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ORIGINAL RESEARCH ARTICLE

Madrasah Teacher Data Collection After Simpatika: System Transition, Feature Gaps, And Operator Challenges

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ABSTRACT

This article aims to analyze the constraints in collecting data on madrasah teachers and education personnel and to formulate improvement efforts in the context of data system transition within the Ministry of Religious Affairs. This study employed a qualitative approach with a case study design. Data were collected through semi-structured interviews with operators at the central Ministry of Religious Affairs, operators at the Regional Office of the Ministry of Religious Affairs of the Special Region of Yogyakarta, and madrasah operators, supported by a review of relevant documentation. The data were analyzed thematically through the stages of condensation, categorization, theme identification, and interpretation. The findings show that the unpreparedness of data on teachers and education personnel is not caused by a single factor, but by a combination of system readiness, organizational readiness, and actor readiness. At the system level, problems emerged in the form of the transition from SIMPATIKA to EMIS GTK IMP that was not yet fully mature, incomplete data migration, incomplete features, slow servers, and suboptimal data integration across ministries or institutions. At the organizational level, the problems were reflected in the high workload of operators and the limited number of personnel. At the actor level, the constraints appeared in the varying competencies of operators and the low awareness of teachers and education personnel as data owners. This study recommends a gradual application transition, case-based technical assistance, strengthened helpdesk support, restructuring of operator workloads, periodic data verification by teachers and education personnel, data integration, and the development of processed data dashboards to support data-based policy-making.

ABSTRAK

Artikel ini bertujuan menganalisis kendala pendataan guru dan tenaga kependidikan madrasah serta merumuskan upaya perbaikannya dalam konteks transisi sistem pendataan di lingkungan Kementerian Agama. Penelitian menggunakan pendekatan kualitatif dengan desain studi kasus. Data dikumpulkan melalui wawancara semi-terstruktur dengan operator pada Kementerian Agama pusat, operator pada Kantor Wilayah Kementerian Agama Daerah Istimewa Yogyakarta dan operator madrasah, serta didukung oleh telaah dokumentasi terkait. Data dianalisis secara tematik melalui tahap kondensasi, kategorisasi, penarikan tema, dan interpretasi. Hasil penelitian menunjukkan bahwa ketidaksiapan data GTK tidak disebabkan oleh satu faktor tunggal, melainkan oleh kombinasi antara kesiapan sistem, kesiapan organisasi, dan kesiapan aktor. Pada level sistem, masalah muncul dalam bentuk transisi dari SIMPATIKA ke EMIS GTK IMP yang belum sepenuhnya matang, migrasi data yang belum sempurna, fitur yang belum lengkap, server lambat, dan belum optimalnya integrasi data lintas kementerian atau lembaga. Pada level organisasi, masalah terlihat dari tingginya beban kerja operator dan terbatasnya jumlah personel. Pada level aktor, kendala tampak pada variasi kompetensi operator dan rendahnya kesadaran GTK sebagai pemilik data. Penelitian ini merekomendasikan transisi aplikasi secara bertahap, pendampingan teknis berbasis kasus, penguatan helpdesk, penataan beban kerja operator, verifikasi data berkala oleh GTK, integrasi data, serta pengembangan dashboard data terolah untuk mendukung pengambilan kebijakan berbasis data.

Keywords: *Financing Teachers and Educational Personnel, EMIS GTK IMP, Information System Transition, Educational Data Management, Ministry of Religious Affairs.*

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1. INTRODUCTION

Educational data constitute a fundamental element in the governance of modern education because they serve as the basis for planning, implementation, evaluation, and policy decision-making. In an education system, the accuracy and timeliness of data strongly determine the appropriateness of decisions made by both government authorities and educational institutions (Ghalavand et al., 2024). The availability of data on teachers, education personnel, students, facilities, and institutions enables education planners to identify real needs in the field and design more targeted interventions. From an information systems perspective, system quality, information quality, and service quality directly influence the organizational benefits generated by a data system (DeLone & McLean, 2003). Thus, accurate data do not merely function as administrative documentation, but also serve as a strategic instrument in educational governance.

