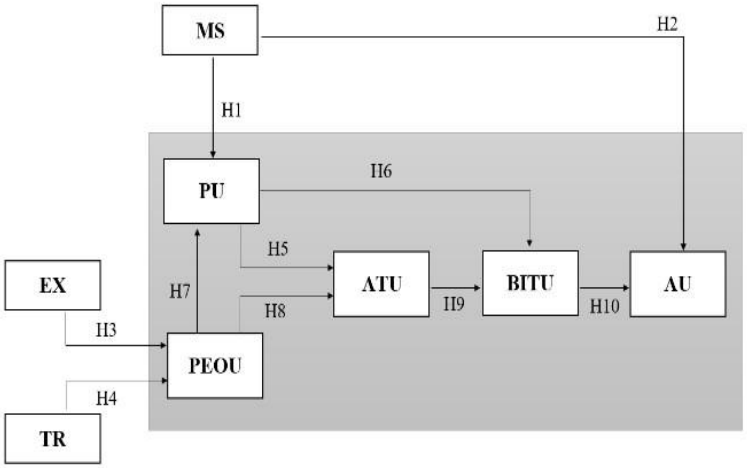

Figure 1. Research Hypotheses

Based on the research model, the following hypotheses were formulated to examine the factors influencing the acceptance and implementation of EMIS 4.0:

H1: Management Support (MS) significantly affects Perceived Usefulness (PU) in the implementation of EMIS 4.0.
H2: Management Support (MS) significantly affects Actual Use (AU) in the implementation of EMIS 4.0.
H3: Experience (EX) significantly affects Perceived Ease of Use (PEOU) in the implementation of EMIS 4.0.
H4: Training (TR) significantly affects Perceived Ease of Use (PEOU) in the implementation of EMIS 4.0.

H5: Perceived Usefulness (PU) significantly affects Attitude Toward Use (ATU) in the implementation of EMIS 4.0.
H6: Perceived Usefulness (PU) significantly affects Behavioral Intention to Use (BITU) in the implementation of EMIS 4.0.
H7: Perceived Ease of Use (PEOU) significantly affects Perceived Usefulness (PU) in the implementation of EMIS 4.0.
H8: Perceived Ease of Use (PEOU) significantly affects Attitude Toward Use (ATU) in the implementation of EMIS 4.0.
H9: Attitude Toward Use (ATU) significantly affects Behavioral Intention to Use (BITU) in the implementation of EMIS 4.0.
H10: Behavioral Intention to Use (BITU) significantly affects Actual Use (AU) in the implementation of EMIS 4.0.

The study encompassed the entire population of madrasa operators at a private Madrasah Tsanawiyah in Malangbong, Garut Regency a feasible approach since the population comprised fewer than 100 individuals, allowing for complete (census) sampling (Boyd et al., 2022). Census sampling ensures that every member of a small population is included without introducing sampling error, particularly appropriate for this research scale. The survey instrument underwent rigorous validity and reliability assessment. Structural model evaluation using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS revealed a Q^2 (Stone Geisser's predictive relevance) value of 0.981, indicating exceptionally strong predictive relevance (Hair et al., 2021) In PLS-SEM, a Q^2 above 0.35 is considered to demonstrate substantial predictive power, underscoring the robustness of the proposed model (Hair et al., 2021).

RESULTS AND DISCUSSION

The primary objective of this study is to evaluate the effectiveness of implementing EMIS 4.0 at Madrasah Tsanawiyah in Malangbong, Garut Regency, with a focus on the influence of external factors such as management support, experience, and training on its adoption. To achieve this, data was collected through a questionnaire distributed to madrasah operators, which measured their perceptions and experiences with EMIS using the TAM constructs. The data will be analyzed using Structural Equation Modeling (SEM) with SmartPLS software, which allows for the evaluation of the relationships between the latent variables (perceived usefulness, perceived ease of use, attitude toward use, behavioral intention to use, and actual use) and the external variables (management support, experience, and training). By describing the results through the inner and outer model analysis, this study will identify significant factors influencing the acceptance and utilization of EMIS, contributing valuable insights into the effectiveness of this educational management tool.

