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Systematic Literature Review

A Systematic Literature Review on Adoption of Management Information System in School Administration: Challenges, Barriers and Possible Solutions

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Abstract

This systematic literature review examines the adoption, applications, implementation barriers, and enabling conditions of management information systems (MIS) in schools. Following PRISMA guidelines, 68 studies were selected and synthesized to assess how MIS supports student records, attendance, assessment, staff scheduling, financial management, communication, and institutional decision-making. Findings indicate that MIS can improve administrative efficiency, data accuracy, coordination, transparency, and evidence-informed leadership. However, implementation remains constrained, particularly in resource-limited schools, by inadequate infrastructure, financial limitations, insufficient technical support, limited staff competence, resistance to change, and weak institutional readiness. Effective and sustainable adoption therefore requires reliable technological infrastructure, continuous professional development, responsive leadership, clear implementation policies, and stakeholder engagement. The review establishes MIS as an essential strategic resource for strengthening school administration.

Keywords: administrators, barriers, challenges, management information system, school administration, school organisation, solutions, technology

1. Introduction

Management information system is generally seen as an integrated user machine system that delivers information to facilitate operations, management, and decision-making activities within an organization (Adeoti-Adekeye, 1997). The influence of management information system (MIS) has existed since the mid-1950s, in non-educational organizations, and has received significant attention (Attewell & Rule, 1984). The utilization of information systems enhances workplace effectiveness through information processing, improves managerial efficacy by addressing informational needs, and provides a competitive advantage by guiding strategic initiatives (Yuen, Law

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& Wong, 2003). *"A management information system designed to match the structure, management task, instructional processes, and special needs of the school"* (Telem, 1999). Management Information Systems are now an integral part of the education sector, supporting administrative processes, data management, and communication within schools, making them more efficient for different stakeholders. MIS are essential instruments within organizations, designed to provide users with reliable, comprehensive, accessible, and precise data promptly. MIS promotes the mechanization of tasks. Mechanization substantially enhances organizational efficiency (Mamary, Shamsuddin, & Aziati, 2014). Management Information System (MIS) can facilitate more informed decision-making by providing various types of computer-generated information to address badly structured problems, such as low student success rates (Bosker et al., 2007). MIS was developed to give students in business and computer science a practical understanding of Information Systems. By instructing students in the utilization of management of information technologies to enhance corporate processes, improve decision-making, and secure competitive advantages, or generating valuable new information products across various industries (O' Brien & Marakas, 2008). These systems possess the capability to furnish users with processed information, analytical models, real-time updates, and hypothetical situations to facilitate their decision-making process (Shah, 2014). A school Management Information System (MIS) consists of multiple interrelated components that collectively facilitate efficient information management. It consists of the hardware infrastructure, the application software, the centralized databases, the communication networks, the standardized procedures, and the trained personnel to operate and maintain the system. The success of MIS depends not only on technological infrastructure, but also on user competencies, organizational leadership, and institutional readiness to adopt digital innovations. The research shows time and again that success of implementation is dependent on the fit of technology, organizational processes and human resources (Pradana et al., 2026).

School Administration

The use of administrative terms in education, particularly inside schools, makes school administration a crucial component of the management of educational institutions. Schools, whether official, non-formal, or informal institutions, are tasked with delivering education via the learning process. School administration includes not only the instructional component but also various managerial elements that facilitate the efficient functioning of institutions (Fatimah et al., 2024). Liang Gie defines administration as a sequence of operations that governs the principal tasks performed by a collective in collaboration. This administration entails coordinating many actions required to achieve shared objectives. The administration plays a crucial role in ensuring that diverse organisational or group activities proceed as expected. School administration is the process by which school leaders coordinate the efforts and activities of staff and students to achieve educational objectives. It pertains to the daily execution of leadership responsibilities by the school administrators. To be effective and efficient in their administrative duties, a school administrator must be familiar with the implementation of innovations in school administration (Akpan, 2016). *"School administration can be defined as a series of regulatory and management activities involving various parties to achieve educational goals. Collaboration between the principal, teachers, staff, and students is very important in this process. Through well-organized administration, schools can carry out their functions optimally and provide quality education to students"* (Fatimah et al., 2024).

In the digital age, Management Information System (MIS) have become essential tools for the effective management of educational institutions (Kurniasih, 2023; Suhardi & Fahmi, 2025). These systems popularly known as Educational Management

Information System (EMIS) or School Information Management System (SIMS) are aimed at collection, processing and analysing data to facilitate administrative decision making (Yusuf et al., 2022; Shal, 2022; Ajobiewe, 2020). Many schools face difficulties in moving from manual to digital administrative processes, despite the promise of greater efficiency and better educational results (Ngarifin et al., 2024; Yuliantari et al., 2025). Schools are turning to digital technologies to make administrative processes more efficient, improve communication among stakeholders, enable data-driven decision-making, and improve the overall quality of educational management. Consequently, the adoption of Management Information System (MIS) has become a key element of the educational digital transformation, allowing school administrators to manage complex organisational activities more efficiently and effectively (Adhikari et al., 2024). MIS is one of the core technologies as it provides information from different administrative functions on a single platform to facilitate operational and strategic decision making (Baetisalamah et al., 2024). Such responsibilities are difficult to manage in traditional paper-based administrative systems as they are time consuming, prone to human error, hard to monitor and inefficient in producing reports in a timely manner (Adhikari et al., 2024).

In India, the digital transformation of school administration has gained considerable momentum through initiatives associated with the National Education Policy (NEP) 2020 and wider Digital India programmes. More and more schools are using digital platforms for student enrolment, attendance management, examination processing, teacher records, financial administration, scholarship management and reporting through systems like UDISE+. These initiatives are aimed at improving the efficiency of administration, ensuring data accuracy, strengthening educational governance and facilitating evidence-based decision-making at the institutional, district and national levels. Similar initiatives have also been seen in developed and developing countries alike, reflecting the growing recognition that digital information systems are essential for effective educational management.

2. Literature Review

Adoption of Management Information System (MIS)

The adoption of Management Information System (MIS) in school administration has steadily increased as educational institutions recognise their capacity to enhance administrative efficiency, effectiveness, and overall management (Fitz-Gerald, 2009; Shah, 2014). As administrative functions become increasingly digitised, MIS serves as a critical tool for supporting evidence-based governance and contemporary educational management (Hartono et al., 2025). Empirical studies consistently demonstrate that MIS adoption enhances decision-making, administrative efficiency, resource optimisation, information accessibility, and organisational performance. By delivering timely and accurate information, MIS enables administrators to make informed decisions, streamline processes, and optimise resource utilisation (Adhikari et al., 2024; Shah, 2014; Kurniawan et al., 2025). Additionally, MIS implementation has increased the responsiveness, transparency, and accountability of school administration through data-driven decision-making practices (Hartono et al., 2025; Pradana et al., 2026). Numerous studies have highlighted the operational benefits of MIS within educational institutions. Effective MIS implementation improves information flow, increases data accuracy, enhances transparency, and expedites administrative tasks, thereby elevating overall administrative performance (Dahyanti & Hamini, 2025; Uchenna et al., 2013). Furthermore, MIS strengthens data management practices, accelerates routine processes, and encourage parental involvement, ultimately contributing to enhanced educational quality (Sarumpaet & Firdaus, 2024). Despite these advantages, successful MIS

implementation is contingent upon several organisational and technological factors. Research underscores the importance of human resource readiness, staff digital competence, technological infrastructure, and institutional support in achieving the desired outcomes of MIS adoption (Dahyanti & Hamini, 2025; Khalis et al., 2026). Furthermore, review study indicates that MIS adoption varies significantly across geographical regions and educational contexts. Some regions have achieved high levels of MIS integration, while others experience slower implementation due to disparities in training, technical support, infrastructure, and organisational preparedness (Adhikari et al., 2024). Additionally, ongoing concerns regarding data security and privacy necessitate the development of appropriate policies and technological safeguards to ensure sustainable MIS implementation (Adhikari et al., 2024). In summary, the literature establishes that MIS adoption is an essential element of modern school administration. When supported by sufficient infrastructure, skilled personnel, ongoing training, and strong organisational commitment, MIS substantially enhances administrative efficiency, data accuracy, transparency, accountability, and evidence-based decision-making. These improvements contribute to more effective school governance and better educational outcomes (Hartono et al., 2025; Kurniawan et al., 2025; Pradana et al., 2026).