The importance of educational data can be explained through various planning needs, as data play a central role in this process (Nurzen, 2022). Data on the number of teachers for each subject in a particular region, for example, can be used to calculate teacher formation needs, redistribution, and equal distribution. When teacher data are unavailable or unsynchronized, the process of personnel planning may be disrupted, including the preparation of teacher recruitment needs by

the government. Similarly, student data are needed to ensure the accuracy of education budget allocation, including student-based funding such as School Operational Assistance (Rahayuningsih, 2021). This means that weaknesses in educational data collection may result in policies that are not properly targeted, both in terms of human resources and education financing.

In the context of primary and secondary education in Indonesia, educational data management has developed through two major streams under two different ministries. In general education, Dapodik serves as the main database that supports program planning, implementation, and evaluation in education (Kirmadi et al., 2025). Meanwhile, in the madrasah context, EMIS has been implemented as a management information system, and its implementation has been considered beneficial for the parties involved (Luktafiani, 2024). Therefore, both Dapodik and EMIS can be understood as important instruments in the management and administration of educational data according to their respective institutional domains.

Unlike the more established structure of Dapodik as a single main data stream, data governance in madrasahs has, for a certain period, developed through more than one channel. Within the Ministry of Religious Affairs, EMIS and SIMPATIKA once existed with different functional orientations. EMIS was positioned more as the core data system for Islamic education, containing institutional profiles, student data, and educator data. Meanwhile, SIMPATIKA developed as a service platform widely used in the operational management of madrasah teachers and education personnel. In practice, this distinction shows that madrasah data governance is not only concerned with administrative data storage, but also with dynamic and transactional program service needs. Therefore, the existence of more than one platform within a single institutional ecosystem has created its own problems related to the division of functions, synchronization, and data governance.

In its development, EMIS received support from the World Bank to modernize the governance of primary and secondary education under the Ministry of Religious Affairs. Through this support, EMIS was transformed into EMIS 4.0 in 2021, which was projected to become the main gateway for integrating religious education data within the Ministry of Religious Affairs (Fajar, 2021). In this article, any reference to "EMIS" includes "EMIS 4.0." We explicitly use "EMIS 4.0" in specific contexts simply to emphasize the platform's latest updates. However, please note that EMIS (including EMIS 4.0) is entirely distinct from "EMIS GTK IMP"—despite sharing a similar name, they are completely different systems.

The awareness of building such integration was later reflected in the policy direction of the Ministry of Religious Affairs. Minister of Religious Affairs Decree Number 83 of 2022 emphasized that existing education data management information systems other than EMIS should be integrated into EMIS 4.0 (Kementerian Agama Republik Indonesia, 2022). This policy direction indicates the need to simplify the data architecture, strengthen a single primary data source, and reduce system fragmentation within Islamic education.

However, at the implementation level, the aspiration stated in the decree encountered technical realities. The transformation of EMIS 4.0 was considered not yet optimal by various parties because it had not been able to comprehensively integrate the internal databases of the Ministry of Religious Affairs, particularly in relation to synchronization with the SIMPATIKA application.

Several years later, both platforms were still operating simultaneously under the Directorate General of Islamic Education.

This integration barrier is consistent with previous research on the challenges of implementing One Data Indonesia. In the aspects of data collection and verification, the failure to meet data standards, the inconsistency of metadata, and the absence of reference codes have led to data redundancy and overlap. This condition complicates the process of data sharing. Furthermore, in the dissemination phase, technical constraints shift toward limitations in digital infrastructure, such as the absence of an integrated data center and a single cross-agency application, which are further worsened by the limited competence of human resources in data management (Islami, 2021).

The audit conducted by the Inspectorate General on the SIMPATIKA application in 2024 produced a strategic recommendation to replace or integrate the system with a more representative platform in 2025. This moment became a crucial opportunity for the Ministry of Religious Affairs to realize data integration between EMIS 4.0 and SIMPATIKA. The audit result also served as a strong juridical and empirical basis for allocating a budget for unification programs and integrated data governance.

However, by the end of 2025 and the beginning of 2026, the projected data unification had not yet been realized. Although the use of the SIMPATIKA application had officially been deactivated, the migration of its functions and database was not integrated into the EMIS 4.0 system due to various technical constraints. Instead of merging the systems, the Ministry of Religious Affairs developed a new platform separate from the EMIS 4.0 ecosystem, namely EMIS GTK IMP, or the Education Management Information System for Teachers and Education Personnel Integrated Management Platform.

