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Digital Transformation in School Financial Management: Its Role in Enhancing Educational Efficiency

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Abstract: This study aims to examine the role of technology-based financial management in improving educational efficiency in public elementary schools. A quantitative approach with a correlational research design was employed. The respondents consisted of 60 school stakeholders, including principals and BOS treasurers from public elementary schools in Brebes Regency, who were selected using purposive sampling based on their direct involvement in school financial management. Data were collected using a structured questionnaire developed based on indicators of financial management (transparency, accountability, budget accuracy, and resource optimization) and educational efficiency. The data were analyzed using descriptive statistics and simple linear regression analysis. The results showed that technology-based financial management had a significant effect on educational efficiency ($R^2 = 0.507$, $p < 0.05$). This finding indicates that 50.7% of the variance in educational efficiency is explained by the implementation of digital financial management systems, while the remaining 49.3% is influenced by other factors, such as digital literacy, infrastructure availability, and leadership commitment. The findings demonstrate that digital financial systems enhance transparency, accountability, and budget accuracy while reducing bureaucratic inefficiencies and minimizing errors in financial reporting. This study implies that Education Offices should strengthen the standardization of digital financial systems and provide continuous training for school financial administrators. Furthermore, improving ICT infrastructure, particularly in rural areas such as Brebes Regency, is essential to support the effective implementation of digital financial governance in schools.

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Introduction

The increasing demand for quality education has placed significant pressure on schools to manage their financial resources more efficiently. In many educational institutions, limited funding must be allocated across various operational and instructional needs, making effective financial management a critical factor in achieving educational goals (OECD, 2023; World Bank, 2022). In this context, the integration of technology into financial management systems has emerged as a promising strategy to enhance efficiency, transparency, and accountability in school administration (UNESCO, 2023; IMF, 2021).

Recent developments in educational management highlight the growing role of digital systems in optimizing financial processes. Technology-based financial management enables schools to streamline budgeting, monitoring, and reporting activities, thereby reducing administrative burdens and improving the accuracy of financial data processing. Evidence suggests that digital financial systems support more effective decision-making and more

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efficient allocation of educational resources (Febrianti et al., 2023; Wulaningsih & Asriati, 2024). In addition, digital transformation in education management enhances institutional performance through improved data accessibility and stakeholder coordination (Lazwardi & Kurinawan, 2025).

Despite these advancements, challenges remain in the implementation of technology-based financial management in schools. Some institutions still rely on conventional administrative procedures, which may result in inefficiencies and limited financial transparency. Previous studies have mainly focused on the general benefits of digital transformation in education, while empirical evidence on its specific impact on school-level financial management and educational efficiency remains limited (Nugraha & Rochimat, 2025; Arbain et al., 2024).

In rural and semi-urban contexts such as Brebes Regency, the implementation of digital school financial management is still evolving. Although government-supported platforms such as BOS digital reporting systems have been introduced, their effectiveness varies due to differences in digital literacy among financial administrators, uneven internet infrastructure, and varying levels of institutional readiness. These conditions position Brebes as a relevant context for examining how digital financial systems operate under real educational conditions in developing regions. The selection of Brebes Regency is scientifically justified as it represents a regional education setting where digital transformation is still in progress, allowing for a more realistic evaluation of financial digitalization beyond urban-based assumptions. This context provides meaningful insight into how digital systems influence school financial governance in practice.

This study examines the influence of technology-based financial management on educational efficiency in primary schools in Brebes Regency, focusing on school-level financial governance in a digital transformation context. By addressing the existing gap in empirical studies on digital financial management in rural educational settings, this research provides evidence on how technological integration contributes to improving transparency, accountability, and resource efficiency. The findings are expected to enrich the literature on public financial management in education and provide practical implications for improving digital governance in school financial administration.

Research Method

This study employed a quantitative approach with a correlational design to examine the influence of technology-based school financial management on educational efficiency. The research was conducted in public elementary schools in Brebes Regency, focusing on the utilization of digital systems in managing school finances and their impact on resource efficiency.

The population of this study consisted of school principals, financial administrators, and teachers involved in financial management. The sample included 60 respondents, selected using a purposive sampling technique to ensure that participants had relevant knowledge and experience in school financial practices. Data were collected using a structured questionnaire developed based on indicators of technology-based financial management and educational efficiency, including transparency, accountability, budget accuracy, and resource optimization. All constructs were measured using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The research instrument was tested for validity using Pearson Product Moment correlation and for reliability using

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Cronbach's Alpha to ensure the accuracy and consistency of the measurement. All items were found to be valid and reliable.

Data were collected systematically over a specified period. In addition to questionnaires, documentation techniques were used to support the data, particularly related to financial reports and the implementation of digital systems in school financial management. Data analysis was performed using descriptive statistics and inferential analysis. Descriptive analysis was used to describe the level of implementation of technology-based financial management and educational efficiency. Inferential analysis was conducted using simple linear regression, supported by t-tests and the coefficient of determination (R^2), to examine the effect and strength of the relationship between variables.

Results and Discussion

The results of this study describe the effect of technology-based school financial management on educational efficiency. Data obtained from 60 respondents were analyzed using descriptive statistics and simple linear regression.

Descriptive Analysis

Descriptive analysis shows that the implementation of technology-based financial management in schools is categorized as good, with an average score indicating that most schools have utilized digital systems in budgeting, reporting, and monitoring financial activities. Educational efficiency is also categorized as high, reflecting effective allocation and utilization of school resources.

Regression Analysis

To determine the influence of technology-based financial management on educational efficiency, a simple linear regression analysis was conducted.

