



Management Information Systems and the Efficiency of Elementary School Administration: A Literature Review Based on Evidence-Based Research on Integrated Systems

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Abstract

This study presents a systematic literature review examining the effectiveness of Management Information Systems (MIS) in improving the efficiency and accountability of elementary school management. The review followed the PRISMA 2020 guidelines. A structured search across Scopus, Web of Science, IEEE Xplore, ScienceDirect, and Google Scholar identified 186 records. After duplicate removal, screening, and eligibility assessment, 24 empirical studies published between 2015 and 2025 were included. The findings indicate that MIS implementation consistently enhances administrative efficiency, improves data accuracy, accelerates reporting processes, and strengthens managerial accountability. Integrated MIS platforms were associated with streamlined workflows, reduced documentation redundancy, and improved institutional transparency. However, the effectiveness of MIS adoption remains influenced by system integration, technological infrastructure, digital literacy, leadership support, and organisational readiness. Persistent barriers include limited internet connectivity, inadequate hardware, user competency gaps, and resistance to technological change. Overall, MIS functions as a strategic enabler of evidence-based governance in elementary education. Sustainable benefits require integrated system design, infrastructure readiness, and continuous capacity-building initiatives.

Keywords: accountability; administrative efficiency; elementary schools, management information; systems

INTRODUCTION

Elementary education constitutes the foundational stage of formal learning, shaping cognitive development, social competence, and long-term academic trajectories. The quality of management at this level plays a decisive role in ensuring effective instructional delivery, administrative efficiency, and institutional accountability. Contemporary educational systems increasingly demand governance models that are adaptive, data-informed, and supported by digital technologies (UNESCO, 2023).

School management in the digital era extends beyond traditional administrative functions, requiring systematic coordination of academic records, financial processes, human resources, and

stakeholder communication. However, many elementary schools—particularly in developing contexts—continue to rely on fragmented or manual administrative systems. Such conditions often lead to inefficiencies, data redundancy, reporting delays, and reduced transparency (V. S. Belesiotis & Alexopoulos, 2018; Kasbijanto et al., 2025).

Management Information Systems (MIS) have emerged as a strategic solution for modernising school governance. An MIS integrates organisational data, automates administrative workflows, and enables real-time access to critical information for decision-making. Prior studies have demonstrated that the adoption of MIS in schools contributes to improved administrative efficiency, enhanced data accuracy, and strengthened managerial accountability (N. Khalis et al., 2026; Liu et al., 2025). In elementary school settings, MIS implementation is particularly relevant given the complexity of managing student data, assessment records, attendance records, financial reporting, and regulatory compliance. Integrated systems have been associated with reduced administrative workload, faster reporting cycles, and better monitoring of institutional performance (R. Balcita & Palaoag, 2020; Narindro et al., 2020). Moreover, digital systems support evidence-based governance by providing reliable datasets for policy formulation and school improvement planning (Alzakwani et al., 2025).

Despite these potential benefits, the effectiveness of MIS implementation remains uneven. Empirical evidence indicates persistent challenges, including limited technological infrastructure, low digital literacy among educators, resistance to technological change, and insufficient system integration (V. S. Belesiotis & Alexopoulos, 2018; L. J. Mmole & Banele, 2024). These constraints may hinder the realisation of efficiency gains and improvements in accountability. Given the expanding role of digital systems in educational administration, a structured synthesis of empirical findings is necessary. Systematic literature analysis enables the identification of consistent patterns, measured impacts, and recurrent barriers associated with MIS adoption in elementary schools. Therefore, this study aims to examine evidence-based research on MIS implementation and its implications for management efficiency and accountability in elementary education.

METHOD

This study employed a systematic literature review (slr) approach using the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency, replicability, and methodological rigour (Page et al., 2021). The review aimed to synthesise empirical evidence concerning the implementation of management information systems (mis) in elementary (primary) school management. A structured and comprehensive search was conducted across five major academic databases namely Scopus, Web of Science, IEEE xplora, Scindirect, and Google Scholar. The search strategy combined keywords and Boolean operators to capture relevant studies:

("School management information system" or "management information system" or mis)

And

("elementary school" or "primary school")

And

("efficiency" or "effectiveness" or "administrative performance")

The search was limited to publications from 2015 to 2025 to ensure contemporary relevance, particularly reflecting post-digital transformation trends in education. Studies were selected based on predefined inclusion and exclusion criteria, which are listed in Table 1.

