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Implementation of Management Information Systems in Primary Schools: A Qualitative Case Study

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ABSTRACT

The growing digitalization of educational administration has established Management Information Systems (MIS) as vital instruments for enhancing school administration and facilitating decisions based on data. Despite its strategic importance, empirical data regarding the use of Management Information Systems in elementary education—especially in limited financial settings—remains uncommon. This study examines the planning, implementation, and evaluation of Management Information Systems (MIS) in SD Negeri 20 Kuta Makmur, a public primary school located in North Aceh Regency, employing a qualitative case study methodology, data were gathered via semi-structured interviews with school leaders, educators, and administrative personnel, supplemented by observations and document analysis. The results reveal that although the school exhibits a robust dedication to digital transformation, the efficacy of MIS implementation is hindered by insufficient infrastructure, restricted budgetary resources, and disparate digital competences among staff. Nonetheless, the technology has enhanced administrative coordination, data accessibility, and internal communication. The research indicates that effective MIS implementation relies on both technology preparedness and organizational elements, such as leadership dedication, well-defined operating protocols, and a conducive institutional culture. Without these enabling conditions, the transformational potential of digital technologies is only partially actualized. This research enhances the literature on educational digitalization by offering empirical observations from a primary school setting and presents practical implications for bolstering institutional capacity and governance in basic education via sustainable information system adoption.

1. Introduction

The rapid growth of digital transformation in the Society 5.0 age has fundamentally changed the governance of educational institutions, establishing information systems as strategic assets rather than just administrative tools(Ilham & Yuniarti, 2022). Schools are progressively anticipated to function as data-driven entities that utilize timely, precise, and cohesive information to improve administrative efficacy, institutional accountability, and service quality. In this context, the deployment of Management Information Systems (MIS) has emerged as a crucial factor influencing organizational performance in primary education(Ramli et al., 2023).

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Management Information Systems (MIS) play a vital role in facilitating fundamental managerial operations such as planning, coordination, monitoring, and decision-making(Meilani, 2023). By amalgamating academic, administrative, and financial data, MIS empowers school administrators to diminish ambiguity, enhance resource allocation, and promote evidence-based governance(Marnita et al., 2023). Nonetheless, despite its acknowledged strategic importance, the dissemination of MIS in primary schools—especially in developing areas—continues to be inconsistent and often hindered by structural and organizational constraints(Suwarto et al., 2022). Empirical research repeatedly indicate that deficient technological infrastructure, constrained financial resources, and weak digital skills among teachers and administrative personnel hinder the efficient implementation of information systems(Bahri et al., 2022).

In Indonesia, the difficulties of integrating educational information systems are especially evident in public primary schools located outside major urban areas, where significant differences in infrastructure, funding, and institutional ability persist(Kristiana & Prihatsanti, 2025). Educational institutions in rural and semi-rural regions frequently encounter difficulties in conforming to national digital education programs owing to inadequate access to dependable technology, poor administrative backing, and inconsistent policy implementation at the local level(Idroes et al., 2023). SD Negeri 20 Kuta Makmur in North Aceh Regency illustrates these systemic difficulties. As an early adopter of a Management Information System (MIS) in a resource-limited context, the school's initiative to enhance its administrative processes via digital tools underscores both the potential and the vulnerability of technology integration within Indonesia's public education system(Gashu, 2024). The project sought to improve administrative efficiency, optimize record-keeping, and encourage data-driven decision-making, in accordance with the overarching governmental effort towards digital transformation in education(Mukul & Büyüközkan, 2023).

Nonetheless, the results of implementation are constrained, exposing structural obstacles that persistently delay advancement. Unreliable internet connectivity, inadequate access to necessary gear and software, and the absence of ongoing professional development for educators and administrative personnel have together hindered the system's optimal performance(Mhlanga, 2024). As a result, the school's adoption of the MIS has been incomplete, characterized by inconsistent usage patterns and ongoing reliance on manual administrative processes(Alamsyah et al., 2024). This scenario reflects wider national patterns in which educational institutions in isolated or underfunded areas encounter a continual digital divide that hinders educational innovation and equity(Alavi & Gallupe, 2003). It emphasizes the essential requirement for ongoing investment in infrastructure, capacity-building, and institutional support systems to guarantee that digital transformation initiatives not only access rural schools but also result in meaningful and sustainable enhancements in educational quality and management(Jurnal et al., 2025).