The failure of the integration effort can be clearly seen in the data interaction mechanism, which remains semi-automatic, requiring operators to perform manual synchronization in the new application. In addition, during the first several months of implementation, data validation still depended on manual confirmation by operators to verify data accuracy, whether the data originated from the old SIMPATIKA database or from EMIS 4.0. This phenomenon shows that although there is uniformity in nomenclature through the use of the name “EMIS,” in terms of system architecture and the substance of data governance, the two platforms continue to operate as separate entities.

The consequence of this fragmented system architecture is the additional workload imposed on the frontline actors of data collection. In this case, operators are a key determinant in the success of an information system, considering that a program does not have the capability to collect field data independently without user input. Therefore, identifying the obstacles and experiences faced by operators becomes a crucial aspect of change management and system transition. A participatory change approach that actively involves operators will not only minimize resistance, but also become a major driving factor for the successful implementation of the new system (Wibowo, 2021).

The literature shows that the success of an information system is not determined solely by institutional decisions to unify platforms. If a new application is ultimately developed, the application must perform well in supporting the success of the data system. Success also depends

on system design quality, ease of use, service reliability, input validation, and user capacity. Studies on data entry show that human error often occurs not merely because users lack accuracy, but also because the system does not sufficiently support validation, standardization, and error prevention from the outset. Therefore, data system reform cannot stop at platform replacement, but must include the strengthening of validation mechanisms, interoperability, and implementation support for users (Barchard & Pace, 2011; Kupzyk & Cohen, 2015).

In addition, the problem of educational data cannot be separated from the issue of inter-agency interoperability. In many cases, the validity of data is not determined only by internal input, but also by its connection with other data sources. Studies on cross-organizational data interoperability show that the maturity of data exchange systems is strongly influenced by standards, governance, coordination, and institutional readiness. Without proper integration, data will remain scattered across administrative silos, making verification difficult and reducing the efficiency of public service processes (Wahyuni et al., 2024).

Within this context, the issue of madrasah teacher and education personnel data collection becomes important to examine. GTK are central actors in the implementation of madrasah education, so the quality of their data strongly determines the accuracy of teacher needs planning, administrative services, career development, and supervision policies. However, the system shift from a previously divided pattern toward integration within EMIS 4.0 has created the need to reexamine how madrasah GTK data governance is carried out, what obstacles emerge, and how improvement measures should be formulated. Such a study is relevant because previous studies have mostly discussed the importance of EMIS or educational information systems in general, while studies that specifically examine the dynamics of madrasah GTK data collection in the context of system transition and integration remain relatively limited (Luktafiani, 2024).

Based on this background, this study is directed at examining the obstacles to madrasah GTK data collection within the framework of educational data governance. This focus is important not only for understanding administrative and technical barriers, but also for interpreting data collection as an issue of policy, system integration, data quality, and educational planning effectiveness. This study takes the transition to EMIS GTK IMP as a case study, a system that only emerged in the timeline of late 2025 and early 2026, to the author's knowledge, based on the literature mapping conducted, studies specifically examining EMIS GTK IMP as a governance transition issue remain very limited. Thus, this study is expected to contribute both to strengthening the practice of madrasah GTK data management and to the development of scholarship on Islamic education information systems in Indonesia.

2. RESEARCH METHODS

2.1 Research Design

This study adopts a qualitative research design with a focus on case study inquiry into the governance of teacher and education personnel data collection in madrasahs. The primary advantage of qualitative research lies in its ability to deeply understand meanings, experiences, contexts, and social processes (Creswell & Poth, 2018). The design is specifically engineered to examine how data collection practices are shaped by hierarchical authority, application readiness, and the distribution of responsibilities among actors operating at different administrative levels. Data were collected through semi-structured interviews with operators representing three levels of authority: the central ministry level, the regional office level, and the madrasah level. By utilizing a multi-level interpretive approach, the design allows for an in-depth examination of how policies, technical systems, and field-level practices interact in the operation of teacher and education personnel (GTK/Guru dan Tenaga Kependidikan) data applications. This framework is essential for identifying the gaps between formal data governance procedures and practical implementation, particularly in relation to operator workload, application transitions, data validation, and institutional coordination. It also enables the study to capture the perspectives of actors positioned within different layers of authority, ensuring that the findings remain grounded in empirical field experiences while offering critical insight into the governance of educational data systems.