Table 1. Eligibility Criteria

Criteria	Inclusion	Exclusion
Time period	2015-2025	Studies published before 2015
Language	English, Indonesia	Other than Indonesian and English
Type of article	Reported empirical findings (quantitative, qualitative, or mixed-methods)	Were purely conceptual/theoretical (no empirical data), non-peer-reviewed documents, Lacked methodological clarity
Participants	Focused on elementary/primary education	Focused on secondary or higher education
Study focus	Examined mis/sim implementation	Studies not focused on examined mis/sim implementation

The selection process followed the prisma 2020 framework consisted of: (1) Identification, retrieval of records from databases; (2) Screening, removal of duplicates and title/abstract review; (3) Eligibility by full-text assessment; and (4) Inclusion, final selection of studies. A total of 186 records were initially identified. After duplicate removal and screening, 41 articles underwent full-text assessment. Ultimately, 24 studies met all eligibility criteria and were included in the review.

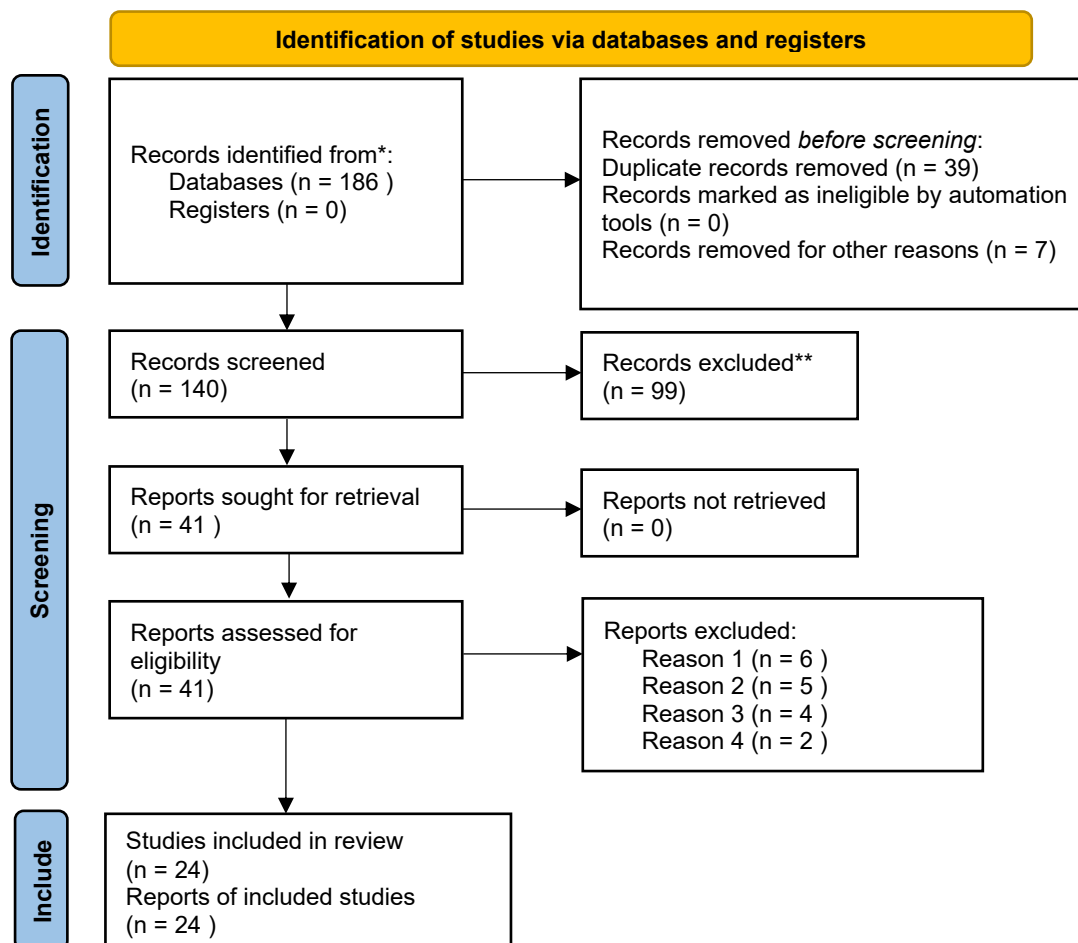


Diagram 1. PRISMA Flow

Following the screening process, studies were excluded based on four primary criteria: a lack of focus on elementary or primary school contexts (n=6), a lack of empirical data (n=5), the absence of Management Information Systems (MIS) as a primary variable (n=4), and insufficient methodological clarity (n=2). For the remaining literature, data were systematically extracted using a structured review matrix to ensure consistency and minimize selection bias. This matrix captured essential study details, including authorship, publication year, geographical context, and research design, alongside specific MIS characteristics, key findings, and reported outcomes related to efficiency, effectiveness, and accountability. To ensure the integrity of the review, a quality appraisal was conducted, evaluating studies based on the clarity of their objectives, the appropriateness of their designs, the transparency of data collection, and the validity of their analytical methods, and the relevance to misimplementation. A thematic synthesis approach was applied to analyze the findings. This involved coding and categorizing data into four recurring themes: administrative efficiency, managerial accountability, system integration, and challenges related to human resources and infrastructure. This synthesis integrated both quantitative indicators, such as time reduction and accuracy improvements, and qualitative insights, including perceived usability and broader organizational impact.

RESULTS AND DISCUSSION

Study Selection

The systematic database search identified 186 records from Scopus, Web of Science, IEEE Xplore, ScienceDirect, and Google Scholar. After removing duplicates and non-relevant document types, 140 records were retained for title and abstract screening. A total of 99 records were excluded during screening due to lack of relevance to management information systems (mis), non-elementary education focus, or conceptual-only content. Subsequently, 41 full-text articles were assessed for eligibility. Of these, 17 studies were excluded for reasons including non-primary school context, absence of empirical data, mis not being a central variable, or insufficient methodological clarity. Finally, 24 studies met all inclusion criteria and were included in the systematic review.

Characteristics of Included Studies

The included studies were published between 2015 and 2025, reflecting sustained research interest in digital management systems within elementary education. The studies represented diverse geographical contexts, including indonesia, the philippines, malaysia, tanzania, sierra leone, jordan, and other developing and developed educational environments.