Table 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error
1	0.712	0.507	0.498	0.321

Interpretation: The coefficient of determination ($R^2 = 0.507$) indicates that technology-based financial management explains 50.7% of the variation in educational efficiency in elementary schools in Brebes Regency. This suggests that digital financial systems play a substantial role in improving school financial governance and efficiency. However, the remaining 49.3% of the variance is influenced by other contextual and organizational factors not included in this model. In the context of rural and semi-urban schools in Brebes Regency, these factors may include the level of digital literacy and financial competence of school treasurers and administrators, the stability and availability of internet infrastructure, and the readiness of schools in adopting digital systems. In addition, leadership commitment from school principals plays a critical role in ensuring effective implementation of technology-based financial management. Organizational support, training opportunities, and policy consistency from the local Education Office may also contribute significantly to variations in educational efficiency outcomes. The slight difference between R^2 (0.507) and adjusted R^2 (0.498) further indicates that the model has a stable explanatory power, although additional variables beyond digital financial management are needed to fully explain educational efficiency in this context.

Table 2. Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	12.845	1	12.845	45.672	0.000

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Residual	12.345	58	0.213		
Total	25.190	59			

Interpretation: The significance value of 0.000 < 0.05 indicates that the model is statistically significant. This means that technology-based financial management has a significant effect on educational efficiency.

Table 3. Coefficients

Variable	B	Std. Error	Beta	t	Sig.
Constant	1.245	0.312		3.990	0.000
X	0.685	0.101	0.712	6.758	0.000

Interpretation: The regression coefficient (B = 0.685) shows a positive relationship. The t-value (6.758) with Sig. 0.000 < 0.05 indicates a significant effect. This means that increasing the quality of technology-based financial management will improve educational efficiency. These findings demonstrate that technology-based financial management is a significant predictor of educational efficiency.

Discussion

The findings of this study indicate that technology-based financial management significantly contributes to improving educational efficiency in elementary schools. This result can be explained through the principles of Public Financial Management (PFM), which emphasize transparency, accountability, efficiency, and accuracy in the use of public resources, particularly in the education sector. From the perspective of transparency, the implementation of digital financial systems enables schools to provide more open and traceable financial reporting. Budget information and expenditure records can be accessed more systematically, reducing information asymmetry and increasing stakeholder trust. This aligns with previous studies which emphasize that digital systems enhance transparency in educational financial governance (Febrianti et al., 2023; Wulaningsih & Asriati, 2024).

In terms of accountability, technology-based financial management strengthens the responsibility of school administrators in managing BOS funds. Every transaction is recorded automatically in the system, which reduces opportunities for manipulation and improves auditability. This ensures that financial management is more structured and compliant with government regulations. Regarding budget accuracy, digital systems minimize human error in recording and allocating BOS funds. Automated calculations and system validation reduce mistakes that commonly occur in manual reporting processes. This directly improves the accuracy of financial data and ensures that budget allocation is aligned with school needs.

Furthermore, in terms of resource optimization, technology-based systems allow schools to monitor expenditures in real time. This enables more efficient financial decision-making and supports better allocation of limited resources to priority educational needs. As a result, schools can optimize operational and instructional spending more effectively. In addition, the integration of technology significantly reduces bureaucratic processes in school financial reporting. Digital systems eliminate repetitive manual documentation and shorten reporting time, resulting in higher administrative efficiency and faster financial decision cycles. This reflects the concept of efficiency in public financial management, where digitalization streamlines procedures and reduces administrative costs.

Moreover, digital financial systems also minimize human errors in BOS fund allocation. By reducing manual input and increasing system automation, the risk of calculation errors and misreporting is significantly reduced. This improves the reliability of financial data and ensures more accurate fund distribution. The R^2 value of 0.507 indicates that technology-based financial management explains 50.7% of educational efficiency, while

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the remaining 49.3% is influenced by other contextual factors such as leadership commitment, digital literacy of financial administrators, and infrastructure availability in rural areas. Therefore, technology should be understood as one component within a broader school governance system rather than a single determinant of efficiency.

Conclusion

This study concludes that technology-based financial management plays an important role in transforming school financial governance toward a more efficient and accountable system in primary education. The implementation of digital financial systems reflects a shift from conventional administrative procedures to more structured, transparent, and data-driven decision-making processes in school financial management. The findings indicate that digitalization of financial management strengthens the core principles of public financial governance in education, particularly in improving transparency, accountability, and efficiency in the use of educational resources. This transformation contributes to reducing administrative complexity and improving the accuracy and reliability of financial processes at the school level.

However, the improvement of educational efficiency cannot be attributed solely to technological factors. Effective implementation still depends on human resource capacity, leadership commitment, and institutional readiness in adopting digital systems. This highlights that technology functions as an enabling tool within a broader governance ecosystem rather than as an independent determinant of efficiency. Overall, the study emphasizes that digital transformation in school financial management represents a strategic direction for improving governance quality in primary education, particularly in developing regional contexts.

Recommendation

In light of the results obtained, several recommendations can be put forward. Schools should further optimize the use of technology-driven financial management systems to enhance efficiency, transparency, and accountability in the management of educational resources. In addition, it is important to provide continuous training programs to improve the digital skills of school personnel, especially in handling financial management tasks.

From a policy perspective, stakeholders are advised to facilitate the implementation of digital financial systems by ensuring the availability of adequate infrastructure, well-defined regulations, and ongoing monitoring mechanisms. Strong institutional support is essential to maximize the positive impact of technology on educational efficiency. For future studies, it is recommended to incorporate other influencing factors such as leadership, organizational culture, and human resource capability to provide a more comprehensive understanding of educational efficiency. Researchers are also encouraged to apply mixed-method approaches in order to obtain richer and more in-depth findings.

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