The effective implementation of a Management Information System (MIS) is recognized as a multifaceted organizational transformation that transcends mere technical preparedness(Purnomo et al., 2023). It necessitates profound modifications in cultural, administrative, and institutional frameworks, illustrating the interconnection between technology and organizational conduct(Waskita & Ashari, 2024). This transition in educational environments necessitates the establishment of technology infrastructure and the development of a supporting institutional culture that promotes adaptation, collaboration, and accountability among personnel. Leadership is crucial in building this environment by establishing a clear vision, organizing resources, and cultivating trust and engagement among system users(Ariati et al., 2025).

Prior research has consistently demonstrated that leadership commitment, efficient inter-unit communication, and the formulation of well-defined operating protocols are critical factors influencing the success of MIS adoption and ongoing system utilization. In the absence of these

supporting conditions, digital projects sometimes forfeit their strategic purpose, transforming into mere symbolic acts of modernization instead of genuine tools for organizational enhancement(ulfitri & Firdaus, 2024). This tendency, commonly known as "ceremonial adoption," results in the underutilization of systems, diminished user engagement, and negligible effects on institutional performance(Prasetyo et al., 2023). Consequently, authentic change via MIS implementation necessitates a holistic strategy that amalgamates technological preparedness with organizational learning, capacity enhancement, and sustained managerial support to realize significant and enduring results.

Although a growing number of literature investigating MIS adoption in secondary and higher education, empirical data from elementary school environments—especially in rural and regional areas—is still relatively limited. This disparity is substantial, as fundamental educational institutions are pivotal in influencing long-term system effectiveness and governance capability. Understanding the planning, implementation, and assessment of MIS at the primary level is crucial for the advancement of both theoretical and practical aspects of educational administration.

This study examines the adoption of Management Information Systems at SD Negeri 20 Kuta Makmur through three analytical dimensions: planning, implementation, and assessment. This study aims to enhance theoretical models of Management Information Systems (MIS) adoption by contextualizing the findings within wider discussions on digital governance and organizational transformation in education, thereby offering evidence-based insights for policymakers, school leaders, and educational administrators seeking to bolster institutional capacity in the digital age.

2. Methodology

2.1 Research Design

This research employed a qualitative case study methodology to investigate the application of a Management Information System (MIS) inside its actual institutional setting(Hsieh & Shannon, 2005). A case study methodology was chosen for its capacity to facilitate a comprehensive examination of organizational processes, stakeholder perspectives, and contextual limitations influencing the integration of digital technology in educational environments. This approach is especially effective for comprehending intricate implementation dynamics that quantitative measures alone cannot properly capture.

2.2 Research Site and Participants

The study was conducted out at SD Negeri 20 Kuta Makmur, a public primary school located in North Aceh Regency, Indonesia, currently undergoing first phases of digital transformation. Participants were chosen by purposive sampling to guarantee the participation of those actively engaged in the planning, operation, and assessment of the MIS. The sample included the school principal, administrative personnel, and designated teachers tasked with managing academic and administrative data. This composition facilitated a thorough comprehension of MIS implementation from various institutional viewpoints.

2.3 Data Collection Techniques

The data for this study were gathered using a variety of qualitative methods aimed at achieving a thorough knowledge of MIS deployment in the educational setting. Semi-structured interviews were initially performed with key stakeholders, including school leaders, teachers, and administrative staff, to document their experiences, perceptions, and issues faced during the system's adoption and utilization. These interviews provide valuable, direct insights into individual interactions with the MIS and the impact of their attitudes and competencies on its usage. Secondly, non-participant

observations were conducted to record actual practices inside the school's administrative processes, emphasizing the integration—or occasional circumvention—of digital technologies in daily operations. This approach enabled the researcher to directly examine the interplay between system design and user behavior, uncovering discrepancies between formal protocols and actual practices. Third, document analysis was conducted by examining pertinent resources, including school rules, administrative reports, training manuals, and technical guidelines, to comprehend the institutional framework and procedural standards regulating information system management. The amalgamation of these three data collection approaches enhanced the research by providing diverse viewpoints on the phenomenon examined. Furthermore, the application of methodological triangulation improved the credibility, dependability, and interpretive richness of the findings, ensuring that conclusions were based on consistent evidence from many data sources.