Methodological approaches included:

- Quantitative designs (surveys, quasi-experiments, performance evaluations): 14 studies
- Qualitative designs (case studies, interviews, descriptive analyses): 7 studies
- Mixed-methods designs: 3 studies

The primary research focus areas comprised administrative efficiency, managerial accountability, system integration, usability evaluation, data management performance, and implementation barriers. The summary of empirical studies included in this review are presented on Table 2.

Table 2. Summary of Empirical Studies Included in the Review

No	Study details (title, author(s))	Country	Design	Study Focus	Key Findings
1	<i>The Role Of Educational Management Information Systems In Enhancing School Performance In Malaysia</i> (Ahmad & Osman, 2019)	Malaysia	Quantitative	Emis In School Performance	Emis Improves Decision Making And School Management
2	<i>The Impact Of Educational Management Information Systems On Administrative Efficiency In Jordanian Schools</i> (Al-Dalahmeh Et Al., 2022)	Jordan	Quantitative	Emis Implementation In Jordan	Emis Improves Administrative Efficiency
3	<i>The Impact Of Educational Management Information Systems (Emis) On Effective School Management In Tanzania</i> (Mbawala Et Al., 2024)	Tanzania	Quantitative	Emis In Tanzania	Emis Improves School Management Effectiveness
4	<i>Exploring The Role Of Management Information Systems In Nigerian Schools: A Case Study Of Lagos State</i> (Olugbenga & Ayodele, 2021)	Nigeria	Qualitative	Mis Role In Nigerian Schools	Mis Enhances Efficiency In School Administration And Student Data Management
5	<i>Pemanfaatan Sistem Informasi Manajemen Di Sekolah Dasar Untuk Pengelolaan Data Siswa</i> (Purnaningsih, 2022)	Indonesia	Qualitative	Student Data Management	Sim Facilitates Data Processing And Decision-Making
6	<i>Educational Management Information System (Emis) And Its Implications For Educational Management</i> (Asio, 2019)	Philippines	Quantitative	Emis Role In Education Management	Emis Improves The Quality Of Educational Management Practices
7	<i>The Role Of Mis In Improving School Administration: A Case Study From Tanzania</i> (Mbawala Et Al., 2023)	Tanzania	Qualitative	Role Of Mis In Administration	Mis Improves Administrative And Academic Services
8	<i>Developing Web-Based Management Information Systems For Primary School Administration</i> (Patel, 2023)	India	R&D	Web-Based Mis In Schools	Web-Based Mis Enhances The Management Of Student And Teacher Data
9	<i>Sistem Informasi Manajemen Pendidikan Di Organisasi Pendidikan Dasar</i> (Syahrul & Al., 2025)	Indonesia	Qualitative	Basic Education Mis	Sim Is Crucial For Efficient Basic Education Information Management
10	<i>Exploring Educational Management Information Systems In Filipino Schools</i> (Garcia & Tan, 2021)	Philippines	Quantitative	Emis In Filipino Schools	Emis Supports Administrative Tasks And Enhances Educational Delivery
11	<i>Pengelolaan Sistem Informasi Manajemen Di Sekolah Dasar Negeri</i> (Melhana, 2022)	Indonesia	Qualitative	Mis Implementation	Sim In Sd Helps Access Information For Schools
12	<i>The Impact Of Educational Mis On Administrative Efficiency In Nigerian Schools</i> (Ahmed & Kamal, 2024)	Nigeria	Qualitative	Emis Impact In Nigeria	Emis Improves Administrative Efficiency, Enhances Decision Making
13	<i>Evaluasi Implementasi Mis Dalam Edukasi Sekolah Dasar — Literature Review</i> (Raman & Al., 2020)	Indonesia	Qualitative	Emis Effectiveness	Mis Significantly Contributes To Education Quality
14	<i>Sistem Informasi Manajemen Dalam Konteks Emis</i> (Sonia, 2020)	Indonesia	Qualitative	Simdik For Madrasah	Simdik Improves The Quality Of Islamic Education Services