Overview of Structural Model Results

The structural model in this study was analyzed using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach through SmartPLS version 4.0 software. The objective of the model is to examine the causal relationships between external variables—namely Management Support (MS), Experience (EX), and Training (TR)—and the core constructs of the Technology Acceptance Model (TAM), which include Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude Toward Use (ATU), Behavioral Intention to Use (BITU), and Actual Use (AU).

The predictive accuracy of the model was assessed using the coefficient of determination (R^2), path coefficients (β), t-statistics, and significance values (p-values), obtained through a bootstrapping process with 5,000 resamples. The analysis results revealed several significant paths: Management Support has a positive and significant effect on both Perceived Usefulness

(β = 0.301; p = 0.016) and Actual Use (β = 0.372; p = 0.022), emphasizing the critical role of leadership in supporting technology adoption. Additionally, both Experience and Training significantly affect Perceived Ease of Use (β = 0.401; p = 0.016 and β = 0.455; p = 0.007, respectively).

Another important finding indicates that Perceived Ease of Use strongly predicts Perceived Usefulness (β = 0.665; p < 0.001), but does not have a significant effect on Attitude Toward Use (p = 0.113). Similarly, Perceived Usefulness does not significantly influence Attitude (p = 0.416), although it does affect Behavioral Intention to Use (p = 0.047). Meanwhile, both Attitude Toward Use (p = 0.029) and Behavioral Intention to Use (p = 0.025) are proven to be significant predictors of Actual Use.

Overall, the structural model is statistically valid and theoretically relevant in identifying key factors influencing the successful adoption of EMIS 4.0 in madrasa environments. These findings highlight the importance of managerial support and targeted training as primary drivers of user acceptance and sustainable system implementation.

Hypothesis Testing

The questionnaire data on management support, experience, and training were analyzed using the Inner Model (structural model), which included the R-square output, parameter coefficients, and t-statistics. To determine whether a hypothesis could be accepted or rejected, the significance between constructs, t-statistics, and p-values were carefully considered. Hypothesis testing for this study was conducted using SmartPLS (Partial Least Squares) 4.0 software, and the results were obtained through bootstrapping. The criteria used for hypothesis acceptance were a t-statistic greater than 1.65, a significance level with a p-value less than 0.05 (5%), and a positive beta coefficient. The detailed results of the hypothesis testing are presented in Table 1.

Table 1. Results of Hypotheses Testing

	Original sample (O)	**Sample mean (M)**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	**P values**
MS -> PU	0.301	0.313	0.138	2.175	**0.016**
MS -> AU	0.372	0.362	0.183	2.034	**0.022**
EX -> PEOU	0.401	0.450	0.185	2.172	**0.016**
TR -> PEOU	0.455	0.485	0.181	2.516	**0.007**
PU -> ATU	0.095	0.138	0.450	0.212	**0.416**
PU -> BITU	0.408	0.436	0.241	1.696	**0.047**
PEOU -> PU	0.665	0.666	0.119	5.575	**0.000**
PEOU -> ATU	0.524	0.512	0.430	1.216	**0.113**
ATU -> BITU	0.493	0.478	0.257	1.915	**0.029**
BITU -> AU	0.435	0.451	0.219	1.988	**0.025**

The results of the hypothesis test show that the variables studied have a significant influence on the initial research method as Figure 2.