Challenges and Barriers of Management Information System (MIS) in School Administration

Management Information System (MIS) offer significant potential to enhance school administration; however, their implementation and sustained use are frequently limited by technical, organisational, financial, and human resource barriers. The literature indicates that these challenges are multidimensional and interconnected, a comprehensive approach that addresses both technological and institutional readiness (Adhikari et al., 2024; Ariatpi & Ismatullah, 2025). A major challenge to MIS implementation is inadequate technological infrastructure. Many schools experience poor communication networks, limited internet connectivity, insufficient computer systems, inadequate hardware and digital facilities, and unreliable technical infrastructure. These technological deficiencies are due to limited financial resources and budget constraints, which limit schools' ability to procure, maintain, and upgrade MIS technologies (Adeoye, 2022; Nurhidayah & Muliansyah, 2023; Khalis et al., 2026; Pradana et al., 2026). Consequently, the effectiveness of MIS largely depends on the availability of adequate technological infrastructure and institutional investment (Dahyanti & Hamini, 2025). Human resource readiness constitutes a critical factor in successful MIS implementation. Studies consistently report that school administrators and staff often lack digital competencies, computer literacy, confidence, technical skills, and experience technology-related anxiety. These issues are intensified by insufficient training opportunities, a shortage of qualified IT personnel, and limited ongoing technical support, collectively diminishing users' ability and willingness to utilise MIS effectively (Shah, 2014; Fitz-Gerald, 2009; Nurhidayah & Muliansyah, 2023; Adhikari & Budhathoki, 2025). Consequently, continuous professional development and sustained user support are essential for enhancing MIS adoption and utilisation (Adhikari et al., 2024). Organisational and managerial barriers also play a significant role in determining the success of MIS implementation. Weak organisational structures, inadequate legal and policy frameworks, poor system integration, limited stakeholder involvement, and insufficient support from senior management frequently obstruct the effective deployment and institutionalisation of MIS in schools (Adhikari & Budhathoki, 2025; Yusuf et al., 2022). Additionally, resistance to technological change, difficulties in adapting to new work processes, disruption of established administrative routines, and challenges in integrating MIS into organisational practices further impede successful

implementation (Ngarifin et al., 2024). Challenges related to system quality and user experience are frequently highlighted in the literature. Users report dissatisfaction with MIS usability, accessibility, and responsiveness. Technical issues, including delayed software updates, system glitches, unreliable internet connectivity, inadequate helpdesk services, and limited onsite technical support, undermine user confidence and acceptance (Ariatpi & Ismatullah, 2025; Nkambule & Ngubane, 2024). Furthermore, concerns about the utility and quality of collected data may discourage administrators from fully utilising MIS for evidence-based decision-making (Ngarifin et al., 2024). Limited utilisation of MIS functionalities, despite system availability, constitutes another significant barrier. Evidence indicates that school administrators frequently underutilise MIS for essential administrative activities, such as online admissions, attendance management, and result processing. This underutilisation is primarily attributed to inadequate training, insufficient user competence, and limited awareness of the system's capabilities (Chidinmachinenye & Anachuna, 2019). Safeguarding the confidentiality, integrity, and protection of educational data necessitates strong security mechanisms, ongoing staff training, and reliable technical support to enhance user trust and facilitate sustainable MIS implementation (Adhikari et al., 2024). The literature demonstrates that challenges and barriers to MIS implementation in school administration are highly interconnected and extend beyond technological limitations. Addressing these interrelated factors is crucial for achieving sustainable MIS adoption and maximising its contribution to efficient, transparent, and data-driven school administration (Dahyanti & Hamini, 2025; Khalis et al., 2026; Ariatpi & Ismatullah, 2025).

3. Research Questions

This systematic review is guided by three primary research questions: -

1. How the schools are adopting the applications of Management Information System (MIS)?
2. What are the primary challenges and barriers that school administrators face during the adoption of Management Information System (MIS)?
3. What are the solutions for improving and implementing to overcome the challenges or barriers to MIS adoption in schools?

4. Research Methodology

Research Design

This comprehensive study utilises a methodical analytical framework adhering to the Preferred Reporting Items for Systematic Reviews (PRISMA 2020) standards. On July 31, 2026, three databases, SCOPUS, Google Scholar and, ERIC (Education Resources Information Centre), were examined for research articles via the on-campus service available to university students. These databases offer extensive access to superior peer-reviewed publications within the domain of education. The PRISMA 2020 recommendations were taken into account for the systematic nature of this research. The literature review covers publications from 2015 to 2026 on adopting management information systems in school administration.

Search Strategy

A systematic Boolean search strategy was developed by combining keywords and synonyms related to the three core concepts of the study:-

1. Management Information Systems
2. School Administration
3. Adoption, Challenges, Barriers, and Solutions

Boolean operators (AND, OR) were used to maximize the retrieval of relevant literature. The primary search string was: ("Management Information System" OR "MIS" OR "School Management Information System" OR "SMIS" OR "Education Management Information System" OR "EMIS" OR "School Information System" OR "SIS" OR "Educational Information System") AND ("Adoption" OR "Implementation" OR "Acceptance" OR "Utilization" OR "Usage" OR "Integration") AND ("School Administration" OR "School Management" OR "Educational Administration" OR "Educational Management" OR "Principal" OR "Administrator") AND ("Challenges" OR "Barrier" OR "Constraint" OR "Limitation" OR "Obstacle" OR "Problem") AND ("Solution" OR "Recommendation" OR "Strategy" OR "Framework" OR "Best Practice"). The search strategy was adapted according to the indexing requirements of each database. Reference lists of the included studies were also manually searched to identify additional relevant publications.

Inclusion and Exclusion Criteria

To ensure transparency and consistency in study selection, predefined inclusion and exclusion criteria were established before the screening process.

Criteria	Inclusion	Exclusion
Publication Period	2015–2026	Before 2015
Language	English	Non-English publications
Document Type	Peer-reviewed journal articles, conference papers, systematic reviews.	Books, dissertations, editorials, reports, theses, magazines.
Research Focus	Adoption, implementation, use, challenges, barriers, or solutions related to MIS in school administration.	Studies focusing solely on Learning Management Systems (LMS), e-learning, or classroom technologies without administrative MIS.
Educational Context	Primary and secondary schools; school administration.	Higher education only, corporate organisations, healthcare, banking, and non-school sectors.
Availability	Full-text available	Inaccessible full text

Screening Process

The study selection process followed the PRISMA 2020 four-phase flow: -

1. Identification: Records identified through database searching and additional records identified through manual reference searching.
2. Screening: Duplicate records were removed, titles and abstracts screened for relevance.
3. Eligibility: Full-text articles assessed against the predefined inclusion and exclusion criteria.
4. Included: Final studies included in the qualitative synthesis.

5. Results

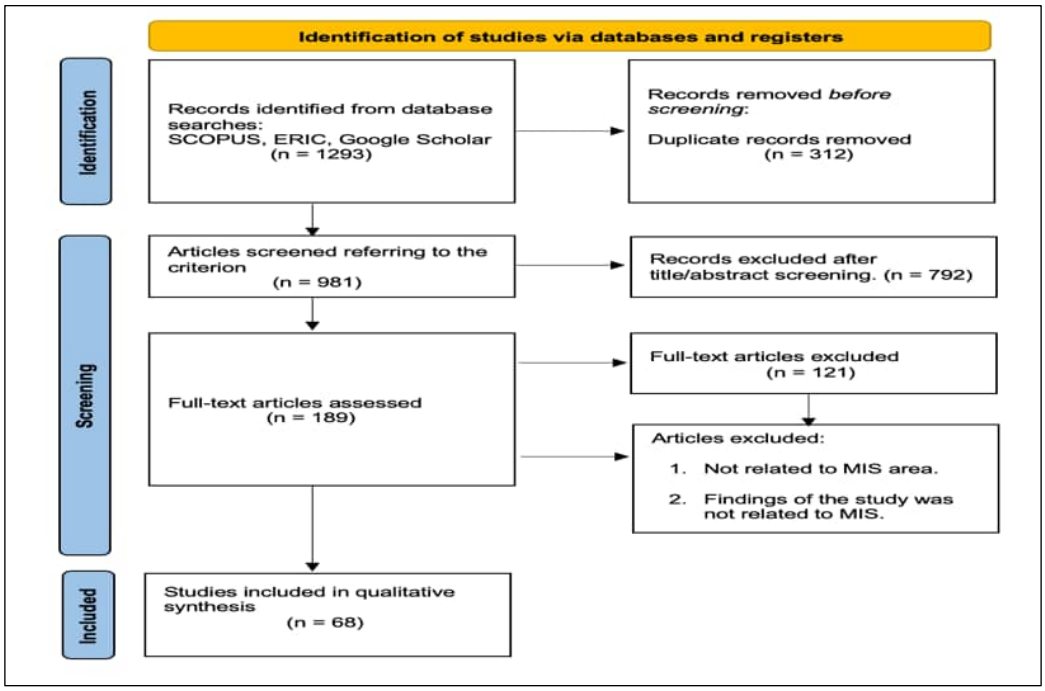
Study Selection

Data extraction was performed on the final set of included studies. Extracted items included study design, geographical context, identified challenges and barriers, and proposed solutions or recommendations. The systematic search identified 1293 articles as records. After removing 312 duplicates, 981 unique records remained for screening. During the title and abstract screening phase, the researcher excluded 792 records for not meeting the eligibility criteria. The 189 records assessed for eligibility at the full-text

level, 121 were excluded due to insufficient data on findings, related challenges, barriers and solutions. A final set of 68 studies was included in the synthesis.

Figure 1

PRISMA 2020 flow diagram for systematic reviews



Characteristics of Included Studies

The 68 included studies encompassed diverse methodological approaches and geographic contexts. Table 1 summarizes the distribution of articles by methodology, geographic region, and educational level.