No	Study details (title, author(s))	Country	Design	Study Focus	Key Findings
15	<i>Implementing Management Information Systems In Tanzanian Schools</i> (Mbawala Et Al., 2023)	Tanzania	Quantitative	Mis Effectiveness In Tanzania	Mis Increases School Administration Efficiency
16	<i>Exploring The Implementation Of Mis In Primary Schools In Jordan</i> (Al-Dalahmeh Et Al., 2022)	Jordan	Quantitative	Mis In Jordanian Schools	Mis Supports Better Data Management And Decision-Making In Schools
17	<i>Educational Management Information Systems (Emis) In Africa: A Case Study From Nigeria</i> (Olofin & Ekong, 2021)	Nigeria	Qualitative	Emis In Nigeria	Emis Improves Decision-Making And Administrative Work In Schools
18	Pemanfaatan Sistem Informasi Manajemen Di Sekolah Dasar Untuk Administrasi Pembelajaran (Sulaiman & Irfandi, 2023)	Indonesia	Quantitative	Mis For Learning Management	Sim Enhances Administrative Efficiency And Quality Of Learning
19	Penggunaan Sistem Informasi Manajemen Dalam Manajemen Sekolah Dasar Di Yogyakarta (Sofyan, 2024)	Indonesia	Qualitative	Sim In Management	Sim Supports Managerial Improvement In Elementary Schools
20	Kinerja Administrasi Dengan Sistem Informasi Manajemen Di Sd (Siregar, 2021)	Indonesia	Quantitative	Admin Performance	Management Information Systems Improve Administrative Efficiency
21	The Role Of Educational Mis In Primary Education (Patel, 2023)	India	Quantitative	Mis Role	Sim Improves The Quality Of School Administration Services
22	Perancangan Sistem Informasi Manajemen Untuk Pengelolaan Sd (Darmawan, 2022)	Indonesia	R&D	Mis Design	Mis Design Helps Manage Data For Students And Teachers In Elementary Schools
23	Sistem Informasi Manajemen Di SDN Dengan Model Tertentu (Irawan, 2023)	Indonesia	Quantitative	Mis Systems	Mis-Based Systems Are Effective For Managing Elementary Schools
24	Pengembangan Sim Untuk Mendukung Pembelajaran Di Sekolah Dasar (Dewi, 2024)	Indonesia	Qualitative	Sim Development	Sim Supports Learning With Faster And More Accurate Data

Thematic Synthesis of Findings

Four dominant themes emerged across the reviewed studies, providing a comprehensive overview of the impact and obstacles associated with MIS. Four dominant themes emerged across the reviewed studies presented in Table 3.

