



# Improved: The Impact of Education Management Information Systems (EMIS) on Data Management Efficiency in Islamic Senior High Schools

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## ABSTRACT

### Keywords:

EMIS; Educational  
Data Management;  
Efficiency.

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This study aims to analyze the impact of the implementation of the Education Management Information System (EMIS) on the efficiency of educational data management. Using a quantitative approach with an associative design, the research involved 66 respondents selected through purposive sampling. Data were collected through two questionnaires: one for assessing EMIS implementation (21 items) and one for evaluating educational data management efficiency (20 items). Both instruments were validated and tested for reliability using SPSS version 27. Data analysis included normality testing (Kolmogorov-Smirnov test), homogeneity testing (Levene's test), and hypothesis testing (simple linear regression analysis). The results showed a significant effect of EMIS implementation on data management efficiency, with a significance value of  $<0.000$  and an R Square value of 0.437. This indicates that EMIS contributes 43.7% to improving educational data management efficiency. The findings suggest that the adoption of EMIS can enhance administrative efficiency and facilitate more effective management of educational data.

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## INTRODUCTION

Education plays a crucial role in the development of quality human resources. In the digital era, managing educational data effectively has become a key factor in improving the quality of educational services. Data regarding students, teachers, educational staff, infrastructure, and institutional information must be managed efficiently to facilitate informed decision-making (Liu et al., 2020; Song & Wang, 2026). The integration of information technology into educational systems can enhance the quality of data management and educational services, though it also presents challenges during implementation (He, Chen & Zhu, 2023). Therefore, the use of Education Management Information Systems (EMIS) is seen as a solution to improve the efficiency of educational data management (Asio et al., 2022).

The theory applied in this study is based on the understanding that the integration of information systems like EMIS contributes to improving the efficiency of managing educational data, both in terms of reducing administrative errors and facilitating faster access to information (Alshamisi et al., 2023; El Mazbough et al., 2025). The study assumes that the adoption of such systems can enhance the effectiveness of decision-making in educational institutions.

Educational institutions, especially Islamic schools, face challenges in managing educational data effectively (Alawi et al., 2022). These include issues such as manual data entry, inconsistencies in data, and slow processing times. These problems hinder quick and accurate decision-making, affecting the quality of education (Kurilovas, 2020). Additionally, issues such as inadequate infrastructure, low digital literacy, and unstable internet connectivity further complicate the implementation of digital systems. Thus, addressing the impact of EMIS implementation on improving the efficiency of educational data management is crucial to overcoming these barriers (Amuha & Masiero, 2026).

Previous studies indicate that the integration of technology into education systems, including the use of EMIS, can lead to better data management by improving the speed and accuracy of data processing (Iwogbe, 2025). Research shows that digital systems help reduce administrative burdens and ensure more efficient reporting processes in educational institutions (Woelert, 2023). While many studies acknowledge the benefits of EMIS, few have quantitatively assessed its impact on educational data management efficiency in the specific context of Madrasah Aliyah Negeri (MAN). This research seeks to fill this gap by examining the relationship between EMIS implementation and data management efficiency through quantitative methods (Saleh, 2023).

Despite the advantages, challenges remain in the implementation of EMIS (Stamenkov & Zhaku-Hani, 2023). Barriers such as inadequate infrastructure, low digital literacy, and unstable internet connectivity hinder the successful adoption of EMIS in schools (Rajasekaran & Casap, 2022; Ibrahim et al., 2020). These challenges are often overlooked in many studies, which focus solely on the benefits of EMIS without addressing the obstacles to its effective implementation (Iwogbe et al., 2025). This research aims to explore both the positive impacts and the challenges faced in the process of adopting EMIS, offering a more comprehensive view of its role in improving data management efficiency.

This research aims to investigate the effect of EMIS implementation on the efficiency of educational data management at MAN Kota Palangka Raya. Specifically, the study will examine whether the use of EMIS contributes to more efficient data processing and reporting. It is hypothesized that EMIS adoption will lead to enhanced administrative efficiency, improved data accuracy, and

faster access to educational data. This study will contribute valuable insights to the field of educational management, offering empirical evidence on the effectiveness of EMIS in improving data management practices in Islamic educational institutions.

## RESEARCH METHODS

This study employs a quantitative approach with an associative (correlational) research design. The quantitative approach is used to objectively measure the impact of the implementation of the Education Management Information System (EMIS) on the efficiency of educational data management. An associative design is chosen to examine the relationship and influence between two variables: EMIS implementation as the independent variable (X) and the efficiency of educational data management as the dependent variable (Y). This design is suitable for determining how changes in one variable affect another in a measurable and statistical manner (Muhammad, 2023; Duckett, 2021).