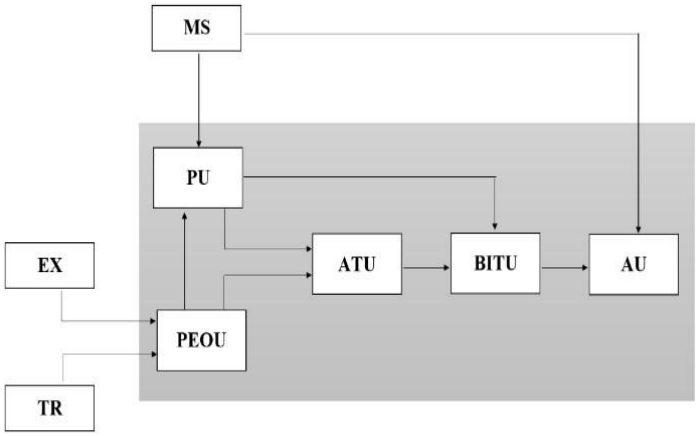

Figure 3. Initial Model of Research

And the final model is obtained as Figure 3.

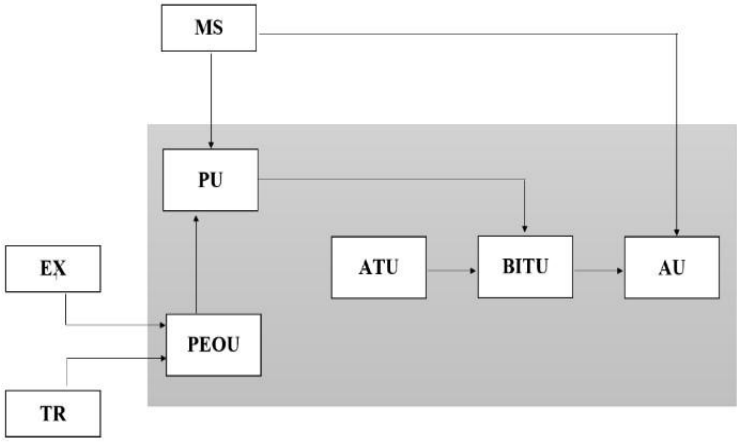

Figure 4. Final Model of the Research

To examine the causal relationships among variables within the framework of the Technology Acceptance Model (TAM), **based on Figure 2 and Figure 4,** this study developed ten hypotheses reflecting the influence of external variables—namely management support, experience, and training as well as core TAM constructs, including perceived ease of use, perceived usefulness, attitude toward use, behavioral intention to use, and actual use of the EMIS 4.0 system. Each hypothesis was tested through path analysis using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach with SmartPLS version 4.0 software, employing a bootstrapping technique with 5,000 resamples. The following analysis provides a comprehensive overview of the statistical significance and strength of relationships among the studied variables and highlights the key factors driving the successful adoption of EMIS 4.0 within madrasah environments.

Management Support (MS) significantly affects Perceived Usefulness (PU) in the implementation of EMIS 4.0 (H_1)

As illustrated in Figure 3, the analysis shows that Management Support (MS) has a statistically significant effect on Perceived Usefulness (PU) in the implementation of EMIS 4.0. The relationship is indicated by a path coefficient of 0.301, a t-statistic of 2.175, and a p-value of 0.016 well below the 0.05 significance threshold. Based on these values, the null hypothesis (Ho1) is rejected, and the alternative hypothesis (Ha1) is accepted. This confirms that

Management Support has a meaningful influence on users' perception of the system's usefulness.

Management Support (MS) significantly affects Actual Use (AU) in the implementation of EMIS 4.0. (H_2)

The second hypothesis demonstrates that Management Support (MS) has a significant influence on Actual Use (AU) of the EMIS system. The analysis produced a path coefficient of 0.372, a t-statistic value of 2.034, and a p-value of 0.022. Since the p-value is below the 0.05 threshold for statistical significance, the null hypothesis (Ho2) is rejected, and the alternative hypothesis (Ha2) is accepted. These results confirm that management support significantly encourages the actual use of EMIS among madrasa operators, underscoring the role of leadership in fostering technology utilization.