Table 1

Distribution of reviewed studies by Methodology

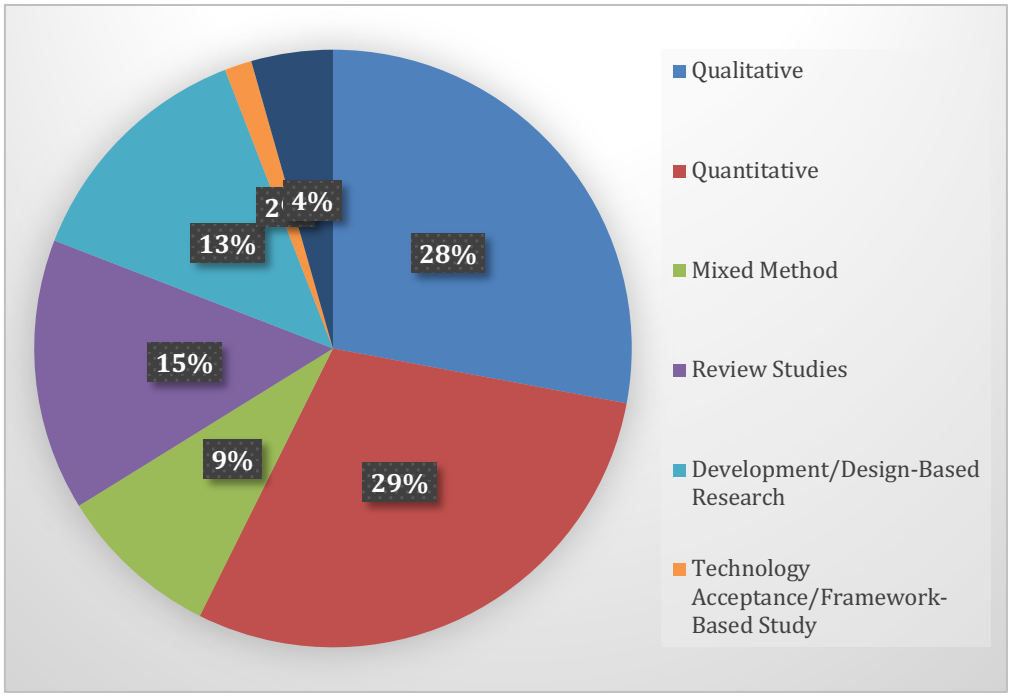
Category	Classification	Number of Studies
Qualitative	Qualitative Approach, Qualitative Case Study, Multiple-Case Study	19
Quantitative	Quantitative Approach, Descriptive Survey, Correlational Study, Cross-Sectional, Explanatory Research, Empirical Study	20
Mixed Method	Mixed Method Approach	6
Review Studies	Systematic Literature Review (SLR), Literature Review, Review Article, Scoping Review	10

Development/Design-Based Research	Research and Development (R&D), System Development Approach, SDLC (Waterfall), Waterfall Methodology, Conceptual Design	9
Technology Acceptance/Framework-Based Study	Technology Acceptance Model (TAM) & Information System Success Model (ISSM)	1
Descriptive (General)	Descriptive Approach	3

Note. Number of studies classification with categories

Figure 2

Types of Reviewed Studies



Total 68 studies evaluated, the most frequent research designs were the quantitative ones (20 studies, 29%), followed by qualitative designs (19 studies, 28%). Review-based studies (systematic reviews, literature reviews, review articles, and scoping reviews) accounted for 10 studies (15%), and development/design-based studies accounted for 9 studies (13%). Six studies (9%) used mixed methods. This implies that few researchers combined qualitative and quantitative approaches. Some studies (3 studies, 4%) used a general descriptive approach, and only one study (2%) explicitly used a Technology Acceptance Model (TAM) and Information System Success Model (ISSM) as the main research design. The synthesis indicates that the research in Management Information Systems (MIS) in education has been mostly quantitative and qualitative, with mixed-methods and development-oriented methods less common.

Table 2

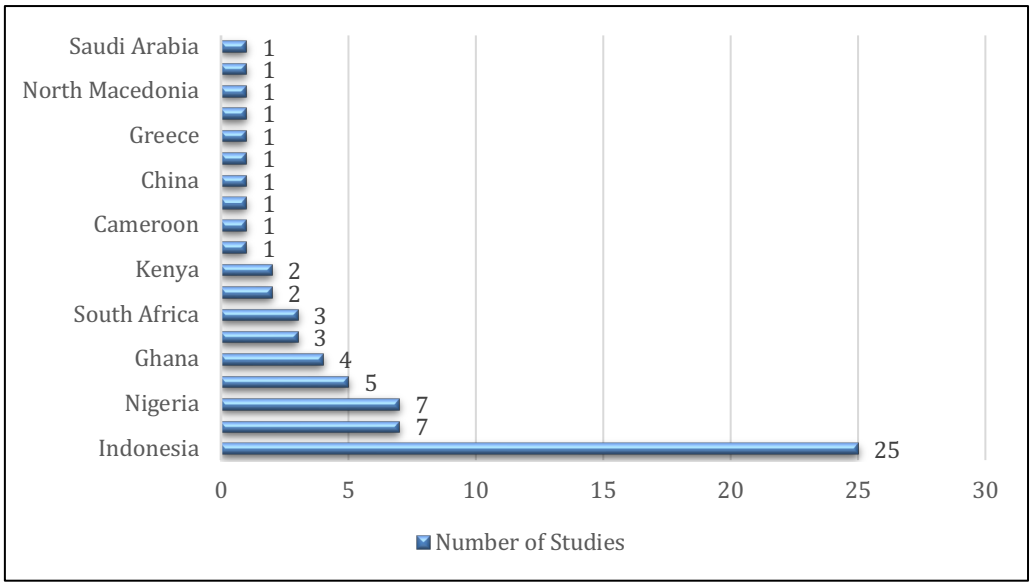
Distribution of reviewed studies by Geographic Region

Category	Countries Included	Number of Studies
Southeast Asia	Indonesia, Philippines	27
South Asia	India	7
Africa	Nigeria, Ghana, Tanzania, Kenya, South Africa, Cameroon, Morocco	21
Middle East	Saudi Arabia, Lebanon	2
East Asia	China	1
Europe	Turkey, Greece, Kosovo, North Macedonia	4
North America	United States	1
Others	Studies with no specific country	5

Note. Different countries included for reviewed studies

Figure 3

Number of Studies in Different Geographic Region



The review includes 68 studies, of which the majority are located in South-east Asia (27 studies, 42%), mainly from Indonesia, indicating a substantial research interest in MIS in the educational context in this region. Twenty-one studies (33%) were conducted in African countries with Nigeria and Ghana being the major contributors. This indicates increasing interest in the adoption and study of MIS in school administration in Africa. South Asia (India only) contributed 7 studies (11% of total). 4 studies (6%) represented Europe and 2 studies (3%) the Middle East. One study (2%) was performed in East Asia (China) and North America (United States). Further, 5 studies (8%) were international or did not specify a geographic location. In general, the results show that the current literature on Management Information Systems in education is dominated by research from South-east Asia and Africa, with relatively little research being undertaken in

Europe, the Middle East, East Asia and North America. In Figure 3, there are mentioned country wise number of reviewed studies of total 68. This implies that future research in the underrepresented regions may be needed to obtain a more holistic global view on MIS implementation in educational institutions.

Table 3

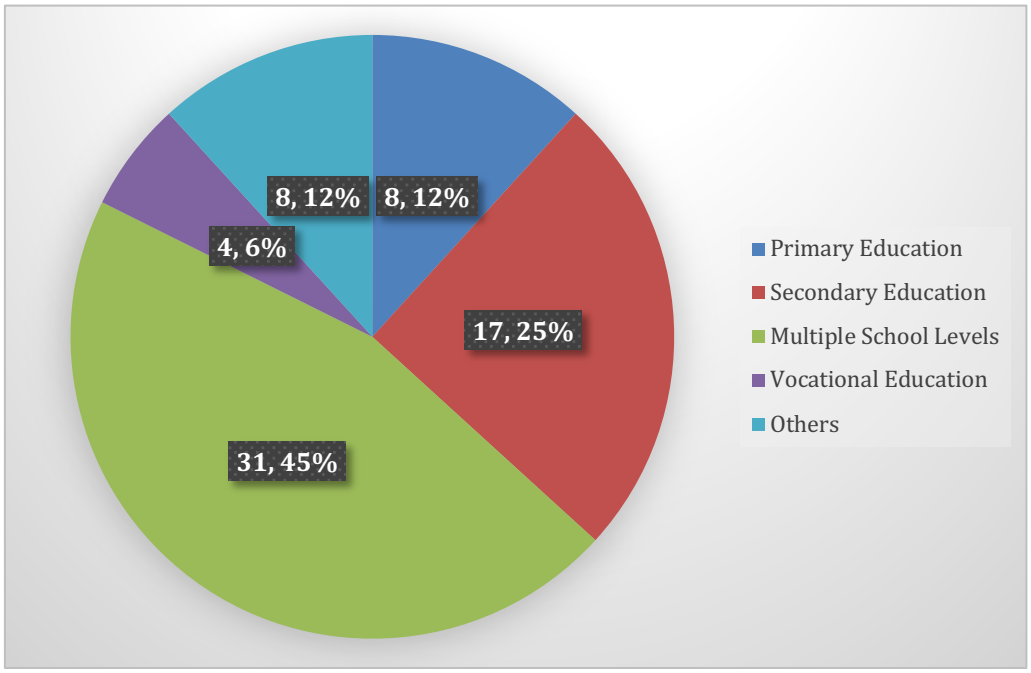
Distribution of reviewed studies by Education Level

Category	Included Education Levels	Number of Studies
Primary Education	Primary Schools	8
Secondary Education	Secondary School, Senior Secondary School	17
Multiple School Levels	Primary, Secondary and High Schools	31
Vocational Education	Vocational School	4
Others	Not Specified school levels	8

Note. Different educational level included for reviewed studies

Figure 4

Number of Reviewed Studies in Different Educational Level



As data mentioned in Table 3 and Figure 4, the multiple school levels was the most studied level of education among the 68 studies included in the review (31 studies; 45%). This category consists of studies conducted in primary, secondary and senior secondary schools which shows that research on Management Information Systems (MIS) has been focused on administrative and academic processes at the school level. 17 studies (25%)

considered secondary schools, indicating that some researchers considered MIS implementation in different school contexts rather than focusing on one educational level. The main educational contexts that were explored were primary schools (8 studies, 12%) and vocational education (4 studies, 6%) with relatively low interest in these settings. In addition, 8 studies (12%) were classified as general studies as they were literature reviews, conceptual papers or system development studies not restricted to a specific educational level. Overall, the synthesis indicates that the literature on Management Information Systems in education is largely concentrated on the secondary education level, with relatively few studies focusing exclusively on primary or vocational education. This highlights the necessity of future research to examine the application of MIS and its effectiveness in wider educational contexts, especially in primary and vocational institutions.