2.4 Data Analysis

The data analysis employed a theme analysis methodology, including repeated steps of coding, categorization, and interpretation. All interview transcripts, observational notes, and documents were thoroughly analyzed and classified to identify typical themes and patterns. The codes were further categorized into principal themes that signify the essential phases of MIS development: planning, implementation, and assessment. The continual comparative method was utilized throughout the process to enhance themes, assure analytical coherence, and preserve a close alignment between data and interpretation. This method facilitated an understanding of the complex issues determining MIS adoption inside the school's organizational context.

3. Results

3.1 Strategic Planning in the Development of the Management Information System.

The development of the Management Information System (MIS) at SD Negeri 20 Kuta Makmur was executed through a systematic, needs-oriented methodology that demonstrated the institution's dedication to harmonizing technical advancements with its real operating circumstances. The method started with a situational evaluation to identify critical infrastructure and resource needs, rather than employing a top-down model. The preliminary diagnostic phase concentrated on cataloging current assets and identifying shortcomings in hardware availability, including computers, printers, and network devices, while also assessing the stability of the school's internet connectivity. These foundational elements were acknowledged as essential for any significant digital transformation, considering the growing dependence of Indonesia's educational administration on online platforms such as Dapodik, SIMPKB, and Ruang GTK.

This initial planning phase was both technical and strategic, aiming to guarantee that system development would be practical, sustainable, and consistent with national education information systems. The school's leadership recognized that the successful adoption of MIS relied on a robust technological foundation and institutional preparedness prior to achieving complete digital integration. Thus, planning conversations encompassed evaluations of human resource readiness, including the identification of personnel proficient in digital technologies and the assessment of training requirements to enhance user competencies. By adopting this systematic and context-aware strategy, SD Negeri 20 Kuta Makmur positioned itself to reconcile policy expectations with actual conditions, establishing a foundation for a gradual and adaptive shift from manual administrative systems to a digitally integrated management framework.

Moreover, the principal emphasized the urgent need for the school’s digital transformation, stating that administrative digitization is now an essential requirement rather than an optional project in today’s educational environment. He emphasized that the growing integration of national

education administration systems necessitates that schools be digitally equipped to maintain administrative efficiency and accountability. From his viewpoint, technological readiness directly impacts institutional performance, as delays in adopting digital processes can lead to considerable administrative bottlenecks, including tardy data submissions, reporting inaccuracies, and limited access to vital government programs, funding, and professional development opportunities. The principal's position exemplifies a transformational leadership model, wherein the focus on digital proficiency and system modernization acts as both a reaction to external policy mandates and a proactive strategy to enhance institutional efficacy, transparency, and responsiveness within an increasingly digitized educational framework.

Additionally, the needs-based approach is manifested in the principal's commitment to prioritize the acquisition of essential equipment, including PCs for operators and teachers, together with a reliable internet connection in the administrative office. After fulfilling these fundamental objectives, little training is offered to educators and personnel on the utilization of online applications such as SIMPKB, Dapodik, and Ruang GTK. This incremental strategy has demonstrated greater efficacy than the concurrent implementation of technologies without enough preparation. With a robust planning framework, the school can operate its information system more reliably, experiencing minimum technological disruptions, while emphasizing long-term sustainability. This fosters a new work culture that is more adaptable to technological advancements and enhances the school's management capabilities in navigating the digital age.

The integration of administrative and academic data at SDN 20 Kuta Makmur signifies a crucial phase in the institution's digital transformation, shifting from a primarily manual, paper-centric system to a more organized, cohesive, and data-oriented digital management framework. This method represents both a technical enhancement and a comprehensive organizational transition towards efficiency, transparency, and responsibility in the management of educational information. The shift towards integration has commenced to optimize data processing, diminish redundancy, and augment collaboration between administrative and academic departments, thereby enhancing decision-making and institutional responsiveness.

This transition is currently at a developmental stage and requires additional consolidation via strategic investments in technical infrastructure, continuous capacity improvement, and supportive institutional policies. Reliable hardware, consistent internet access, and compatible software systems are all essential for maintaining and enhancing this digital ecosystem. The continuous professional development of educators and administrative staff is equally crucial to maintain consistent system utilization and data precision. The formulation of explicit internal regulations and standard operating procedures will further entrench digital behaviors, guaranteeing that the MIS operates as a fundamental, sustainable element of school governance rather than a transient innovation. Through these collaborative initiatives, SDN 20 Kuta Makmur can progress towards a fully integrated and robust information management environment that fosters sustained enhancement of educational quality.