Experience (EX) significantly affects Perceived Ease of Use (PEOU) in the implementation of EMIS 4.0. (H_3)

The third hypothesis reveals that experience (EX) significantly influences the perceived ease of use (PEOU) of the EMIS 4.0 system. The statistical analysis shows a coefficient of 0.401, a t-statistic value of 2.172, and a p-value of 0.016, which is below the 0.05 significance level. These results support the rejection of the null hypothesis (Ho3) and the acceptance of the alternative hypothesis (Ha3). This confirms that prior experience plays a substantial role in shaping users' perceptions of how easy it is to use EMIS 4.0, indicating that users with more experience tend to find the system more intuitive and manageable.

Training (TR) significantly affects Perceived Ease of Use (PEOU) in the implementation of EMIS 4.0. (H_4)

The fourth hypothesis demonstrates that training (TR) has a significant influence on perceived ease of use (PEOU), as indicated by a coefficient of 0.455, a t-statistic value of 2.516, and a p-value of 0.007—all of which confirm statistical significance at the 0.05 level. These results lead to the rejection of the null hypothesis (Ho4) and support the acceptance of the alternative hypothesis (Ha4), confirming that the training received by madrasa operators significantly enhances their perception of EMIS 4.0's ease of use. Well-structured training programs equip users with the essential skills to operate the system efficiently, particularly in processes such as student data collection, where training enables operators to digitize documents and streamline workflows.

Perceived Usefulness (PU) does not have a significant effect on Attitude Toward Using (ATU) in the implementation of EMIS 4.0. (H_5)

The fifth hypothesis indicates that perceived usefulness (PU) does not have a significant influence on attitude toward using (ATU), as shown by a coefficient of 0.095, a t-statistic value of 0.212, and a p-value of 0.416 well above the 0.05 significance threshold. Consequently, the null hypothesis (Ho5) is accepted, and the alternative hypothesis (Ha5) is rejected. This result suggests that although users may recognize the potential benefits of EMIS 4.0, these perceptions do not significantly shape their attitude toward using the system.

Usefulness (PU) has a significant effect on Intention to Use (BITU) in the implementation of EMIS 4.0 (H_6)

The sixth hypothesis reveals that perceived usefulness (PU) has a significant impact on behavioral intention to use (BITU), with a coefficient of 0.408, a t-statistic value of 1.696, and a p-value of 0.047, which is below the accepted significance threshold of 0.05. As a result, the null hypothesis (Ho6) is rejected, and the alternative hypothesis (Ha6) is accepted. This indicates that users' perception of EMIS as a beneficial tool significantly influences their intention to adopt and use the system in their professional activities.

Perceived Ease of Use (PEOU) significantly affects Perceived Usefulness (PU) in the implementation of EMIS 4.0. (H_7)

The seventh hypothesis indicates that perceived ease of use (PEOU) has a significant effect on perceived usefulness (PU), with a coefficient of 0.665, a t-statistic value of 5.575, and a p-value of 0.000, which is well below the 0.05 significance threshold. Consequently, the null hypothesis (Ho7) is rejected, and the alternative hypothesis (Ha7) is accepted. These results demonstrate that the ease with which users can interact with EMIS significantly influences their perception of the system's usefulness. In essence, the more user-friendly the system is, the more valuable it is perceived to be by madrasa operators.

Perceived Ease of Use (PEOU) does not have a significant effect on Attitude Toward Using (ATU) in the implementation of EMIS 4.0. (H_8)

The eighth hypothesis indicates that the influence of Perceived Ease of Use (PEOU) on Attitude Toward Using (ATU) is not statistically significant, with a coefficient of 0.524, a t-statistic value of 1.216, and a p-value of 0.113, which exceeds the significance threshold of 0.05. As a result, the null hypothesis (Ho8) is accepted, and the alternative hypothesis (Ha8) is rejected. This finding suggests that users' perception of EMIS being easy to use does not significantly influence their overall attitude toward using the system.