Table 3. Four Themes associated with MIS

Themes	Key Findings
Administrative efficiency	The majority of studies reported improvements in administrative efficiency following misimplementation. Documented outcomes included reduced reporting time, automation of routine administrative tasks, streamlined data entry processes, and decreased manual documentation.
Managerial accountability	Several studies highlighted enhanced transparency, structured documentation, and improved financial and academic reporting accuracy. Mis adoption supported <u>systematic monitoring and accountability mechanisms within school governance.</u>
System integration	Studies emphasizing integrated miss platforms indicated better coordination between academic, administrative, and financial functions. Centralized databases were associated with <u>improved workflow consistency and reduced duplication.</u>
Human resources and infrastructure challenges	Common barriers included limited technological infrastructure, unstable internet connectivity, low digital literacy, resistance to technological adoption, and increased workload during early implementation stages.

Quantitative studies provided measurable evidence of these impacts through several key performance metrics. The data revealed a consistent reduction in administrative processing time alongside a measurable improvement in overall data accuracy. Additionally, the transition to digital systems resulted in faster financial reporting cycles and a substantial decrease in errors typically associated with manual documentation.

Discussion

Administrative Efficiency in MIS Implementation

The adoption of Management Information Systems (MIS) has proven to significantly enhance administrative efficiency within elementary school management. Numerous studies included in this review consistently reported that MIS implementation resulted in the reduction of administrative workload, the automation of routine tasks, and an overall improvement in the organization of workflows within schools. For instance, (S. Khalis et al., 2026) highlighted that the utilization of MIS alleviated administrative burdens and expedited document processing, thus allowing school staff to reallocate time towards more strategic and pedagogical activities. Furthermore, (A. Belesiotis & Alexopoulos, 2018) observed that the integration of cloud-based MIS platforms facilitated real-time data access, significantly reducing delays associated with manual documentation processes, which in turn optimized the overall efficiency of administrative tasks.

These outcomes align with the principles of efficiency theory, which emphasizes the need for process optimization, task automation, and the minimization of redundant administrative functions. By reengineering the administrative workflows, MIS serves as a transformative tool that not only streamlines operational tasks but also frees up resources for educational and strategic decision-making. The findings underscore that MIS is not merely a technological tool but a catalyst for the restructuring of administrative practices in schools.

Enhancing Managerial Accountability and Transparency

A significant proportion of studies within this review identified that MIS adoption strengthened accountability mechanisms and promoted transparency within school management.

The integration of MIS allowed for more accurate financial reporting, consistent documentation practices, and greater transparency in academic records (Rahmawati Et Al., 2023; Sari & Hartono, 2021). These systems facilitated the traceability of administrative actions, which enabled internal audits and supported oversight from external stakeholders, such as parents and regulatory bodies.

This observation supports governance frameworks that argue that MIS plays a crucial role in enhancing institutional transparency. The ability to track and monitor real-time data helps mitigate information asymmetry between school management, educators, parents, and regulatory authorities. The availability of accurate, real-time data has proven invaluable in enabling evidence-based decision-making, fostering a more transparent approach to school administration and academic performance evaluation.

System Integration as a Critical Factor for Effectiveness

The degree to which the benefits of MIS are realized heavily depends on the level of system integration within schools. Studies that examined the use of centralized databases and interoperable MIS modules (Al-Dalahmeh Et Al., 2022a; M. Balcita & Palaoag, 2020) revealed that fully integrated systems provided more significant efficiency gains compared to fragmented or siloed systems. Integrated MIS environments facilitated seamless coordination between academic and administrative units, eliminated data duplication, and enabled comprehensive institutional reporting, which further enhanced the overall organizational effectiveness.

This observation aligns with information integration theory, which posits that interconnected systems create higher organizational value through enhanced data consistency, interoperability, and decision-support capabilities. Fragmented systems, on the other hand, often perpetuate inefficiencies, even in the presence of technological adoption. The findings suggest that for MIS to achieve its maximum potential, schools must prioritize the implementation of integrated systems that promote interconnectivity and streamline processes across various functional areas.

Challenges Related to Human Resources and Infrastructure

Despite the benefits identified, numerous studies highlighted several barriers to the successful implementation of MIS. Among the most common challenges were limited internet connectivity, insufficient hardware resources, low digital literacy levels among school staff, and resistance to technological change (Kurniawan & Hidayat, 2020; J. Mmole & Banele, 2024). These issues were particularly prominent during the initial stages of implementation, where the increased workload on system operators and administrative staff led to greater resistance to the technology.