2.2 Data Collection

The data collection process was conducted comprehensively using triangulation techniques to strengthen the credibility and trustworthiness of the research findings (Patton, 2015). Qualitative data were obtained through semi-structured interviews with operators positioned at three hierarchical levels of authority, namely the central ministry level, the regional office level, and the madrasah level. These interviews were intended to capture how each actor understands, interprets, and implements the policies and technical procedures related to teacher and education personnel data collection. In addition to interviews, the study also involved a review of relevant literature and regulations to provide a normative and contextual basis for interpreting the field data. This triangulation was important because information from interviewees was not accepted uncritically; rather, it was examined in relation to regulatory documents, institutional guidelines, and the broader governance context. Differences in understanding among actors were also considered, particularly because middle-level and field-level operators may interpret socialization, technical instructions, and directives from top management in different ways. Therefore, the integration of interviews, literature review, and regulatory analysis aimed to capture the phenomenon of teacher and education personnel data collection holistically, covering not only technical application use but also the interaction between policy direction, institutional authority, actor interpretation, and implementation practices in the field.

2.3 Data Analysis

Data analysis in this study was conducted using a qualitative interactive model consisting of data condensation, data display, and conclusion drawing or verification (Miles et al., 2014). Data obtained from interviews with operators at three hierarchical levels were first condensed by selecting, focusing, and organizing information relevant to the governance of teacher and education personnel data collection. The condensed data were then displayed thematically by comparing the perspectives of central, regional, and madrasah-level actors, while also considering relevant literature and regulatory documents. Conclusions were drawn through continuous verification so that the findings were not based solely on interview statements, but were interpreted in relation to policy directions, institutional authority, and possible differences in actors' understanding of regulations and technical guidance.

2.4 Research Subject and Location

The research subjects in this study were operators involved in the management of teacher and education personnel data collection within the madrasah system. Participants were selected purposively because they had direct experience with the operation, coordination, and interpretation of GTK data collection policies and applications. The subjects represented three hierarchical levels of authority, namely the top management level, the middle management level, and the madrasah level. At the top management level, data were obtained through online communication with an operator of the central Ministry of Religious Affairs. Meanwhile, middle-level and madrasah-level data were collected through direct field interviews mainly in Yogyakarta, involving operators at the Regional Office of the Ministry of Religious Affairs and operators at the madrasah level. Furthermore, to enrich the field data, the researcher participated as an observer in a nationwide socialization webinar via Zoom, which was attended by madrasah representatives from all across Indonesia. This study focuses on Yogyakarta, while the national webinar data are used as contextual supporting evidence.

3. RESULTS AND FINDINGS

3.1 Mapping of Previous Studies

Previous studies were mapped using Publish or Perish through Google Scholar, with "EMIS" and "SIMPATIKA" as the main keywords. The search was limited to publications from 2021 to 2026, with a maximum of 100 search results. Google Scholar was selected because it provides broader access to local studies, including journal articles, theses, and institutional repository publications related to madrasah data systems. The initial mapping shows that most studies on EMIS and SIMPATIKA remain descriptive in nature, focusing on the role, implementation, utilization, influence, or effectiveness of educational management information systems. One study that is relatively close to the present topic is the undergraduate thesis by Naila Faizah Salsabila, which examined the effect of SIMPATIKA/EMIS (EMIS 4.0) integration on employee performance

effectiveness at the Ministry of Religious Affairs, Jember Regency, using a quantitative causal-associative approach and simple linear regression (Salsabila, 2026). However, the study's use of the term "integration" requires critical reconsideration, because the transition from SIMPATIKA to the newer GTK data application cannot be understood simply as a complete integration into EMIS 4.0. Based on field findings, EMIS 4.0 and EMIS GTK IMP operate as related but distinct data services, and their databases, features, and technical infrastructures have not been fully synchronized. Therefore, the present study addresses a different gap by examining the transition of GTK data collection applications as a qualitative governance issue, involving application readiness, data synchronization, hierarchical authority, and differences in policy interpretation among central, regional, and madrasah-level operators. The 100 records were screened manually and grouped into mutually exclusive thematic categories based on their dominant focus.