RQ 1: How the schools are adopting the applications of Management Information System (MIS)?

The 68 articles finally extracted at the end of the selection process, their title, author(s), publication year, country and summarised information observed on adoption of the application of Management Information System (MIS) in below Table 4.

Table 4

Distribution of reviewed studies on adoption of the application of Management Information System (MIS) in schools.

S. No.	Title	Author (s)	Year	Country	Findings on the adoption of Management Information Systems (MIS) in schools, as observed in reviewed studies.
1	School Administrators' Utilization of Management Information System for Administrative Effectiveness in Secondary Schools in Enugu Education Zone	(Chidinmachinenye & Anachuna, 2019)	2019	Nigeria	Potential applications investigated include online admission systems, spreadsheet software, school websites and email, PowerPoint, online payment gateways, and central databases.
2	Optimization and Challenges of Implementing Academic Service Management Information	(Triono et al., 2023)	2023	Indonesia	The Academic Services Management Information System (MIS), which is designed to collect, process, store, and distribute educational data to support decision-

	Systems in Muhammadiyah Higher Education: A Multiple-Case Study				making, academic administration, and learning activities
3	A Comparative Case Study on the Challenges Encountered by Philippine Private and Public Educational Institutions with their Existing Management Information System	(Zulueta et al., 2021)	2021	Philippines	Institutions utilized MIS mandated by the Department of Education, subscribed systems
4	Enhancing School Administration in Rural South African Schools: Challenges and Opportunities-Using the Scooping Review Method	(Ajani & Dlomo, 2025)	2025	South Africa	South African School Administration and Management System (SA-SAMS)
5	Management Information System in Nigerian Secondary Schools: Challenges and Way Forward	(Yusuf et al., 2022)	2022	Nigeria	MIS is used for administrative decision-making, including electronic timetable planning, managing staff and student records (enrolments, hostel allocations, health details), tracking academic progress, resource management, and staff recruitment or promotion.
6	An Appraisal Of The Use Of Education Management	(Valery, 2020)	2020	Cameroon	The paper focuses on the Education Management Information System (EMIS), Specific

	Information System (EMIS) And Its Effects In The Effective Management Of Secondary Schools In The West Region Of Cameroon.				applications include keeping track of students' marks, discipline reports, attendance, and facilitating class promotion decisions.
7	Assessing the Performance of Primary School Information Management Systems (PReM) in Data Provision: A Focus on Two Selected Public Primary Schools at Temeke Municipal Council, Dar es Salaam, Tanzania.	(Mmole & Banele, 2024)	2024	Tanzania	Primary School Information Management Systems (PReM). The sources also mention other systems used in Tanzania such as the Facility Financial Accounting and Reporting System (FFARS), Student Management Information Systems (EMIS), and the Annual School-Based Education Management Information System (BEMIS).
8	Digital Management of Schools: Contributions, Challenges and Constraints Case of Morocco	(Mazouak, Tridane, & Belaaouad, 2019)	2019	Morocco	The authors developed and experimented with a specific digital management and governance tool, designed for different categories of school leaders.
9	Digital Transformation in School Administration and the Implementation of School Management Information Systems at Madrasah Aliyah Negeri 1 Mataram.	(Yuliantari, Mustari, & Syarifuddin, 2025)	2025	Indonesia	The primary application is the School Management Information System (SIMS). The school also utilizes a Learning Management System (LMS), Computer-Based Test (CBT) systems, and a web-based system for managing student grades and report cards.

10	Digital Transformation in School Management: Insights From Administrators' Perspectives	(Taşdan et al., 2025)	2025	Turkey	Administrators utilized several digital tools and management information systems, most notably e-school, DYS (Document Management System), MEBBIS (Ministry of National Education Data Processing Systems), MYS (Accounting Management System), and EBA.
11	Exploring the Impact of Information and Communication Technology on Educational Administration: A Systematic Scoping Review	(Liu et al., 2025)	2025	China	ICT tools and Management Information Systems (MIS) highlighted include Education Management Information Systems (EMIS), Student Information Systems (SIS), and Learning Management Systems (LMS), Automating attendance tracking, report generation, and exam scheduling. Campus management and Financial management
12	ICT Adoption in the Educational Management of Primary Schools in Kenya	(Mwadulo & Odoyo, 2020)	2020	Kenya	Management Information Systems (MIS): General software for data entry, storage, resource planning, financial management, and tracking staff performance.
13	Influence of Educational Management Information System (EMIS) on the Administration of Public Senior High Schools in	(Ibrahim et al., 2025)	2025	Ghana	MIS system is used for various administrative tasks, including record-keeping, staff allocation, tracking teacher training and development, and managing teachers as an indispensable resource.

	the Tamale Metropolis				
14	Information Management in Schools in the Digital Age	(Louka, 2025)	2025	Greece	Information Management Systems (IMS), with a specific focus on the "MySchool" information system used for school administration and organisation.
15	Perceived barriers to optimal effectiveness of the South African School Administration and Management System (SA-SAMS): a case of selected township schools.	(Nkambule & Ngubane, 2024)	2024	South Africa	South African School Administration and Management System (SA-SAMS)
16	Management Information Systems and the Efficiency of Elementary School Administration: A Literature Review Based on Evidence-Based Research on Integrated Systems	(Pradana et al., 2026)	2026	Indonesia	The paper focuses on Management Information Systems (MIS) and Educational Management Information Systems (EMIS) used for coordinating academic records, financial processes, human resources, and stakeholder communication.
17	School Information Management System (SIMS) In Public Schools in Lebanon	(Kassir Shal, 2022)	2022	Lebanon	School Information Management System (SIMS), which was officially certified by the Ministry of Education and Higher Education (MEHE)

18	Secondary School Principals' Level Of Preparedness And Adoption Of National Education Management Information System In Keiyo North Sub-County, Kenya	(Kasimiri, Sang, Shadrack, & Beru, 2021)	2021	Kenya	National Education Management Information System (NEMIS).
19	The Benefits of Management Information Systems (MIS) in Increasing the Effectiveness of School Management	(Dahyanti & Hamini, 2025)	2025	International (Country Not Identified)	The system is used for managing student and teacher data, financial records, curriculum, learning evaluation, class schedules, and institutional performance reporting.
20	The Impact of Educational Management Information Systems (EMIS) on Effective School Management in Tanzania	(Mbawala et al., 2024)	2024	Tanzania	The schools utilized three main government-controlled systems: the School Information System (SIS), the Primary Records Manager (PReM), and the Facility Financial Accounting and Reporting System (FFARS). Additionally, schools used private systems for generating student report cards and communicating with parents.
21	The Role of Information Technology in Enhancing the Effectiveness of Education Management in Schools	(Anisyah et al., 2025)	2025	Indonesia	The study discusses the School Management Information System (SMIS), digital communication platforms (email, instant messaging, school portals), and Learning Management Systems (LMS).

22	The Role of Information Technology in the Development of Education Management Systems in the Digital Age: A Literature Review	(Suhardi & Fahmi, 2025)	2025	Indonesia	Education Management Information Systems (EMIS), school management information systems (SIM), digital dashboards, and Learning Management Systems (LMS).
23	Management Information Systems and Sustainable Innovation in the Digital Era	(Lubis & Nasution, 2025)	2025	Indonesia	Integrated systems that provide real-time data, predictive analytics, and performance insights to support planning, control, and strategic decision-making. It specifically mentions the integration of cloud computing, artificial intelligence (AI), and big data analytics.
24	Development of a Web-Based School Payment Administration Information System Using the Laravel Framework	(Arifin et al., 2023)	2023	Indonesia	Web-based school payment administration system (Laravel), Developed system improves efficiency and accuracy in payment data management.
25	Development of accountability for academic performance model based on management information system	(Narindro et al., 2020)	2020	Indonesia	Integrated MIS model, Current quality achievement at SMK is below expected standards.
26	Selecting and using faculty data management software systems	(Fossen et al., 2021)	2021	USA	Faculty data management software systems, Systems are used for AOL reporting, faculty engagement, and maintenance.