3.2 Implementation of the Management Information System.

The implementation of the Management Information System (MIS) at SD Negeri 20 Kuta Makmur signifies significant advancement in the school's shift to digital management. Field findings indicate that the school has intentionally implemented the necessary elements of a technological infrastructure—namely hardware, software, and internet connectivity—which collectively constitute the fundamental requirements for creating an integrated information management environment. These activities indicate the school's increasing dedication to integrating its administrative processes with national digital education standards.

Observations and interviews reveal that the school has provided both the operator's room and the teacher's room with multiple computers, utilized interchangeably by staff to access essential national platforms, including Dapodik, SIMPKB, and the Merdeka Mengajar Platform (PMM). The existence of a fiber optic Wi-Fi network enhances online connectivity; yet, coverage is inconsistent, leaving certain classrooms without reliable access. Notwithstanding these constraints, the school's initiatives signify a concrete advancement toward the establishment of a dependable and operational digital infrastructure. This advancement signifies a pivotal phase in the comprehensive process of MIS deployment, establishing an essential groundwork for cohesive data management, administrative efficacy, and enhanced coordination across diverse operational sectors within the institution.

The principle and school operator acknowledged that, despite a limited number of digital devices, their use has been deliberately optimised through a rotation mechanism to guarantee equal access for staff. This approach enables teachers and administrative staff to effectively utilize the available computers for important tasks, including data entry, reporting, and accessing various online educational platforms. This adaptive management approach has cultivated a culture of digital involvement throughout the school community over time. Educators, specifically, have become progressively adept at utilizing systems like SIMPKB for the administration of professional development initiatives and PMM (Merdeka Teaching Platform) for instructional assistance and performance documentation. The increasing digital literacy among employees indicates a significant transformation in organizational practices, transitioning from dependence on manual processes to a more collaborative and technology-enhanced work environment. Despite ongoing infrastructural limitations, the school's proactive adaptation exemplifies both institutional dedication and user preparedness, which are essential for the enduring success of MIS deployment.

Moreover, the use of digital tools such as Dapodik, e-Rapor, and the Merdeka Teaching Platform (PMM) has progressively integrated into the everyday operational practices of both educators and school administrators. These programs currently function as vital instruments for overseeing administrative, academic, and performance-related responsibilities within the educational setting. Through ongoing internal mentoring and peer support, educators have acquired the proficiency to autonomously execute digital administrative tasks—such as updating student information, managing electronic grade reports, and uploading instructional materials—despite the limitations of inadequate equipment and time constraints. This adaptive process signifies the development of a collaborative and learning-focused work culture, wherein collective problem-solving and mutual support are essential for maintaining technological adoption. The school's experience demonstrates that, even in resource-constrained environments, a robust sense of collaboration and collective accountability can efficiently address infrastructural deficiencies and promote significant advancements in digital transformation.

Moreover, an important aspect of the Management Information System (MIS) deployment at SD Negeri 20 Kuta Makmur is the comprehensive utilization of the Dapodik (Core Data on Education) application as the primary platform for handling educational data. This system serves as the principal database for documenting and revising extensive information pertaining to students, educators, curriculum, and educational infrastructure. (Dapodik) not only facilitates basic administrative reporting to the Education Office but also serves a strategic function in enhancing internal planning, monitoring, and decision-making processes within the school. Providing precise and current data empowers school leaders to make evidence-based decisions on resource allocation, academic planning, and performance evaluation.

The maintenance of data accuracy in (Dapodik) is conducted collaboratively, with school principals and operators closely collaborating with homeroom instructors to frequently verify and update

information. This participative method enhances data dependability and fosters a sense of collective accountability among personnel. The systematic and unified data management processes of SD Negeri 20 Kuta Makmur demonstrate an evolving culture of effective data governance, marked by transparency, precision, and shared accountability. Such activities are crucial for the proper functioning of the MIS as both an administrative instrument and a basis for evidence-based school management.

The school has efficiently employed the SIMPKB (Continous Professional Development Management Information System) and Ruang GTK (Teachers and Educational Staff) platforms as the principal digital systems for the management of teacher-related data and administrative services. These platforms work as centralized instruments that enable various professional and administrative tasks, such as participation in teacher training, formulation of performance targets (SKP), and submission of certification applications. Every teacher must sustain a personal account and autonomously use the system to revise their professional details, track progress, and meet administrative responsibilities.