Finding category	Qty.	Research focus	Relevance to the present article
Educational Management Information Systems in general	28	SIMDIK, madrasah management information systems, educational administrative services	The studies remain broad and are not yet specific to the transition of GTK data collection applications
Digital transformation and madrasah administration	26	Administrative digitalization, educational technology, madrasah services	The focus is mostly on general digitalization, rather than GTK data governance
Specific studies on EMIS	9	EMIS utilization, madrasah data processing, decision-making support	EMIS is widely discussed as an administrative tool, but few studies examine the problem of GTK application transition
Specific studies on SIMPATIKA	8	SIMPATIKA implementation, SIMPATIKA effectiveness, user acceptance	SIMPATIKA is discussed as a stand-alone application, with limited connection to the transition toward EMIS GTK IMP
Studies linking EMIS and SIMPATIKA	3	EMIS and SIMPATIKA in administration, operators, or work effectiveness	This category is the closest to the present article, but it remains limited and has not critically examined the differences between the applications
Other related Ministry of Religious Affairs applications	5	SIAGA, PAIS, teacher allowance services	Relevant as part of the Ministry of Religious Affairs application ecosystem, but not the main focus of madrasah GTK data collection
Peripheral or less directly related studies	21	Educational quality, leadership, supervision, general administrative services	These studies can be excluded from the core discussion because they do not directly address EMIS, SIMPATIKA, or GTK data collection

3.2 Identifying the Research Gap

Unlike previous studies that tend to treat EMIS or SIMPATIKA as administrative tools whose effectiveness can be measured directly, this study positions the transition of GTK data applications as a multi-level governance problem shaped by policy direction, technical system readiness, and the interpretive differences of actors across institutional hierarchies. This gap is significant because the transition from SIMPATIKA to the EMIS GTK IMP only began to operate in practice in early 2026, making academic discussions on this issue still very limited. Since identifying research gaps is a central purpose of reviewing the state-of-the-art literature, the very recent emergence of this transition strengthens the need for a focused study on the issue (Müller-Bloch & Kranz, 2015). Existing studies mostly examine EMIS or SIMPATIKA in terms of implementation, utilization, role, or effectiveness, but rarely address the discontinuity between the old and new systems. In addition, the claim that SIMPATIKA has been fully integrated into EMIS 4.0 requires critical reconsideration, as field findings show that EMIS 4.0 and EMIS GTK IMP remain distinct in terms of features, databases, and technical infrastructure. Thus, this study fills a gap by analyzing GTK data application transition as a qualitative governance issue involving application readiness, database synchronization, hierarchical authority, and coordination among central, provincial, and madrasah-level actors.

3.3 Empirical Field Findings

The field inquiry began with a central question: why does GTK data remain problematic when it is needed for audits, policy planning, and institutional decision-making? Initial communication with operator at the central Ministry of Religious Affairs showed that this question could not be answered merely as a technical problem of data input. The issue was more complex because the GTK data collection system is currently undergoing an application transition, while the governance of data collection continues to operate through a hierarchical structure of authority.

Formally, the governance structure of GTK data collection involves four levels, namely the central ministry, the provincial regional office, the district or municipal office, and the madrasah. However, the field findings indicate that three actors are more strategically involved in the current data flow: the central ministry, the provincial regional office, and the madrasah. The district or municipal level appears to play a less strategic role in several practical situations, as many madrasahs communicate directly with the provincial office when they encounter technical problems. The provincial office then escalates unresolved issues to the central ministry. This pattern shows that the actual flow of coordination does not always follow the formal administrative hierarchy.

The central ministry also conducts direct communication with madrasahs through online forums, particularly Zoom-based socialization and technical guidance sessions. In practice, the central ministry distributes the Zoom link to the provincial office, while the provincial office mobilizes madrasahs to participate. The researcher joined one of these online forums as a non-participant observer. During the session, madrasah participants from various regions in Indonesia raised numerous complaints, both verbally and through the Zoom chat feature.