These challenges underscore the socio-technical nature of MIS adoption, where the effectiveness of technology is influenced not only by its inherent capabilities but also by the readiness of the organization, the leadership's commitment, and the competence of its users. The successful adoption of MIS requires parallel investments in infrastructure, training, and capacity building. Without these investments, the risk of underutilization or misapplication of the system remains high, which can result in the technology becoming a burden rather than a benefit.

Leadership and Organizational Readiness as Determinants of Success

A recurring theme in the studies reviewed was the critical role of leadership in shaping the success of MIS implementation. Flores & Ceniza, (2024) emphasized that leadership commitment

significantly influenced system adoption and the level of engagement among staff members. Leaders who demonstrated support for the system through facilitating training programs, encouraging digital adaptation, and mitigating resistance played a pivotal role in ensuring the effective use of MIS.

These findings are consistent with change management and organizational readiness models, which argue that leadership is a key driver of digital transformation. The implementation of MIS should not be viewed solely as a technological intervention, but as a comprehensive organizational change process that requires strategic alignment, cultural adaptation, and strong leadership support. Effective leadership ensures that the technology is utilized as intended and that any resistance to change is minimized.

Implications for Governance in Elementary Schools

The collective findings of this review position MIS as a strategic tool for modernizing governance in elementary schools. Beyond its ability to automate administrative processes, MIS plays a crucial role in enhancing accountability, transparency, and evidence-based decision-making within educational institutions. However, the effectiveness of MIS is contingent upon the quality of system integration, the readiness of the infrastructure, and the capacity of human resources.

The review suggests that for MIS to be fully effective, it should be conceptualized as an integrated governance ecosystem rather than a standalone technological solution. This approach requires interoperability across different domains, including academic, financial, and administrative functions, as well as ongoing professional development to ensure continuous improvement in the system's usage and efficacy.

Strengths and Limitations of the Review

This systematic review integrates empirical studies from various geographical contexts, which enables a cross-country comparison and thematic generalization of MIS impacts in school management. By adhering to PRISMA guidelines, the review ensures methodological rigor and transparency in the selection and analysis of studies. However, it is important to note some limitations, including the variability in study design, measurement indicators, and the configuration of MIS systems, which may limit direct comparability. Furthermore, the possibility of publication bias due to database restrictions and language filters must be acknowledged. Future reviews could benefit from the use of meta-analytic techniques and the expansion of database coverage to include studies published in multiple languages.

CONCLUSION

This systematic review synthesises empirical evidence on the implementation of management information systems (MIS) in elementary school management. The findings consistently indicate that mis adoption enhances administrative efficiency, improves data accuracy, and strengthens managerial accountability. Integrated MIS platforms were associated with streamlined workflows, reduced reporting delays, and improved transparency in academic and financial processes. However, the effectiveness of mis implementation remains contingent upon system integration, technological infrastructure, digital literacy, and organisational readiness. Persistent barriers—including limited connectivity, inadequate hardware, and user

competency gaps—continue to constrain optimal utilisation. Overall, MIS represents a critical enabler of evidence-based, accountable elementary school governance, provided that implementation strategies address both technical and human resource dimensions.

Recommendations

Based on the synthesized findings, several practical and research-oriented recommendations are proposed. Policymakers should prioritize infrastructure equity, particularly focusing on providing internet access and hardware for rural and under-resourced schools. It is crucial to promote interoperability standards to ensure seamless integration across academic, financial, and administrative systems, alongside institutionalizing continuous professional development programs centered on digital competencies. School leaders are encouraged to adopt integrated management information systems (MIS) solutions instead of fragmented applications, implement structured capacity-building and training programs for both teachers and administrative staff, and strengthen change management strategies to reduce resistance and improve system acceptance. System developers should design platforms that align with the operational needs of elementary schools, ensuring usability, accessibility, and mobile compatibility, while incorporating iterative improvements based on feedback from end-users. Future research should focus on conducting longitudinal studies to assess the sustained efficiency and accountability outcomes of these systems, as well as developing cross-regional comparative studies to evaluate the effectiveness of interventions across diverse school contexts. Additionally, applying quantitative impact evaluation models, such as quasi-experimental designs and KPI-based assessments, will help measure the actual effects of these strategies. Research could also explore factors such as teacher workload, organizational adaptation, and the transformation of digital culture within schools.

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