This method has markedly enhanced the efficiency and transparency of personnel administration in the school, diminishing dependence on manual documentation and facilitating real-time data synchronization with the Education Office. Furthermore, it has prompted educators to assume further responsibility for their professional growth by acquainting themselves with digital administrative procedures. By consistently utilizing SIMPKB and Ruang GTK, teachers are progressively fostering digital autonomy and accountability, while the institution enhances its general capability for systematically managing data.

3.3 *Evaluation of the Management Information System.*

Evaluation of the MIS implementation shows that SD Negeri 20 Kuta Makmur has accomplished its digitalization goals substantially. Dapodik, SIMPKB, and Ruang GTK are just a few of the important digital platforms that the school has effectively integrated and used to handle people and administrative tasks. When compared to manual processes, these systems have significantly improved data organization, accuracy, and accessibility. Manual processes, such as reporting on teachers' performance, managing students' data, and keeping track of staff information, were commonplace before the implementation of the MIS, increasing the probability of data duplication, loss, and incomplete documentation.

Since information can now be updated, checked, and kept more consistently in real time, digital integration has greatly reduced such risks. The system has also made it easier for the school to communicate with outside education authorities, which has led to more consistent and timely data reporting and administrative compliance. Results show that school administration is now more efficient and trustworthy thanks to MIS platforms, and that accountability at the institutional level and decision-making based on evidence are both made much easier with their implementation.

The deployment of the Management Information System (MIS) has yielded a significant and favorable effect on the efficiency and precision of data management at SD Negeri 20 Kuta Makmur. The principal stated that the digital system has streamlined administrative reporting, enhancing efficiency and structure, so enabling the school to provide precise data to educational authorities in a more prompt and orderly fashion. Educators similarly indicated advantages, especially via the utilization of SIMPKB, which has streamlined the formulation of Employee Performance Targets (SKP) and bolstered engagement in autonomous professional development endeavors.

These experiences cumulatively demonstrate that the MIS has enhanced operational efficiency while simultaneously promoting increased user autonomy and digital proficiency among school staff. Educators and personnel are increasingly more proficient in handling their administrative duties

independently, with reduced reliance on operators or manual processes. This transition indicates an increasing culture of self-reliance, responsibility, and technical flexibility within the school, illustrating that digital systems, when properly executed and supported, may improve both institutional efficacy and individual professional autonomy.

School operators highlighted that the integration of data via Dapodik has facilitated seamless synchronization with central education databases, markedly diminishing redundant administrative tasks and improving the precision of reports sent to the Education Office. This synchronization procedure has optimized data administration, removing redundant entries and manual cross-checking that previously required significant time and effort. The shift to digital data systems has enhanced administrative efficiency and dependability while strengthening the fundamental values of transparency and accountability in school governance.

In addition to operational efficiency, the quality and consistency of school data have demonstrated significant enhancement. The school now performs regular data updates each semester, specifically for basic education data (Dapodik), which underpins the allocation of government assistance programs such as BOS (School Operational Assistance), teacher professional allowances, and infrastructure funding. This regular data update procedure demonstrates an increasing institutional recognition of the necessity for correct, current information as a foundation for policy decisions and resource allocation. The school's digital data management techniques exemplify the notion of evidence-based decision-making, fundamental to effective and contemporary educational governance.

5. Conclusions

This study highlights the significance of SD Negeri 20 Kuta Makmur's installation of the Management Information System (MIS) as a turning point in the school's transition to data-driven, modern educational leadership. The school is now able to handle and report data more systematically thanks to the deployment of digital platforms, which has significantly improved administrative efficiency, transparency, and accessibility of information. Teachers, operators, and administrators are now better able to work together thanks to the integrated systems like Ruang GTK, SIMPKB, and Dapodik. Inadequate technological infrastructure, low levels of digital literacy among employees, and the lack of organized training and assessment tools to support continuous system improvement are some of the persistent challenges identified by the study as limiting the system's overall effectiveness. The results highlight the fact that there is more to implementing MIS in primary schools than just using digital tools technically. Sustaining change calls for an all-encompassing strategy that incorporates capacity-building, institutional support systems, and strategic planning. In order to cultivate a culture that welcomes technological innovation, there must be strong commitment from leadership, ongoing professional development, and well-defined governance structures. The findings underscore the need for educational leaders and legislators to address the digital divide in schools through the provision of consistent technical support, targeted financing, and extensive capacity-building initiatives. In the end, the study highlights that improving school management's quality, accountability, and responsiveness through digital transformation is more important than just having the right technology.

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