27	Perceived benefits and postadoption usage of education management information system	(Stamenkov & Zhaku-Hani, 2021)	2021	North Macedonia	Education Management Information System (EMIS), Technological knowledge and external support impact usage.
28	Implementation of Information Systems in Enhanced Integrated School Management	(Rahmadi et al., 2021)	2021	Indonesia	Edulink system offers flexibility and integration over other apps.
29	Impact of Education Management Information System (EMIS) on Teaching-Learning Development	(Helal et al., 2021)	2021	International (Country Not Identified)	Education Management Information System (EMIS) has a significant impact on teacher and student performance.
30	Information Management Database System Managerial Supervision of School Supervisors	(Putra & Prananosa, 2021)	2021	Indonesia	Managerial supervisory information system, 95% of supervisors were still using manual systems for data management.
31	The Moderation Effect of Information Systems on Vocational High School Principal Decision-Making Model	(Supriadi et al., 2021)	2021	Indonesia	MIS and Decision Support System (DSS), Decisions are often made with insufficient data and unreliable factors.
32	Role of Management Information Systems (MIS)	(Verma, 2022)	2022	India	General MIS is vital for efficient processing and supports various management levels.

	in education sector				
33	Web-Based Management System for Student Score Passing Grades	(Purba & Rachmadi , 2022)	2022	Indonesia	Web-based grade management system, allows digital input of grades, viewable schedules, and report generation.
34	Impact of Managing Information System on School Administration of Secondary Schools in Yenagoa	(Amangala & Ngozi, 2023)	2023	Nigeria	School Management Information Systems (SMIS), Adequate utilization of MIS significantly enhances administration.
35	Implementation of School Management Information Systems at Vocational School State I Tomohon	(Kamu et al., 2023)	2023	Indonesia	SIMS (PHP, HTML, CSS, MySQL), increased transparency and efficiency in monitoring performance.
36	Development of a Website-Based Education Management Information System in Inclusive Schools	(Purnamawati et al., 2023)	2023	Indonesia	E-Smart Inclusive website, successfully developed and found highly eligible.
37	Academic Management System	(Karuppusamy et al., 2023)	2023	India	Academic Management System (AMS), includes modules for student profiles, attendance, fees, and grades.
38	Review on School Management System	(Pawar et al., 2023)	2023	India	School Management System manage timetables, exams, and finances to reduce paper records.

39	Digital Transformations in Vocational High School: A Case Study of MIS Implementation in Banda Aceh	(Idroes et al., 2023)	2023	Indonesia	Management Information System (MIS) found high user satisfaction and operational efficiency.
40	The Impact and Benefits of the E-System for Administration Management in Primary and Secondary Schools for Teachers and Parents	(Ramadani et al., 2023)	2023	Kosovo	E-School application shortens time for analytics and improves communication.
41	MIS and its Impact on Productivity in Higher Education: A Case of Colleges of Education in Ghana	(Baiden et al., 2023)	2023	Ghana	General Management Information System (MIS). 95% agreed MIS implementation would improve departmental efficiency.
42	A Study of Management Information System Report of Student's Performance in Rural School of Ranchi in Jharkhand	(Mahato & Yada, 2023)	2023	India	MIS tool for performance, Over 50% of 5th graders in government schools cannot read 2nd-grade text.
43	A Study on Teacher Information System	(Khan et al., 2023)	2023	India	Android app and web-based application. Proposed system uses Android app for teachers and web for admin.
44	Student Management System	(Hiwale et al., 2023)	2023	India	Computerised Student Management System, improve efficiency,

					accuracy, and communication.
45	Influence of principals' use of MIS in managing public senior secondary schools in Kaduna State	(Barde et al., 2023)	2023	Nigeria	Education Management Information System (EMIS) is effective in managing various aspects of staff and student records.
46	Management Information Systems In Private Universities And Its Impact On Productivity	(Nurhidayah & Muliansyah, 2023)	2023	Indonesia	Management Information System (MIS), 86.7% face daily data duplication issues that MIS could address.
47	Improving the Effectiveness of Primary School Administration Services Based on EMIS with Dapodik Application And Education Service Facilities	(Udiyana et al., 2023)	2023	Indonesia	Dapodik application is crucial for processing data and securing school funding.
48	The Relationship Between Education Management Information Systems (Emis) and Administrative Effectiveness in Public Secondary Schools in Cross River State, Nigeria.	(Ngozi & Obona, 2024)	2024	Nigeria	Education Management Information System (EMIS), Strong positive correlation (r=0.80) between student personnel management and effectiveness.
49	Teachers' Attitude Towards School	(Adjei & Adade, 2024)	2024	Ghana	School Information Management System (SIS) offers increased

	Information System (SIS) for Decision Driven Support in Senior High School the Gomoa West District				efficiency, improved performance, and reduced travel.
50	Roles of e-Management Systems in School Administration to keep pace with Vision 2030 of KSA	(Alotaibi, 2024)	2024	Saudi Arabia	Electronic management systems contributed to faster work completion and increased productivity.
51	School Administrators' Utilization of MIS for Administrative Effectiveness in Ogoja Education Zone	(Edim et al., 2024)	2024	Nigeria	Management Information System (MIS), Admin use MIS for accurate financial records and processing student results,.
52	Management Information Systems' Role and Effects on School Administration: A Review	(Adhikari et al., 2024)	2024	International (Country Not Identified)	General MIS optimizes resource allocation and facilitates communication.
53	Factors Leading to the Acceptance of MIS in Public Schools: A Path Analysis	(Malatsico & Manayan, 2024)	2024	Philippines	Management Information System (MIS). Structural variables (management support, convenience) were rated very high.
54	Education management information system with advanced ICT: A systematic literature review	(Ghufron, 2024)	2024	International (Country Not Identified)	Mobile application-based EMIS is effective for support but research on mobile apps is lacking.

55	Assessing the Performance of Primary School Information Management Systems (PReM) in Data Provision	(Mmole & Banele, 2024)	2024	Tanzania	Primary School Information Management Systems (PReM) explained 41% of variance in accurate data provision performance.
56	Perceived barriers to optimal effectiveness of SA-SAMS	(Nkambule & Ngubane, 2024)	2024	South Africa	SA-SAMS, System faces challenges in resource-constrained environments.
57	School Administration Transformation: Improving Performance of Principals, Administrators, and Science Teachers with a SIMA Model	(Nasution et al., 2025)	2025	Indonesia	School Administration Information System (SIMA), application found more effective than conventional archiving.
58	The Role of MIS in Improving the Effectiveness of Islamic Education Administration	(Fauziyah, 2025)	2025	Indonesia	Specific apps (EMIS, SIMPATIKA, RDM, e-RKAM) are used for teacher/student data.
59	Influence of EMIS on the Administration of Public Senior High Schools in Tamale Metropolis	(Ibrahim et al., 2025)	2025	Ghana	Educational Management Information System (EMIS). 92.1% of staff agreed they had been trained on EMIS.
60	Utilization of EMIS for School Social Work and Administration: Emerging Issues and Solutions	(Okafor & Ekwulu, 2025)	2025	Nigeria	EMIS enhances administrative efficiency and supports social work.

61	Implementation of EMIS in Improving School Services	(Saputra et al., 2025)	2025	Indonesia	EMIS significantly improved administrative efficiency and transparency.
62	Enhancing Educational Administration: Comparative Analysis of Web-Based SIMS vs. Traditional	(Agrawal et al., 2025)	2025	India	Web-Based Student Information Management System (SIMS). 40% reduction in administrative costs and 70% drop in retrieval time.
63	Digital Transformation in School Admin and SIMS Implementation at MAN 1 Mataram	(Yuliantari et al., 2025)	2025	Indonesia	School Management Information System (SIMS) significantly improved administrative efficiency and data transparency.
64	Effectiveness of Using SMIS to Improve Principal Performance	(Nikmah Wasiatun et al., 2025)	2025	International (Country Not Identified)	Digital tools like Linktree and Google Workspace improve supervision speed.
65	Implementation of Management Information Systems in Primary Schools: A Qualitative Case Study	(Khalis et al., 2026)	2026	Indonesia	The school demonstrated a strong commitment to digital transformation; however, MIS implementation remained incomplete due to the various challenges. The findings indicate that successful MIS adoption requires not only technological solutions but also effective leadership, well-defined procedures, and a supportive institutional culture.

66	Educational Management Information System Governance in Islamic Secondary Schools	(Humaidi & Sarwan, 2026)	2026	Indonesia	Effective implementation of MIS depends on the balanced integration of technological solutions and skilled personnel. Enhanced data accuracy, technical infrastructure, standardized operating procedures, clearly defined responsibilities, and comprehensive staff training collectively improve service quality, accountability, and operational efficiency.
67	Modelling EMIS Adoption with PLS-SEM: Integrating the Government Adoption Model and DeLone–McLean IS Success Model	(Mardiyanto et al., 2026)	2026	Indonesia	All seven hypotheses received statistical support. Information Quality emerged as the most significant predictor of EMIS adoption, whereas Perceived Security was the primary predictor of trust. The model accounted for 48.5% of the variance in trust and 56.2% of the variance in EMIS adoption.
68	Transforming Madrasah Education: Integrating Technology, Governance, and Commitment within Management Information Systems	(Bahri et al., 2026)	2026	Indonesia	Technology integration and governance emerged as the most influential direct determinants of MIS effectiveness. The proposed model accounted for 76.3% of the variance in educational transformation and 63.8% of the variance in MIS effectiveness.

Thematic Summary of Findings

The identified studies in this systematic review showed the challenges and barriers that school administrators face, as well as solutions to overcome barriers to MIS adoption in schools, as outlined below, research question-wise.

RQ 2: What are the primary challenges and barriers that school administrators face during the adoption of Management Information System (MIS)?

Challenges and Barriers in Implementing the Use of MIS in School Administration

The reviewed studies suggest that the problems of Management Information Systems (MIS) in school administration are multidimensional. That is, technological infrastructure, human resources, data management, organizational practices, system functionality, and contextual limitations. Evidence suggests that availability of technology is not a sole determinant of the implementation of MIS and the effectiveness of MIS is a function of the interaction of technological, human and organizational factors.