The research was conducted at Madrasah Aliyah Negeri (MAN) Kota Palangka Raya. The selection of this location is based on the institution's active use of EMIS, which provides a relevant case study for understanding the effects of EMIS implementation on data management efficiency. The study was carried out from September to November 2025. The population for this study consists of 71 teachers and administrative staff members at MAN Kota Palangka Raya, including 64 teachers and 7 administrative staff. A purposive sampling technique was used to select 66 respondents who are directly involved in the use of EMIS, consisting of 64 teachers and 2 administrative staff serving as EMIS operators.

Data were collected using questionnaires as the primary instrument. The research instruments included two types of questionnaires: one for assessing the implementation of EMIS, with 21 items based on system quality, information quality, management support, system usage, and system benefits, and the other for evaluating the efficiency of educational data management, with 20 items focusing on work efficiency in data management. A four-point Likert scale was used to measure respondents' agreement with each statement. The collected data were analyzed using SPSS version 27, with validity tested through Pearson's Product Moment correlation and reliability assessed using Cronbach's Alpha. All items were found to be valid and reliable for data collection purposes (Kullan et al., 2022; Sürücü & Maslakci, 2020).

## RESULTS AND DISCUSSION

### Normality Test

The normality test is conducted to determine whether the research data follows a normal distribution. This test is an important step in quantitative data analysis as its results help to decide whether the data meets the assumptions necessary for parametric statistical analysis. In this study, normality testing was

carried out using the Kolmogorov-Smirnov test with SPSS version 27. This test compares the research data distribution with a normal distribution, allowing us to determine whether the data obtained from respondents approximates a normal distribution. Normality testing is a prerequisite for parametric statistical analysis, such as simple linear regression, which requires normally distributed data to ensure that the analysis results are accurate and interpretable. The results of the normality test can be seen in Table 1.

**Table 1: Normality Test Results  
One-Sample Kolmogorov-Smirnov Test**

		Unstandardize d Residual	
N		91	
Normal Parameters <sup>a,b</sup>	Mean	.000000	
	Std. Deviation	3.57866030	
Most Extreme Differences	Absolute	.039	
	Positive	.039	
	Negative	-.025	
Test Statistic		.039	
Asymp. Sig. (2-tailed) <sup>c</sup>		.200 <sup>d</sup>	
Monte Carlo Sig. (2-tailed) <sup>e</sup>	Sig.	.983	
	99% Confidence Interval	Lower Bound	.979
		Upper Bound	.986

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

e. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 2000000.

Based on the results in Table 1 from the Kolmogorov-Smirnov normality test, the Asymp. Sig. (2-tailed) value is 0.200, which is greater than 0.05. This indicates that the research data follows a normal distribution. Therefore, the data in this study meets the normality assumption, allowing for the use of parametric statistical analysis, namely simple linear regression, to examine the effect of EMIS implementation on the efficiency of educational data management.

### Homogeneity Test

The homogeneity test is conducted to determine whether the data variances are homogeneous. In this study, Levene's test was used to test for homogeneity with the help of SPSS software. The results of the homogeneity test can be seen in Table 2.

**Table 2: Results of the Levene Test for Homogeneity of Variances**

**Tests of Homogeneity of Variances**

		Levene			
		Statistic	df1	df2	Sig.
Penerapan EMIS dan Efisiensi Pengelolaan Data Pendidikan	Based on Mean	1.050	1	180	.307
	Based on Median	.970	1	180	.326
	Based on Median and with adjusted df	.970	1	176.996	.326
	Based on trimmed mean	1.091	1	180	.298

Based on the Levene test results shown in Table 2, the significance value is 0.307, which is greater than 0.05. This indicates that the data variances are homogeneous, thus meeting one of the assumptions for conducting parametric statistical analysis in the next stage. If the significance value from the homogeneity test is greater than 0.05, the variances between data groups can be considered equal or homogeneous.

**Simple Linear Regression Test**

Simple linear regression analysis was used to determine the impact of the implementation of the Education Management Information System (EMIS) on the efficiency of educational data management at MAN Kota Palangka Raya. The regression analysis results are shown in Table 3.

**Table 3 : Model Summary**

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<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.661 <sup>a</sup>	.437	.430	3.599

a. Predictors: (Constant), Penerapan EMIS

From Table 3, the R value is 0.661, indicating a moderate to strong relationship between the EMIS implementation and the efficiency of educational data management. The R Square value of 0.437 shows that EMIS implementation contributes 43.7% to the efficiency of educational data management, with the remaining 56.3% influenced by factors outside the scope of this study. To determine the significance of the regression model, an ANOVA test was performed, as shown in Table 4.

