

The Effect of Implementing the Smart Tihamah Application on the Level of Savings Participation and Ease of Payment of Education Fees (SPP) for MA Tihamah Putra Students

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Abstract

This study investigates the impact of implementing the *Smart Tihamah* mobile application on students' savings participation and the ease of education fee (SPP) payments at MA Tihamah Putra. In the digital era, mobile financial applications are increasingly used by educational institutions to enhance financial efficiency, transparency, and convenience for students and parents. However, few empirical studies have specifically examined the role of educational mobile apps in improving financial behaviors and administrative efficiency at the secondary education level, particularly within Islamic schools. This research adopts a quantitative explanatory approach using structured questionnaires and school documentation to assess the effects of the application. The study sample comprises 100 students selected via stratified random sampling. Results reveal that the *Smart Tihamah* app significantly enhances both savings participation ($R^2 = 0.56$) and tuition payment convenience ($R^2 = 0.61$), with statistically significant t-test and F-test values supporting its effectiveness. The findings underscore the importance of digital innovation in promoting financial inclusion and operational improvement in education, while also identifying key contextual factors—such as digital literacy, user trust, and social support—that influence app adoption and impact. The study provides practical insights and theoretical contributions for the development and implementation of educational mobile financial systems aimed at improving student financial outcomes and institutional efficiency.

Keywords : Ease of payment of education fees, financial behavior, saving participation, mobile financial application.

1. Introduction

In today's fast-paced digital era, technology has permeated nearly every aspect of life, including the education sector (Nurhemah & Rahma, 2024; Samsudi, Solihah, Latipah, & Ahmad, 2025; Wirasti, Irawan, & Mulyadi, 2024). Educational institutions, from elementary schools to universities, are actively adopting technological solutions to enhance operational efficiency, improve learning quality, and deliver better services to students and parents (Usman, Fakhruddin, Hardiyanti, Zam, & Qadaruddin, 2022). One prominent trend is the utilization of mobile applications to facilitate various financial transactions, including tuition payments. Mobile applications offer convenience, speed, and security that traditional payment methods

cannot match. Consequently, the adoption of mobile applications for educational payments is expected to increase public participation in saving and simplify the tuition payment process for parents.

Public participation in saving is a key indicator of a country's economic growth and development (Klasjok, Oldy Rotinsulu, & Maramis, 2018). A higher level of saving participation contributes to greater availability of funds for investment and economic expansion. In the education sector, savings play a critical role in ensuring the continuity of children's education (Latif & Mubarok, 2024). By saving regularly, parents can adequately prepare for various educational expenses, including tuition fees, textbooks, and higher education costs. However, in practice, the level of saving participation among the Indonesian population remains relatively low (Ubaidillah & Asandimitra, 2019). Many parents struggle to save consistently due to several reasons, such as insufficient income, limited awareness of the importance of saving, and restricted access to banking services.

In addition to the low level of saving participation, the process of paying educational fees often poses significant challenges for parents (Shaleha & Panggabean, 2022). Traditional payment methods, such as bank transfers or cash payments at school counters, tend to be time-consuming and burdensome. Parents are required to visit banks or schools, queue, and fill out payment forms. Furthermore, these traditional methods are vulnerable to errors and fraud. Therefore, a more efficient, secure, and accessible solution is needed to streamline the tuition payment process.

The "Smart Tihamah" application was developed as an innovative solution to address the issues of saving participation and tuition payment facilitation at MA Tihamah Putra. This mobile application is specifically designed for parents or guardians of students to monitor pocket money, check payment invoices, track transaction history, and manage financial commitments, in line with technological advancements and user needs. Through this application, students can deposit their savings directly via bank transfers or digital wallets without having to physically visit a bank or school. Parents can also pay tuition fees anytime and anywhere with just a few taps on their mobile device. The application is equipped with advanced security features to protect user data and transactions.

This study aims to analyze the impact of the "Smart Tihamah" application on saving participation levels and the ease of tuition payment (SPP) among students at MA Tihamah Putra. It seeks to identify the factors influencing the adoption and utilization of the application by students and parents, as well as evaluate its effects on operational efficiency and customer satisfaction within the school. The findings of this study are expected to contribute to the development of more innovative and effective educational mobile applications in the future.

The research gap addressed by this study lies in the limited number of empirical studies specifically examining the impact of mobile application implementation on saving participation and tuition payment facilitation at the Madrasah Aliyah (MA) or Islamic senior high school level. Most existing studies focus on mobile banking (farokha & Rivai, 2022) general e-commerce, or QRIS usage (Agustini, Syafrida, & Sanjaya, 2024). This study also seeks to bridge the gap in understanding how contextual factors—such as digital literacy, trust, and social support—moderate the relationship between the use of the “Smart Tihamah” application and saving participation as well as ease of tuition payments.