Attitude of Use (ATU) significantly affects Intention to Use (BITU) in the implementation of EMIS 4.0. (H_9)

The ninth hypothesis reveals that the influence of Attitude Toward Using (ATU) on Behavioral Intention to Use (BITU) is statistically significant, with a coefficient of 0.493, a t-statistic value of 1.915, and a p-value of 0.029, which is below the significance threshold of 0.05. As a result, the null hypothesis (Ho9) is rejected, and the alternative hypothesis (Ha9) is accepted. This indicates that users' attitudes toward using EMIS have a significant positive effect on their intention to adopt and use the system.

Interest in Use (BITU) has a significant effect on Actual Use (AU) in the implementation of EMIS 4.0 (H_{10})

The final hypothesis indicates that Behavioral Intention to Use (BITU) significantly influences Actual Use (AU) in the implementation of EMIS 4.0. The statistical analysis shows a coefficient of 0.435, a t-statistic value of 1.988, and a p-value of 0.025, which is below the accepted significance level of 0.05. Based on these results, the null hypothesis (Ho10) is rejected, and the alternative hypothesis (Ha10) is accepted. This confirms that a stronger behavioral intention to use EMIS is associated with increased actual use of the system by its users.

Based on the findings of the present study, there are several points to discuss. This study reveals that active involvement by madrasa leaders significantly enhances the perceived usefulness (PU) of EMIS 4.0 among staff. When school principals provide clear guidance, moral encouragement, and adequate resource allocation, it boosts staff confidence in the system's functional value, leading to more committed and purposeful use. Managerial support fosters an enabling environment for technology adoption and reinforces the belief that the system effectively supports institutional goals. This finding aligns with Sulaiman et al., (2023) who demonstrated that organizational leadership positively influences users' perceptions of digital learning platforms in higher education settings. In the context of madrasas, where religious values and hierarchical leadership structures are prominent, proactive leadership not only accelerates EMIS implementation but also acts as a catalyst for building a sustainable digital culture.

The managerial support goes beyond influencing perceptions; it directly impacts actual system use (AU) of EMIS 4.0. In environments like madrasas, where administrative structure is hierarchical and decision-making often flows from top leadership, the role of school heads is

critical in setting behavioral precedents. When madrasa leaders actively engage in the implementation process by providing hands-on guidance, facilitating training sessions, assisting with technical troubleshooting, and offering regular encouragement users are more likely to integrate the system into their daily workflows. This finding is consistent with prior studies, such as those by Mohammadi, (2021) which found that continuous leadership involvement in Moodle adoption substantially increased usage levels among educators in academic settings (Huda & Rokhman, 2021; Karakose et al., 2021; Mariani et al., 2024). Such involvement signals institutional commitment, reduces user uncertainty, and helps embed technology use into routine administrative culture, thereby enhancing the system's operational sustainability.

Clearly, this study demonstrates that prior experience with similar digital platforms significantly enhances the perceived ease of use (PEOU) of EMIS 4.0 within madrasa environments. This finding aligns with the research by Habibi et al., (2023), which reported that familiarity with mobile learning applications during the COVID-19 pandemic helped reduce user resistance and facilitated technology adoption in educational settings. In the case of Madrasah Tsanawiyah in Malangbong District, Garut Regency, this relationship is particularly relevant many madrasa operators had previously worked with foundational data platforms such as Dapodik or basic reporting systems mandated by the Ministry of Religious Affairs. Such experience not only eased anxiety when facing the more complex EMIS 4.0 interface but also provided a cognitive foundation for understanding the system's structure and functionality. As a result, operators with related digital experience tend to adapt more quickly, enter data more efficiently, and explore system features more confidently. This underscores the importance of implementing EMIS gradually and based on the existing digital competence within institutions, ensuring that large-scale technology transitions proceed more effectively and sustainably.