Inadequate Technological Infrastructure and System Accessibility

A major challenge identified across the literature is the inadequacy of technological infrastructure required for effective MIS implementation. Schools, particularly those in remote and resource-constrained areas, experience difficulties in accessing digital records and maintaining reliable technological facilities (Cuartero & Role, 2018; Ayoku & Funmilayo, 2022; Hamini, 2025). Frequent power outages and unstable network connectivity further interrupt MIS operations (Yuliantari et al., 2025). Technical problems such as system slowness and crashes also affect users' ability to perform administrative tasks (Mmole & Banele, 2024). A lack of sufficient computers, hardware, software, and reliable internet connectivity limited the effective operation and accessibility of the systems (Khalis et al., 2026; Humaidi & Sarwan, 2026). Financial constraints and limited access to technological resources further impeded implementation, especially in resource-constrained environments (Khalis et al., 2026). These findings demonstrate that the effectiveness of MIS depends on the availability of reliable electricity, internet connectivity, hardware, and technical infrastructure.

Human Capacity, ICT competency, and Resistance to Change

A significant challenge in Management Information System (MIS) implementation involves the human dimension. Several studies have identified insufficient ICT competence, negative attitudes, and inadequate professional development among school personnel as key obstacles (Ayoku & Funmilayo, 2020; Ayoku & Funmilayo, 2022). Resistance to transitioning from established manual practices to digital systems has also been recognized as a barrier to effective implementation (Forrester, 2019; Adhikari et al., 2024). The shift from paper-based and manual systems to digital platforms is often hindered when users lack the necessary technical skills, confidence, or willingness to adopt new technologies (Putra & Prananosa, 2021; Rachmadi, 2022). Variability in digital competencies, insufficient technical skills, limited digital literacy, and a lack of ongoing professional development constrained users' capacity to effectively operate and utilize management information systems (Khalis et al., 2026; Humaidi & Sarwan, 2026; Bahri et al., 2026). These findings indicate that training, ongoing professional development of teachers, administrative personnel, and active user involvement are critical for successful MIS implementation.

Data Quality, Accuracy, and Management Problems

The quality and reliability of administrative data present a significant challenge in school administration. Previous studies have identified issues such as inaccurate data, fragmented information, duplication, and inefficient manual data management as persistent problems (Forrester, 2019; Arifin et al., 2021; Kamu et al., 2023). Inaccurate data can limit the effectiveness of management information system (MIS) for strategic planning and decision-making (Supriadi et al., 2021). Furthermore, reliance on manual systems may lead to data loss and decreased operational efficiency (Wasiatun et al., 2025). Additional concerns have been raised regarding the accuracy of data collection, especially when involving young students (Mahato & Yada, 2023). Inconsistencies between Education Management Information System (EMIS) records and actual field conditions may result in administrative challenges and delays in processes such as professional allowance management (Mardiyanto et al., 2026). Therefore, the effectiveness of MIS in administrative decision-making is directly dependent on the accuracy, completeness, consistency, and security of the data entered into the system.

Functional Limitations and Inefficiency of Existing Systems

A number of studies mention limitations of functionality and suitability of MIS platforms. The current systems may not have the institution-specific information or sufficient online tools for major administrative activities such as attendance tracking and dissemination of information (Sabbirkhan, 2015; Anachuna & Nonso, 2019). There are also reports of delays in processing results, monitoring of attendance and release of academic information (Ngozi & Obona, 2024; Amangala & Ngozi, 2023). Some systems may not be well aligned with the practical needs of schools, suggesting a disconnect between system design and the realities of administrative needs (Kassir, 2022). Challenging user interfaces, system instability, slow system access, and delayed administrative responsiveness have been identified as significant barriers to the adoption of management information systems (MIS) (Mardiyanto et al., 2026). The findings show the need for school administrative MIS platforms which are user-centric, functionally adequate, responsive and real-life.

Organisational and Implementation-Related Challenges

Also, literature indicates that the implementation of MIS is influenced by organizational practices and the gap between the planned and actual implementation of systems. The shift from manual administration to computerized administration will bring changes to the existing procedures and workflow that may pose challenges to the school personnel (Kurniawan & Andika, 2019; Rachmadi, 2022). The effectiveness of MIS also depends on the level of the system implementation within the organization against the availability (Dormann et al., 2019). In some cases, the possible advantages of digital MIS are limited where public school administrators still use manual systems and typists (Ikediugwu & Anyanwu, 2019). It also found a gap between the Planning of Information System (MIS Planning) and the implementation (Fauziyah, 2025). A major institutional barrier is the risk of ceremonial adoption, in which Management Information System (MIS) are implemented symbolically to signal modernization, yet are not fully integrated into routine organizational practices (Khalis et al., 2026). Therefore, for the successful implementation of MIS, the organizational readiness, clear procedures, administrative support and mainstreaming of digital systems into routine school activities is needed.

Data Security and Privacy Concerns

As reliance on digital administrative systems increases, data security and privacy have become critical concerns. Security vulnerabilities may put in harm the protection of school and student information, indicating a need for enhanced security measures

(Adhikari et al., 2024; Nasution et al., 2025). Additionally, there are significant concerns regarding data privacy and the risk of student profiling associated with the digital collection and processing of educational information (Okafor & Ekwulu, 2025). Concerns regarding data protection and confidentiality can diminish users' trust in the system and lead to hesitancy in fully adopting digital information management (Mardiyanto et al., 2026). These challenges and barriers underscore the necessity for robust data protection mechanisms, effective access controls, comprehensive privacy policies, and responsible management of both student and staff information.

User Engagement and Participation

For successful implementation of the MIS there is also a need for active participation and involvement of the users. The adoption of information systems in educational institutions has been found to lack of faculty engagement (Shea-Van Fossen et al., 2021). The resistance and non-involvement of users can reduce the efficiency of technically possible systems (Forrester, 2019). School administrators and staff should therefore not be seen only as MIS users, but as active participants in the implementation, evaluation and improvement of the system.

Financial Constraints and Inadequate Funding

Financial constraints are closely linked to infrastructure constraints. MIS implementation involves huge investment in terms of hardware, software, internet services, system integration, maintenance and technical support. Major barriers to adoption have been identified as high initial and ongoing costs (Mmole & Banele, 2024; Lubis & Nasution, 2025). Financial constraints have also been linked to the lack of available computing resources and limited technology acquisition (Baiden et al., 2023; Rahmadi et al., 2021). In some instances, the schools' capacity to establish and sustain ICT infrastructure is further challenged by the absence of government funding (Yusuf et al., 2022). Data costs, software maintenance, and limited budgets can be barriers to the sustained use of MIS especially in resource-constrained schools (Mbawala et al., 2024; Yuliantari et al., 2025). Hence, the financial sustainability, not just the initial acquisition of technology, is an important barrier for long-term MIS implementation.

Weak Organisational and Management Support

Organizational readiness and management support are consistently identified in the literature as critical determinants of Management Information System (MIS) adoption. Insufficient senior management support, inadequate leadership knowledge, and limited institutional readiness can significantly slow effective implementation (Kassir, 2022; Ibrahim et al., 2025). Furthermore, management's lack of awareness or reluctance to utilize MIS may further restrict system utilization (Verma, 2022). Bureaucratic structures and the lack of data-driven administrative processes can create significant organizational barriers to effective MIS utilisation (Supriadi et al., 2021). Additionally, discrepancies between system planning and actual implementation indicate that introducing an MIS does not guarantee its integration into routine school administration (Fauziyah, 2025). Organizational barriers such as disjointed systems, inadequate coordination, data redundancy, and inefficient resource allocation slow the development of an integrated information-management system (Khalis et al., 2026; Bahri et al., 2026).

Structural and Geographical Barriers

Structural limitations were especially pronounced in rural, isolated, and underfunded educational environments. Restricted access to technological resources and the persistence of a digital divide resulted in unequal opportunities for effective

Management Information System (MIS) implementation (Khalis et al., 2026). These barriers indicate that both geographical location and institutional resources substantially affect the ability of schools to adopt and maintain MIS.

Policy and Regulatory Barriers

Inconsistent policy implementation and regulatory uncertainty represent significant barriers to effective Management Information System (MIS) adoption. Inconsistently applied policies can affect institutions from establishing systematic and sustainable MIS practices (Khalis et al., 2026; Mardiyanto et al., 2026). Consequently, clear and reliable policies are essential to ensure direction and consistency in MIS implementation.

Lack of Technical Support and System Maintenance

Another big obstacle is the availability of ongoing technical support. Schools may have access to MIS but may not have qualified ICT technicians, competent help desk personnel or adequate maintenance services. Several studies have documented the shortage of ICT experts (Mmole & Banele, 2024; Mbawala et al., 2024). School employees may not be able to solve system problems efficiently if they experience poor or unreliable technical support (Nkambule & Ngubane, 2024). The use of MIS is also obstructed by instability of the system and long shutdowns (Adjei & Adade, 2024). Limited technological resources and a lack of infrastructure readiness affects schools from fully utilizing management information systems (MIS) (Humaidi & Sarwan, 2026; Bahri et al., 2026). In addition, slow system access and system instability disrupt routine administrative activities and reduces users' willingness to adopt the system (Mardiyanto et al., 2026). Thus, MIS adoption is not a one-time installation or training but requires a continuing support structure for its effective use.

RQ 3: What are the solutions for improving and implementing to overcome the challenges or barriers to MIS adoption in schools?

Solutions for Improving MIS use and implementation in School Administration

The studies reviewed indicate that a multidimensional approach, rather than a single intervention, is required to improve the use of Management Information Systems (MIS) in school administration. The solutions suggested are mostly related to the strengthening of the technological infrastructure, the development of users' digital competencies, leadership and financial support, the improvement of system design and technical assistance, the strengthening of data management and security and the adoption of participatory and sustainable implementation strategies.