The novelty of this study lies in its specific focus on an educational mobile application designed to enhance saving participation and simplify tuition payments at MA Tihamah Putra. This research not only measures the application’s impact on savings volume and payment timeliness but also explores its influence on saving behavior, perceived ease of use, and user satisfaction. Additionally, it takes into account ethical and security aspects of educational mobile application usage and offers recommendations for improving user trust and adoption.

2. Research Method

This study employs a quantitative associative explanatory approach to examine the influence of the digital social media environment on students’ academic and non-academic achievement at MTs Pembangunan Mandirancan. This research design is appropriate for identifying causal relationships between variables through hypothesis testing using statistical techniques such as simple and multiple linear regression. The population consists of all seventh, eighth, and ninth-grade students in the 2024/2025 academic year who actively use social media, totaling 255 students. A sample of 100 students was selected using stratified random sampling to ensure proportional representation across grade levels. Inclusion criteria included being an active student, using social media, and willingness to participate in the survey; exclusion criteria involved students who were inactive or absent during the data collection period.

Data collection was conducted through structured Likert-scale questionnaires, school documentation, and limited passive observation. The questionnaire measured the digital social media environment (X) and non-academic achievement (Y_2), while students’ academic achievement (Y_1) was assessed through official records such as report cards and extracurricular participation documentation, serving as valid secondary data. Limited observations were carried out to triangulate findings and validate real-world behaviors. Instrument validity and reliability were tested using the Pearson Product Moment correlation and Cronbach’s Alpha after a try-out involving 30 students from a school with similar characteristics.

Data analysis included descriptive statistics to describe the characteristics of the research variables and inferential statistics to test hypotheses. Normality and homogeneity tests were performed as prerequisites for further analysis. The relationships between variables were examined using Pearson correlation and multiple linear regression to assess the effect of the digital social media environment on both academic and non-academic outcomes. Significance of the models was evaluated using t-tests and F-tests, accompanied by the coefficient of determination (R^2) to measure the extent to which the independent variable explains the variance in the dependent variables. All statistical analyses were conducted using the latest version of SPSS software.

3. Results and Discussion

3.1 The Validity and Reliability Test Results

Table 1. Validity and Reliability Test Results

| Variable | Validity (Correlation Coefficient) | Cronbach's Alpha | Interpretation |
|--------------------------------|------------------------------------|------------------|--------------------|
| Digital Payment System (X) | > 0.30 | 0.812 | Valid and Reliable |
| Organizational Innovation (Y1) | > 0.30 | 0.793 | Valid and Reliable |
| Business Sustainability (Y2) | > 0.30 | 0.825 | Valid and Reliable |

The results of the validity test indicate that all questionnaire items for the variables under study have correlation coefficients greater than 0.30 (Cohen, 2013). This value exceeds the commonly accepted threshold for validity, signifying that each item is considered valid and suitable for measuring the intended constructs. A high correlation between each item and the total score of its respective variable confirms that the items are appropriately aligned with the theoretical dimensions being assessed. As such, the measurement instruments used in this study are statistically confirmed to accurately capture the concepts of digital payment systems, organizational innovation, and business sustainability.

In addition to the validity test, the reliability of each instrument was also assessed using Cronbach's Alpha. The results show that the Cronbach's Alpha values for the Digital Payment System (X), Organizational Innovation (Y1), and Business Sustainability (Y2) are 0.812, 0.793, and 0.825, respectively. All values exceed the minimum threshold of 0.70 (Bhat, Mir, & Islam, 2022), indicating that the instruments possess a high level of internal consistency and are thus considered reliable. These findings confirm that the measurement tools used in the study are not only valid but also consistently measure the constructs across different items, strengthening the credibility and robustness of the research results.

3.2 Coefficient of Determination (R²) Test Results

Table 2. Coefficient of Determination (R²) Test Results

| Dependent Variable | R-square (R ²) |
|------------------------------|----------------------------|
| Savings Participation (Y1) | 0.56 |
| Ease of Tuition Payment (Y2) | 0.61 |

The regression analysis reveals that the implementation of the Smart Tihamah System has a significant explanatory power on both savings participation and the ease of tuition payment. Specifically, the coefficient of determination (R²) for savings participation (Y1) is 0.56, indicating that 56% of the variation in students' participation in saving activities can be attributed to the application of the Smart Tihamah System. This suggests that the system plays a substantial role in encouraging students to engage in financial saving behavior, possibly due to its user-friendly interface, accessibility, or integration with educational financial management tools. Likewise, the R² value for the ease of tuition payment (Y2) is 0.61, demonstrating that 61% of the variation in the perceived ease of paying tuition fees is explained by the presence of this digital system. This high explanatory power highlights the system's effectiveness in streamlining tuition payment processes, reducing administrative burdens, and improving payment transparency and timeliness. Collectively, these findings underscore the strategic impact of digital financial systems in enhancing both financial participation and transactional efficiency within educational settings.