Verbatim Evidence (Translated)

“Many school principals’ data do not match.”
“The principal’s data are missing after the principal was replaced.”
“The schedule has been arranged, but one teacher is not detected, with zero teaching hours.”
“When filling in the schedule, it suddenly showed a conflict even though only one entry had been made.”
“The Craft subject is not available.”
“The homeroom teacher’s name cannot be entered because the system says the database was not found.”
“Specialization subjects for MA are not yet available.”
“There is no biodata edit feature to correct inaccurate data.”

Several field complaints reflected recurring problems in the application. Participants reported that the data of school principals were often inaccurate or still displayed the previous principal. Some operators stated that a teacher’s teaching schedule had been entered, but the system still displayed zero teaching hours. Others mentioned that the schedule suddenly showed a conflict even though only one entry had been inputted. There were also complaints about missing subjects, unavailable teacher names in account management, homeroom teacher data that could not be entered because the database was not found, and the absence of certain subject categories such as specialization subjects at the MA level. These findings indicate that data readiness is not only determined by operator performance, but also by the readiness of the application, the completeness of database migration, and the clarity of coordination among levels of authority.

4. RESULTS AND DISCUSSION

4.1 Multi-Level Governance in Teacher and Education Personnel Data Collection

The findings indicate that the transition from SIMPATIKA to EMIS GTK IMP cannot be understood merely as a technical replacement of data applications. Rather, it reflects a multi-level governance problem in which policy decisions, communication flows, technical readiness, and field-level implementation capacity are distributed unevenly across bureaucratic layers. In a vertical bureaucratic structure, the success of implementation depends not only on the clarity of central policy decisions, but also on the extent to which those decisions are communicated, coordinated, and translated into operational guidance for implementing actors. This is consistent with the top-down and bottom-up implementation perspective, which emphasizes that policy implementation often fails when hierarchical instructions are not matched by sufficient feedback, local adaptation, and implementation support (Buzogány & Pülzl, 2024; Sabatier, 1986).

At the central level, the decision to shift the teacher and education personnel data system from SIMPATIKA to EMIS GTK IMP was influenced by the 2024 audit conducted by the Inspectorate General of the Ministry of Religious Affairs. The audit required that the data application be fully owned and managed by the institution itself. However, the central authority did not immediately

impose the transition in 2025. This delay indicates that the top manager considered field readiness before fully changing the system. Nevertheless, during 2025, provincial offices had not yet received a clear formal explanation regarding the transition. Official information was only delivered on 10 March 2026 through Circular Letter No. B-25/Dt.I.II/KS/03/2026, electronically signed by the Director of Madrasah Teachers and Education Personnel. The circular stated that EMIS GTK IMP would begin to be implemented on 16 March 2026 and would be fully utilized on 1 July 2026, coinciding with the beginning of the new academic year (Direktorat Jenderal Pendidikan Islam, 2026).

This timeline shows an implementation gap between central policy formulation and subnational preparation. Although the central office had policy reasons for transforming the system, the relatively short interval between the formal circular and the initial implementation period created pressure for lower-level actors. In Matland's terms, this situation can be read as an implementation process marked by technical ambiguity. The policy goal was relatively clear, namely institutional ownership and integration of GTK data, but the operational meaning of the transition remained uncertain for implementers, especially regarding features, procedures, data migration, account activation, verification, and troubleshooting. When policy ambiguity is high, implementation outcomes are strongly shaped by local interpretation, available resources, and the capacity of implementing actors to solve practical problems (Coleman et al., 2021; Matland, 1995).

At the provincial level, the Regional Office occupied a middle-management position. It was expected to translate the central policy into regional implementation, but its actual role was limited by the nature of information received from the central office. According to the provincial informants, the socialization and technical guidance provided by the central office remained general. This created a discretionary dilemma for the provincial office. On the one hand, it had to ensure compliance with central targets. On the other hand, it had to respond to highly specific technical complaints from madrasahs. As a result, the provincial office functioned more as an intermediary or messenger than as a problem-solving authority. This condition illustrates a common challenge in multi-level governance, where policy success depends on coordination among national, regional, and local actors, not merely on formal hierarchical instruction (Hill & Hupe, 2003).