**Table 4: ANOVA Test Results**

		ANOVA <sup>a</sup>				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	893.343	1	893.343	68.980	.000 <sup>b</sup>
	Residual	1152.613	89	12.951		
	Total	2045.956	90			

a. Dependent Variable: Efisiensi Pengelolaan Data Pendidikan

b. Predictors: (Constant), Penerapan EMIS

Based on Table 4, the F value is 68.980 with a significance value of <0.000, which is less than 0.05. This indicates that the regression model in this study is significant. Therefore, it can be concluded that the EMIS implementation variable has a significant effect on the efficiency of educational data management.

### Hypothesis Test

The hypothesis test was conducted to determine whether the implementation of the Education Management Information System (EMIS) has a significant effect on the efficiency of educational data management. The research hypotheses are as follows:

H<sub>0</sub>: There is no significant effect of EMIS implementation on the efficiency of educational data management.

H<sub>1</sub>: There is a significant effect of EMIS implementation on the efficiency of educational data management.

The results of the hypothesis test are shown in Table 5.

**Table 5: Regression Coefficients**

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	28.181	5.218		5.401	.000
	Penerapan EMIS	.584	.070	.661	8.305	.000

a. Dependent Variable: Efisiensi Pengelolaan Data Pendidikan

From Table 5, the significance value for the EMIS implementation variable is <0.000, which is smaller than 0.05, meaning that H<sub>0</sub> is rejected and H<sub>1</sub> is accepted. Thus, it can be concluded that the implementation of EMIS has a significant effect on the efficiency of educational data management at MAN Kota

Palangka Raya. Based on the regression coefficients, the simple linear regression equation is as follows:

$$Y = 28.181 + 0.584X$$

This equation indicates that every increase of one unit in EMIS implementation will increase the efficiency of educational data management by 0.584.

## Discussion

The results of the study indicate that the implementation of the Education Management Information System (EMIS) has a significant impact on the efficiency of educational data management at MAN Kota Palangka Raya. This demonstrates that the use of information systems in education management can enhance administrative efficiency and accelerate the process of data processing and reporting. With an integrated information system in place, data management becomes more systematic, accurate, and accessible, supporting more effective educational administration (Muhamad et al., 2025).

These findings are consistent with research that shows the significant influence of service aspects in educational management on stakeholders' decisions when choosing educational institutions. The study utilized a quantitative approach, collecting data through Likert scale questionnaires and statistical analysis using SPSS, including validity tests, reliability, normality, and simple linear regression. The results showed that school services significantly affect parental decisions in choosing elementary schools (Hofflinger et al., 2020; Blake & Mestry, 2021).

The findings are also aligned with the Information System Success Model, which asserts that the success of an information system is influenced by system quality, information quality, and the extent of system usage by users. In this context, the implementation of EMIS facilitates teachers and administrative staff in managing educational data, enabling faster and more efficient data processing, storage, and reporting (Mbawala et al., 2024).

Moreover, it has been explained that management information systems enable organizations to manage data in an integrated manner, with the information generated being used as a basis for decision-making. In education, the use of information systems like EMIS can help educational institutions enhance data management quality and support more accurate, data-driven decision-making (Rahmatullah & Mubarok, 2025).

The findings are also supported by studies that demonstrate the effectiveness of EMIS in enhancing administrative efficiency and simplifying the process of data processing and reporting in educational institutions. This highlights the significant role of information technology in improving

educational data management effectiveness (Castro & Tumibay, 2021; Niu et al., 2021). In conclusion, the implementation of educational information systems such as EMIS not only helps increase the efficiency of educational data management but also contributes to the creation of a more modern, effective, and technology-based education management system.

## CONCLUSION

This study concludes that the implementation of the Education Management Information System (EMIS) significantly influences the efficiency of educational data management at MAN Kota Palangka Raya. The regression analysis indicates that EMIS contributes to enhancing the efficiency of data management, particularly in accelerating data collection, processing, and reporting. By enabling digital and integrated data management, the system allows educational institutions to manage information more effectively while reducing administrative errors. The study emphasizes the role of EMIS as a crucial tool for data-driven decision-making and efficient educational administration.

However, the study also identifies several limitations, including the need for further research to explore other factors influencing the effectiveness of EMIS, such as organizational support, user readiness, and technological infrastructure availability. Future research should also examine the broader impact of EMIS on the quality of management and institutional performance. Despite these limitations, the study provides significant contributions to the field of educational management by demonstrating the importance of technology integration in improving administrative efficiency and decision-making in educational settings.

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