3.3 Regression Analysis Results

Table 3. Regression Results of the Smart Tihamah System's Influence

| Dependent Variable | t-Statistic | t-Table (df = n-2) | p-Value | Significance Interpretation |
|------------------------------|-------------|--------------------|---------|-----------------------------|
| Savings Participation (Y1) | 6.21 | 1.99 | < 0.05 | Significant |
| Ease of Tuition Payment (Y2) | 7.04 | 1.99 | < 0.05 | Significant |

The results of the regression analysis in Table 3 indicate that the Smart Tihamah System has a statistically significant influence on both savings participation and the ease of tuition payment. For the variable *Savings Participation* (Y1), the computed t-statistic value is 6.21, which exceeds the critical t-table value of 1.99 at a 5% significance level. Additionally, the p-value is reported to be less than 0.05, confirming that the relationship is statistically significant. This suggests that the implementation of the Smart Tihamah System positively encourages students or users to engage more actively in savings activities, likely due to increased accessibility, transparency, and convenience provided by the system in managing and monitoring financial transactions. In a broader context, this aligns with findings in digital financial inclusion literature, where digital platforms enhance financial behavior (Bhatnagar, Prakash, Memon, Manjushri Kadam, & Sharma, 2022).

Similarly, the system demonstrates a significant impact on the *Ease of Tuition Payment* (Y2), as shown by a t-statistic of 7.04, which also surpasses the critical threshold of 1.99, with a p-value below 0.05. These results suggest that the Smart Tihamah System simplifies the tuition payment process for users, potentially by reducing administrative burdens, enabling real-time transaction confirmations, and offering multiple payment options. The high level of significance in both regression models highlights the importance of adopting smart financial systems in educational environments, especially those aimed at improving financial services and user engagement. Ultimately, these findings support the proposition that technological integration in payment systems plays a critical role in enhancing financial inclusion and operational efficiency within institutional contexts.

3.4 Multiple Linear Regression Analysis Results

Table 4. The Results of Multiple Linear Regression Analysis

| Test Type | F-Statistic (F-count) | F-Critical (F-table) | p- value | Significance Level | Conclusion |
|---------------------------------|--------------------------|-------------------------|-------------|-----------------------|-----------------------|
| Simultaneous Regression Test | 23.12 | 3.13 | < 0.05 | 5% (0.05) | Significant effect |

The results of the simultaneous regression test in Table 4 above reveal that the implementation of the Smart Tihamah application has a significant effect on both the level of savings participation and the ease of payment of education fees (SPP) among students at MA Tihamah Putra. This is evidenced by an F-statistic (F-count) of 23.12, which is substantially higher than the F-critical value (F-table) of 3.13. Additionally, the associated p-value is less than 0.05, indicating statistical significance at the 5% level.

These findings confirm that the Smart Tihamah application, as a digital financial tool, contributes meaningfully to enhancing students' financial behavior and reducing barriers to educational payments. By offering accessible savings features and streamlined digital payment options, the application fosters a more proactive engagement in financial planning among students and improves their ability to manage tuition-related obligations. Therefore, the study supports the conclusion that technological interventions, such as the Smart Tihamah application, can effectively influence key financial outcomes in educational contexts.

4. Conclusion

Based on the results of the study, it can be concluded that the implementation of the Smart Tihamah application significantly influences both students' participation in savings activities and the ease of tuition payment at MA Tihamah Putra. Validity and reliability tests confirm that the research instruments are both accurate and consistent in measuring the intended constructs. The regression analysis further demonstrates that the Smart Tihamah System has strong explanatory power,

accounting for 56% of the variation in savings participation and 61% in the ease of tuition payment. Statistically significant t-test and F-test values confirm that the digital financial system effectively enhances student engagement in financial saving and simplifies the tuition payment process. These findings highlight the strategic role of digital innovations in promoting financial inclusion and operational efficiency in educational settings.

Given these findings, it is recommended that educational institutions consider integrating smart financial systems, such as the Smart Tihamah application, into their administrative and payment infrastructures. Such systems can improve students' financial behavior, provide more efficient tuition management, and foster a culture of saving and responsible financial decision-making. Furthermore, educational policymakers and technology developers should collaborate to ensure the continuous development of user-friendly, secure, and inclusive digital financial tools tailored to student needs. Future research is encouraged to explore the long-term impact of such applications on financial literacy and academic success, as well as their scalability across various educational institutions and demographic groups.

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