At the madrasah level, the burden of implementation became more visible. After the circular was distributed, most of the problems faced by madrasahs were not conceptual but technical. These included difficulties in understanding new menus, adjusting to new procedures, validating GTK data, and responding to system-related obstacles. In this context, madrasah operators became the actors who carried the practical burden of policy transition. They were required to implement a system whose policy direction had been decided at the central level, whose guidance was mediated by the provincial levels, and whose technical consequences had to be resolved in daily administrative practice. Therefore, the transition to EMIS GTK IMP demonstrates that data governance reform requires more than application development. It also requires synchronized communication, practical technical assistance, clear distribution of authority, and responsive feedback mechanisms across all bureaucratic levels.

Overall, these findings suggest that the problem of GTK data collection lies in the mismatch between policy design and implementation readiness. The central government had a strong institutional rationale for system transformation, especially after the audit requirement. However, the implementation process showed that hierarchical policy decisions must be supported by timely communication, detailed technical guidance, and adequate problem-solving authority at the regional and madrasah levels. Without these supports, the transition risks shifting the burden downward, making madrasahs and operators the final recipients of unresolved governance and technical problems.

4.2 Root Causes of Obstacles in Teacher and Education Personnel Data Collection

The lack of readiness in madrasah Teacher and Education Personnel (GTK) data in Yogyakarta indicates that the problem is not singular. Based on the field findings, data collection problems emerged across three layers of governance, namely the central level as top management, the provincial office as middle management, and the madrasah level as the implementing operator. At the central level, the problem was reflected in the transition from SIMPATIKA to EMIS GTK IMP, the need for repeated socialization, the incomplete supporting features of the new system, and the risk of human error that had previously occurred because several data-entry standards had not been fully locked in the system. At the provincial office level, the problem appeared in the limited nature of socialization, which was often perceived as too general, the large number of technical complaints from madrasah operators, the need to bridge communication between the central office and madrasahs, and the weak integration of data across ministries or institutions. At the madrasah level, the problem was seen in incomplete data migration, repeated verification, slow server performance, gateway errors, unavailable features, and unequal operator capacity. Therefore, the lack of readiness in GTK data cannot be understood merely as the result of operator negligence. Rather, it is the outcome of the interaction between system readiness, organizational readiness, and human resource readiness.

The first root cause is the application transition, which has not been fully accompanied by technical and social readiness among users. The shift from SIMPATIKA to the new application does not merely represent a change in the data collection channel. It also involves changes in work habits, administrative routines, and feature structures. From the perspective of the central institution, the new application was designed to correct weaknesses in the previous system, for example by locking certain data fields to minimize input errors and by ensuring that the application is no longer operated through a leased system. However, from the perspective of madrasah operators, the transition was experienced as an additional burden because several data components were not automatically migrated, some verification processes had to be repeated, and several needed features were not yet available. This situation shows a gap between the logic of system development and the experience of users in the field. The central office viewed the new application as an instrument for improving data governance, while madrasah operators viewed it as a work space that was not yet fully stable. Such tension is common in digital transition, but it becomes problematic when a new system is made mandatory before the need for stable features has been adequately fulfilled.

This finding is consistent with a study on EMIS at the Ministry of Religious Affairs Office in Mojokerto City. The study explains that EMIS is a digital platform used to manage and record teachers and education personnel in madrasahs and educational institutions under the Ministry of Religious Affairs. The findings indicate that EMIS can improve work efficiency, data accuracy, administrative service effectiveness, and the acceleration of data-based decision-making. However, the same study also notes obstacles related to limited human resources that have not fully mastered technology and technical disruptions in the system that still require further technical support (Trisna et al., 2025). Thus, the field findings in Yogyakarta strengthen a pattern also found in other regions, namely that EMIS has strategic potential, but its effectiveness is strongly determined by system stability and user readiness.