Strengthening ICT Infrastructure and Financial Resources

The investment in adequate and reliable ICT infrastructure is the first and most fundamental solution identified in the literature. Schools need sufficient computers and hardware, reliable internet connectivity, adequate bandwidth, stable electricity, and appropriate software to support continuous use of MIS. Studies suggest investing in modern hardware, network infrastructure, internet connectivity and technical support, especially in underserved and rural schools (Ajani & Dlomo, 2025; Mmole & Banele, 2024; Mbawala et al., 2024; Liu et al., 2025). Government funding and equitable distribution of technological resources are especially crucial in reducing disparities between well-resourced and disadvantaged schools (Yusuf et al., 2022; Anisyah et al., 2025; Okafor & Ekwulu, 2025). Therefore, financial planning should be in line with institutional priorities to enable schools to acquire, maintain and upgrade technological resources. Triono et al. (2023) recommended efficient budget allocation for hardware and software as an important component of MIS development. Similarly, the

government and school managers ought to give priority to the funding of the ICT infrastructure and staff training (Kasimiri et al., 2021). A primary recommendation is sustained investment in technological infrastructure. Educational institutions require adequate computers, hardware, software, reliable internet connectivity, sufficient bandwidth, and regular system upgrades to support the effective operation of management information systems (MIS) (Khalis et al., 2026; Humaidi & Sarwan, 2026; Bahri et al., 2026). Thus, sustainable MIS implementation needs adequate infrastructure as well as long-term financial commitment.

Developing ICT Competency through Continuous Training

A second major solution involves capacity building and ongoing professional development. The literature consistently recommends a range of activities, including seminars, workshops, webinars, tutorials, in-service training, and ICT-focused professional development for teachers, principals, administrators, and ICT coordinators (Thompson & Anachuna, 2019; Zulueta et al., 2021; Yusuf et al., 2022). Training should extend beyond basic computer skills to encompass management information system (MIS) operation, data management, reporting, and data-driven decision-making (Dahyanti & Hamini, 2025). Multiple studies emphasize that training must be continuous, inclusive, and context-sensitive, especially for users with varying levels of digital experience (Ajani & Dlomo, 2025; Zulueta et al., 2021). Mentoring, peer collaboration, digital learning communities, and ongoing professional development further enhance digital competence (Ajani & Dlomo, 2025; Anisyah et al., 2025). The involvement of qualified facilitators and ICT experts also contributes to strengthening institutional capacity (Ibrahim et al., 2025). Targeted training and professional development enhance digital competencies and strengthen users' capacity to operate and utilize the system effectively (Khalis et al., 2026; Humaidi & Sarwan, 2026; Bahri et al., 2026). Consequently, training should be regarded as a continuous professional development process rather than a single event associated only with the introduction of a management information system.

Strengthening Leadership and Management Support

Effective MIS implementation also requires strong and committed school leadership. School leaders should provide strategic direction, allocate resources, supervise the use of systems, and create an organisational environment that supports technological change (Taşdan et al., 2025; Dahyanti & Hamini, 2025). Strong leadership commitment can help reduce resistance to technology adoption and encourage staff to integrate MIS into routine administrative practices (Pradana et al., 2026). The literature also recommends that senior management provide financial support and develop a clear strategic vision for digital transformation (Taşdan et al., 2025). School managers should be encouraged to remain open to technological change and actively support ICT integration (Mwadulo & Odoyo, 2020). Similarly, leadership should create a supportive environment in which staff feel encouraged to use ICT and MIS in their administrative work (Adjei & Adade, 2024). The establishment of clear governance structures, leadership support, standard operating procedures, defined roles and responsibilities, and accountability mechanisms facilitates systematic and consistent use of management information systems (MIS) (Khalis et al., 2026; Humaidi & Sarwan, 2026; Bahri et al., 2026). Thus, leadership support acts as an organisational foundation for sustainable MIS implementation.

Promoting Stakeholder Participation and Acceptance

Another important solution is to involve teachers, administrators, school leaders, communities and other stakeholders in the MIS implementation process actively.

Participatory strategic planning leads to higher stakeholder ownership and lower resistance to technological change (Ajani & Dlomo, 2025). Similarly, the participation of stakeholders in system development and assessment can ensure that the resulting system will meet actual administrative needs (Mahato & Yada, 2023). The literature also stresses that users' attitude towards technology should be improved. Increasing the level of acceptance of the principals and positive attitude towards ICT can support the adoption (Kasimiri et al., 2021; Yusuf et al., 2022). Active engagement and resistance reduction can be further enhanced through awareness programmes and inclusive implementation processes (Dahyanti & Hamini, 2025; Anisyah et al., 2025). It follows that the implementation of MIS should be considered a participatory organizational change process and not only the installation of a technological system.

Fostering a Supportive Digital Work Culture

Effective implementation necessitates moving beyond the acquisition of technology to the cultivation of a supportive digital work culture. Educational institutions should promote positive attitudes toward digital systems, foster collaborative working practices, and encourage the routine use of management information systems (MIS) in administrative processes (Khalis et al., 2026; Humaidi & Sarwan, 2026; Bahri et al., 2026). Establishing a supportive organizational culture facilitates the meaningful integration of technology into daily operations.

Improving System Design, Usability, and Integration

Several studies recommend to upgrade the design and usability of MIS platforms to closely match the real needs of schools. User-centred design has the potential to reduce perceived complexity and make administrative systems easier to understand and use (Liu et al. 2025). Systems should be compatible with existing school management tools and preferably be integrated rather than developed as isolated platforms (Mmole & Banele, 2024; Pradana et al., 2026). It has also been recommended to redesign MIS so that it meets the complete requirements of educational administration (Kassir, 2022). User guides and system interfaces should be adjusted to meet the needs of users (Mazouak et al., 2019). Structured interfaces may improve the accessibility of systems for administrators, principals, teachers, and students (Kamu et al., 2023). The user-friendliness can be enhanced by improving mobile compatibility (Khan et al., 2023; Pradana et al., 2026). Enhancing information quality, system quality, and service responsiveness increases user confidence and promotes sustained adoption (Mardiyanto et al., 2026). Therefore, development of MIS should be user-centred and integrated in design so that the system is practical, accessible, interoperable and can be sync with the school workflows.

Establishing Strong Technical Support and System Maintenance

The provision of continuous technical support represents a critical solution. Educational institutions may establish dedicated information and communication technology (ICT) teams, help desks, qualified technical staff, and mobile technical support units to address technical issues efficiently (Zulueta et al., 2021; Nkambule & Ngubane, 2024). Additionally, qualified facilitators and ICT coordinators can assist users and mitigate operational challenges (Ibrahim et al., 2025). Ongoing monitoring, user feedback, regular system updates, and server upgrades are recommended to sustain optimal system performance (Zulueta et al., 2021; Yuliantari et al., 2025). Comprehensive testing and pilot deployment prior to full-scale implementation can facilitate early identification of software defects and usability issues (Kassir, 2022; Mmole & Banele, 2024; Agrawal et al., 2025). Therefore, technical support must encompass not only the

initial installation but also ongoing maintenance, troubleshooting, system updates, and continuous performance evaluation.

Strengthening Data Management, Security, and Privacy

The reviewed studies emphasize the significance of better data management and comprehensive data protection mechanisms. Integrated and secure information management solutions enhance the management and utilization of administrative data (Louka, 2025). It is essential for schools to establish explicit data security and privacy guidelines and to ensure adherence to relevant data-protection requirements (Ajani & Dlomo, 2025; Mmole & Banele, 2024). Enhancing cybersecurity infrastructure, data governance policies, and ethical guidelines for data protection is necessary to ensure responsible management of school information (Lubis & Nasution, 2025; Suhardi & Fahmi, 2025). Furthermore, implementing strategies such as data optimization and offline management enables schools to maintain operations in low-bandwidth environments (Mbawala et al., 2024). Recent studies emphasize the importance of enhancing information security and privacy. Strengthening data protection and ensuring secure system operations can improve user trust in management information systems (MIS) (Mardiyanto et al., 2026). Therefore, Management Information Systems (MIS) should facilitate not only data collection and storage but also ensure data accuracy, accessibility, security, privacy, and responsible use.

Developing Clear Policies, Procedures, and Standards

Another important solution is the development and implementation of clear institutional and governmental policies. Standard Operating Procedures (SOPs) can provide users with clear steps for completing administrative tasks and ensure consistency in MIS use (Triono et al., 2023). Governments and education authorities can also develop common EMIS templates and policies to standardize information management across schools (Valery, 2020). Comprehensive ICT policies should be developed with consideration of local school contexts and the participation of relevant experts (Mwadulo & Odoyo, 2020). Policy interventions should also ensure equitable resource allocation, data security, infrastructure development, and appropriate use of technology (Ajani & Dlomo, 2025; Kasimiri et al., 2021). Clear policies thus establish the institutional framework required for consistent and sustainable implementation of Management Information Systems.

Integrating MIS into Decision-Making and Administrative Processes

The literature indicates that management information systems (MIS) should evolve beyond basic data entry and reporting to become integral components of school decision-making. Incorporating educational MIS into administrative processes enables the use of data for planning, monitoring, evaluation, and accountability (Yusuf et al., 2022). MIS-driven strategies can enhance accountability and quality assurance (Narindro et al., 2020), and decision-support systems can further amplify the influence of MIS on administrative decision-making (Supriadi et al., 2021). Utilizing MIS for financial management, student personnel administration, attendance tracking, assessment, curriculum administration, reporting, and other administrative functions can enhance the practical value of these systems (Thompson & Anachuna, 2019; Karuppusamy et al., 2023; Putra & Prananosa, 2021). Furthermore, data-driven decision-making and increased transparency can improve communication with stakeholders, including parents (Saputra et al., 2025). Therefore, schools should seek to transform MIS from a record-keeping instrument into a strategic resource for decision support.