The targeted and practical training plays a crucial role in enhancing the perceived ease of use (PEOU) of the EMIS 4.0 system. When madrasa operators are provided with hands-on training tailored to their operational tasks such as data entry, report generation, or document validation their confidence and competence in using the system increase significantly. This is consistent with recent meta-analyses on the application of the Technology Acceptance Model (TAM) in educational settings, which show that improved self-efficacy through direct training strengthens the link between PEOU and behavioral intention (Purohit et al., 2022). In the context of Madrasah Tsanawiyah in Malangbong District, Garut, training becomes a decisive factor, as most operators come from varied and limited technical backgrounds. Without adequate training, many users feel overwhelmed by the complexity of EMIS 4.0's interface, ultimately hindering effective implementation and reducing motivation. Therefore, strengthening user capacity through practical, needs-based technical training is a fundamental requirement for the successful adoption of information systems in faith-based educational institutions (abid et al., 2023).

The findings reveal a nuanced relationship between perceived usefulness (PU) and user behavior in the adoption of EMIS 4.0. Although PU did not significantly shape users' attitudes toward using the system (ATU), it had a strong and statistically significant effect on their behavioral intention to use it (BI). This pattern echoes findings in higher education contexts, where usefulness reliably predicts intention, even when user attitudes are shaped more by contextual or organizational factors than by utility alone (Ardura & Artola, 2021). In the case of Madrasah Tsanawiyah in Malangbong, Garut, this suggests that staff recognize the functional benefits of EMIS such as improved efficiency, better data management, and alignment with institutional goals but these perceived advantages are not always sufficient to foster positive emotional or attitudinal commitment. Instead, other elements such as religious obligations, hierarchical structures, or peer expectations may play a more dominant role in shaping users'

overall attitudes. This underscores the importance of addressing not only system features but also the broader socio-cultural ecosystem in which technology adoption occurs.

This study affirms the traditional sequence of relationships within the Technology Acceptance Model (TAM), specifically the path from Perceived Ease of Use (PEOU) to Perceived Usefulness (PU), which then influences Behavioral Intention to use (BI), ultimately leading to Actual Use (AU). This classic TAM trajectory was similarly documented in Indonesian studies on Learning Management System (LMS) adoption by Sulaiman et al., (2023) and in analyses of mobile learning platforms, where system simplicity encouraged perceived value, intention, and eventually usage. In the context of Madrasah Tsanawiyah in Malangbong, Garut, this means that when operators perceive EMIS 4.0 as user-friendly and intuitive, they are more likely to appreciate its usefulness in improving administrative efficiency. That recognition translates into stronger intentions to engage with the system, which, in turn, increases its actual use (Arif et al., 2023; Dias et al., 2021). This sequential logic highlights the importance of ensuring system usability at the earliest stage because even the most powerful features will not drive adoption unless users first feel confident and comfortable navigating them.

This study contributes fresh insight into the growing body of research surrounding the Technology Acceptance Model (TAM), particularly within the context of faith-based educational institutions. Consistent with previous findings such as those by Venkatesh & Davis, (2000) and reinforced by Grandón et al., (2021) this research confirms that perceived usefulness, perceived ease of use, and behavioral intention remain crucial predictors of system adoption. In the case of EMIS 4.0 implementation at madrasas, the study shows that management support and prior experience significantly enhance these perceptions. These results align with broader digital transformation literature (Wang et al., 2022), emphasizing leadership and training as pivotal for successful technology deployment across diverse sectors, including education.

One of the most striking divergences from prior TAM-based studies is the statistical insignificance of the relationship between perceived usefulness and attitude toward using the system. While this link is typically strong in corporate or general academic settings (Purohit et al., 2022), the finding here suggests that madrasa operators may prioritize institutional values, religious leadership, or compliance with directives over individual cost-benefit perceptions. This anomaly points to the need for further investigation into cultural and institutional moderators, as also suggested in the context of post-adoption usage by Stamenkov & Hani, (2023) thereby expanding the boundaries of TAM in specialized environments.

Theoretically, this study contributes to the contextual refinement of TAM by examining its applicability in Islamic, faith-based schooling systems. While much of TAM literature has focused on business or higher education (Bhatt, 2022), its adoption in religious institutions is still limited. The emphasis on external influences particularly structured training and leadership support over internal motivational factors echoes calls in business intelligence research (Mekimah et al., 2024), to consider socio-cultural enablers in complex system implementations. This reinforces Ionescu's (2022) argument that data-centric systems must adapt to contextual user behaviors to sustain operational impact.

Practically, the study suggests several strategies for madrasa leaders and policymakers to enhance EMIS adoption. First, leadership endorsement is vital not merely as a managerial responsibility, but as a cultural cue that influences perceived legitimacy and usefulness (Adeoye et al., 2025; Asmendri et al., 2024; Demeke et al., 2024). Second, training programs tailored to specific tasks like student record management or generating reports are essential to improve perceived ease of use. This is consistent with prior findings in education 4.0 contexts (Purohit et al., 2022), where user competence plays a critical role in reducing resistance to new platforms. Third, peer-led mentorship can accelerate learning and promote intuitive use, while institutional

communication should shift from mere usability to showcasing real benefits such as increased accuracy or administrative efficiency.

Business perspective, the study sheds light on an untapped opportunity: developing faith-sensitive digital systems**.** As digital transformation accelerates globally (Wang et al., 2022), sectors like Islamic education remain underdigitized despite their vast user base. Technology providers who can align digital tools with religious values, local norms, and hierarchical structures may gain a strategic foothold. This mirrors trends in business analytics where customization is a key differentiator (Mekimah et al., 2024; Bhatt, 2022). Therefore, the future of EMIS lies not only in technical advancement but also in its ability to resonate with institutional identity merging innovation with cultural authenticity for sustainable adoption and long-term growth.

In conclusion, this study contributes to the growing body of knowledge on EMIS implementation by demonstrating that user adoption is not driven solely by system functionality, but also by the organizational environment and user experiences. Management support, relevant training, and accumulated user experience emerged as pivotal in promoting system adoption and sustained use. However, the study is not without limitations. Its focus on a single district and reliance on self-reported data may limit the generalizability of the findings. Future research should broaden the sample across regions and explore additional factors such as digital literacy, organizational culture, self-efficacy, and long-term satisfaction. Longitudinal studies are also recommended to evaluate how these variables influence the continued and effective use of EMIS over time, providing deeper insights for policymakers and education administrators aiming to optimize digital systems in schools.

CONCLUSION

This study examines the factors influencing the adoption of EMIS 4.0 (Education Management Information System) in Madrasah Tsanawiyah, employing the Technology Acceptance Model (TAM) framework. The findings reveal that management support, training, and prior experience significantly enhance users' perceived ease of use (PEOU), which in turn positively affects perceived usefulness (PU). Although PU influences behavioral intention to use (BITU), it does not significantly affect user attitude, suggesting a potential misalignment between cognitive and affective responses. Conversely, a positive attitude has a strong influence on BITU and ultimately affects actual system use (AU). The proposed model demonstrates statistical validity and relevance, emphasizing the importance of both organizational and individual factors in successful system implementation. Academically, this study contributes to the literature on technology adoption in educational institutions, particularly within Islamic schools in developing countries, by highlighting the gap between PU and user attitudes and underscoring the critical role of institutional support. The strengths of this study lie in its empirical application of TAM in the context of madrasah, robust statistical modeling, and the integration of organizational and individual perspectives, an approach rarely addressed simultaneously in Islamic educational technology literature. However, the study is limited to a single geographical area, relies on self-reported data, and does not incorporate variables such as digital competence, self-efficacy, or cultural factors. Future research is encouraged to expand the geographical scope, include additional variables such as motivation and self-efficacy, consider alternative theoretical models, and conduct longitudinal studies to examine usage patterns over time.

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