Gradual Implementation, Monitoring, and Continuous Improvement

The literature recommends a phased and continuously evaluated approach to Management Information System (MIS) implementation. Conducting pilot tests prior to full-scale deployment facilitates the identification of technical, usability, and operational challenges (Mmole & Banele, 2024; Agrawal et al., 2025). Implementing continuous feedback mechanisms, periodic evaluations, and regular system upgrades ensures that emerging issues are systematically identified and addressed over time (Zulueta et al., 2021; Yuliantari et al., 2025). A gradual transition from manual to digital systems supports users who may initially encounter challenges during digital transformation (Ramadani et al., 2023; Wasiatun et al., 2025). Institutions should select MIS solutions based on their specific organizational context and requirements, rather than adopting a universal approach (Fossen et al., 2021).

6. Discussion

A synthesis of 68 studies indicates that Management Information System (MIS) possess significant potential to enhance the effectiveness and efficiency of school administration. The reviewed literature associates MIS with improvements in administrative efficiency, information management, record keeping, financial management, reporting, communication, transparency, accountability, and decision-making. However, these benefits are not guaranteed and are contingent upon the availability of infrastructure, human competency, leadership support, financial resources, and institutional readiness. A key finding from the review is that MIS can reduce administrative workload and enhance the efficiency of routine administrative processes. Digital systems have been reported to improve the processing, storage, retrieval, and management of school information, thereby reducing reliance on paper-based records and manual procedures (Pawar et al., 2023; Rachmadi, 2022; Nasution et al., 2025). Integrated systems have also been shown to increase the speed and accuracy of administrative processes and minimize errors (Ramadani et al., 2023; Arifin et al., 2023). Additionally, some studies associate the implementation of web-based systems with significant reductions in administrative costs and demonstrate the feasibility of such systems for enhancing principal performance (Agrawal et al., 2025; Wasiatun et al., 2025). The evidence reviewed further suggests that MIS contributes to improved data management and information accuracy. Systems such as PReM and EMIS support the provision of accurate and current information, including attendance, grades, student demographics, and financial data (Mmole & Banele, 2024; Mbawala et al., 2024). The adoption of structured digital systems has also enhanced transparency and mitigated issues associated with manual data management (Kamu et al., 2023; Nasution et al., 2025). Nevertheless, data quality remains reliant on precise data entry and effective system management. Challenges such as data duplication, inconsistencies between manual and digital records, data loss, and inaccurate information have been documented in several studies (Ajani & Dlomo, 2025; Nurhidayah & Muliansyah, 2023; Fauziyah, 2025). Another important finding concerns the role of MIS in decision-making and planning. Several studies reported that MIS facilitates data-driven decision-making and supports school planning, resource allocation, monitoring, and evaluation (Supriadi et al., 2021; Yusuf et al., 2022; Narindro et al., 2020). Strong relationships between MIS use and administrative effectiveness were also reported. For example, Ngozi and Obona (2024) reported a strong positive relationship between student personnel management through EMIS and administrative effectiveness. Similarly, Baiden et al. (2023) reported that a large majority of respondents perceived MIS as having a high impact on effective decision-making. These findings suggest that MIS can move school administration beyond routine record-keeping towards more evidence-based management. The review also demonstrates the importance of MIS for financial and student personnel

administration. Digital systems can support budgeting, expenditure monitoring, fee management, student records, attendance, admissions, and result processing (Thompson & Anachuna, 2019; Edim et al., 2024). However, the findings indicate that the actual utilisation of MIS for these functions varies considerably. Thompson and Anachuna (2019), for example, found that administrators used spreadsheets for some functions but did not effectively utilise MIS for several core student personnel and financial management activities. This suggests a gap between the availability of MIS and its actual utilisation. The findings further show that human factors are central to successful MIS implementation. Lack of ICT competency, inadequate digital literacy, insufficient training, limited self-efficacy, and negative attitudes towards technology were repeatedly identified as challenges or barriers (Yusuf et al., 2022; Valery, 2020; Zulueta et al., 2021; Anisyah et al., 2025). Inadequate training could even reduce performance because users spent additional time learning the system or had difficulty completing administrative tasks (Zulueta et al., 2021). Conversely, training, continuous professional development, mentoring, and technical support were repeatedly identified as important solutions (Ajani & Dlomo, 2025; Mmole & Banele, 2024; Ibrahim et al., 2025). Technological infrastructure represents another major condition influencing MIS effectiveness. Unstable internet connections, inadequate hardware, power interruptions, insufficient bandwidth, system crashes, and outdated equipment were reported across several studies (Ajani & Dlomo, 2025; Mmole & Banele, 2024; Mbawala et al., 2024; Yuliantari et al., 2025). These problems are particularly significant in rural and disadvantaged settings where a digital divide exists (Ajani & Dlomo, 2025; Anisyah et al., 2025). Thus, the review suggests that digital transformation cannot be achieved simply by introducing software; reliable infrastructure must accompany the system. The review also highlights the importance of leadership and organisational support. Leadership commitment, strategic planning, management support, and institutional culture were repeatedly associated with successful implementation (Triono et al., 2023; Taşdan et al., 2025; Malatsico & Manayan, 2024). Yuliantari et al. (2025) particularly emphasised the interaction among ICT infrastructure, human resource competence, and institutional support. Similarly, Taşdan et al. (2025) identified digital leadership as a critical factor in successful transformation. Therefore, MIS implementation should be considered an organisational transformation process requiring active participation from school leaders and other stakeholders. At the same time, resistance to change and dependence on traditional manual systems continue to restrict MIS adoption. Staff may be reluctant to change established practices because of unfamiliarity, fear of increased workload, or perceived complexity of new technologies (Ajani & Dlomo, 2025; Taşdan et al., 2025; Dahyanti & Hamini, 2025). Several studies also identified paper-based and conventional record-keeping systems as important barriers to digital transformation (Rachmadi, 2022; Pawar et al., 2023; Nasution et al., 2025). Gradual transition, stakeholder participation, awareness programmes, and change-management strategies were consequently recommended. Another emerging issue is data security and privacy. The reviewed studies identified concerns related to data loss, unauthorised access, privacy, cybersecurity, and the protection of student and staff information (Mazouak et al., 2019; Liu et al., 2025; Lubis & Nasution, 2025; Nasution et al., 2025). Therefore, as schools become increasingly dependent on digital information systems, data governance and security need to be integral parts of MIS implementation. The review also reveals that MIS is increasingly moving towards integrated, web-based, mobile, analytical, and intelligent systems. Studies have recommended the use of AI, data analytics, cloud computing, mobile applications, and other advanced technologies to improve educational information management further (Adhikari et al., 2024; Ghufron, 2024). The collective evidence from the four studies indicates that sustainable Management Information System (MIS) effectiveness is attainable only through an integrated

approach. Technological infrastructure forms the basis for MIS operations, human capacity facilitates effective utilization, leadership and governance establish direction and accountability, information and system quality enhance usability, and security, privacy, and trust promote sustained adoption (Khalis et al., 2026; Humaidi & Sarwan, 2026; Mardiyanto et al., 2026; Bahri et al., 2026).

However, the researcher also suggests that advanced technologies should not be introduced without addressing fundamental infrastructure, competency, security, and organisational issues. Overall, the reviewed evidence demonstrates that MIS has the potential to transform school administration from manual, fragmented, and paper-based processes towards more efficient, transparent, data-driven, and integrated administration. Nevertheless, the effectiveness of MIS depends on a combination of technological, human, financial, organizational, and policy conditions. The evidence therefore suggests that successful MIS implementation requires simultaneous attention to infrastructure, digital competency, training, leadership, funding, user acceptance, data quality, technical support, security, and continuous evaluation.

5. Conclusions and Implications

The synthesis of the reviewed studies provides significant insights for the implementation and sustainable use of Management Information Systems (MIS) in educational institutions. The collective evidence suggests that MIS should not be regarded solely as a technological tool for data storage or routine reporting. Instead, effective implementation necessitates the integration of technological infrastructure, human capacity, organisational leadership, governance, financial support, data quality, system security, and ongoing institutional improvement (Thompson & Anachuna, 2019; Triono et al., 2023; Yusuf et al., 2022; Taşdan et al., 2025; Bahri et al., 2026). The diversity observed in research designs, geographical contexts, educational levels, and Management Information System (MIS) applications across the reviewed studies highlights the necessity for more comprehensive empirical research. Future studies should investigate MIS implementation with larger, more diverse samples and explore differences across various school types and geographical contexts. Additionally, research should extend beyond the examination of MIS availability and user perceptions. Future investigations are encouraged to assess tangible outcomes, including administrative efficiency, productivity, reporting quality, time management, communication, data accuracy, decision-making quality, transparency, and overall administrative effectiveness (Ngozi & Obona, 2024; Baiden et al., 2023; Sulaiman et al., 2026). Longitudinal and mixed-methods approaches could yield stronger evidence on the sustainability and long-term effects of MIS implementation. Further research should also examine how technological integration, information quality, governance, organisational transformation, trust, and user competency interact to shape MIS effectiveness (Mardiyanto et al., 2026; Bahri et al., 2026).

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