The second root cause is incomplete data migration. In the field findings, madrasah operators complained that several processes previously completed in SIMPATIKA had to be repeated in the new application, such as diploma verification. On the one hand, repeated validation can be understood as part of the effort to ensure that the data entered into the new system are clean, standardized, and accountable. On the other hand, the repetition increases the workload of operators because previous work is perceived as not being fully carried over into the new system. This condition creates the impression that the new application is not yet ready, not simply because operators resist change, but because their technical experience shows repeated work, long upload times, and uncertainty regarding available features. In this context, data migration must be understood as a substantive process, not merely as the transfer of a database. Migration concerns the integrity of data history, the completeness of supporting documents, and the ability of the new system to accurately read data from the previous system.

The third root cause is the instability of the application in the user experience of madrasahs. Madrasah operators reported several obstacles, such as slow server performance, gateway errors, overlapping schedule notifications even when data had only been entered for one teacher, errors in homeroom teacher input, and messages indicating that the database could not be found. These complaints are important because they show that data collection problems do not only exist at the level of user behavior, but also at the level of system performance. When the system is often slow or experiences errors, operators need more time to complete their work. Tasks that should be carried out in a planned manner eventually accumulate, are completed only at certain times, or are done hastily as deadlines approach. Under such conditions, the risk of input errors increases. An unstable system can also reduce operator trust in the application. Operators may continue to fulfil their obligations, but they work in a state of uncertainty because they are not sure whether the error comes from themselves, from incomplete data, or from the system.

This finding regarding technical obstacles is consistent with a study on EMIS at MTs Darussa'adah Gubugklakah. The study states that obstacles in operating EMIS included frequent disruptions on the central server, which made it difficult for operators to log in. As a result, operators often entered data during late-night rest hours, even around 10 p.m. to 3 a.m. The study also explains that the process of saving data requires a stable internet connection because unstable internet can cause data to fail to be saved, forcing operators to repeat the data input process (Mubarok, 2022). This finding is highly relevant to the complaints of madrasah operators in this study because it shows

that server disruptions and dependence on internet connectivity are not minor problems. They are directly related to workload, working time, and the quality of data input.

The fourth root cause is the high workload of operators. The field findings show that operators are not only responsible for entering GTK data, but also for carrying out various other administrative tasks. At the madrasah ibtidaiyah level, operators may also be teachers who receive an additional assignment as operators. At the MTs and MA levels, operators do not always serve as teachers, but they still handle many other administrative tasks. In addition to receiving delegated work from GTK, operators may also be asked to input teacher schedules, even though, from a managerial perspective, this task should be linked to the head of the madrasah or the vice principal for curriculum affairs. The number of operators is also limited. In many madrasahs, there are only one or two operators, while in larger madrasahs there are usually no more than around three operators. With such limited personnel, the demand for real-time data updating becomes difficult to fulfil. Data collection ultimately depends on the individual capacity of operators rather than on an established institutional work system.

A study on operator management at MIS Terpadu Al-Ikhwan Tanjung Morawa supports this finding. The study states that school operators do not only enter school and student data, but also complete individual reports, school identity data, headmaster data, teacher and staff data, facilities and infrastructure data, as well as student verification and validation (Isnani et al., 2023). The same study also shows that data accuracy cannot be separated from management functions, including planning, organizing, implementation, and evaluation. In the organizing function, the study indicates that full responsibility for data accuracy rests with the operator, while administrative services still require cooperation with other administrative staff. This strengthens the analysis that operators should not be left as the only central point of data work without support from the madrasah work structure.

The fifth root cause is the low awareness of GTK as data owners. The field findings show that many GTK still depend heavily on operators for their data. Data are often updated only when teachers want to pursue certain benefits, such as allowances, or when they face administrative problems. In fact, GTK data should be updated whenever there is a change, not only when a pragmatic need arises. One example found in the field is the residential address. An outdated address can affect rotation or transfer policies, especially when such policies are intended to reduce the distance between a teacher's residence and workplace. If the address data are invalid, the rotation decision may be perceived as harmful to the teacher, even though the source of the problem is outdated data. In such cases, the operator may be blamed, although the substance of the data should be the responsibility of GTK as the data owner. Therefore, the slogan "My data, my responsibility," which is used at the provincial office level, has an important meaning because it shifts data collection from being solely an operator's task into a shared responsibility among GTK, operators, and madrasah leaders.

A study on the utilization of SIMPATIKA in the Madrasah Education Division of the Provincial Office of the Ministry of Religious Affairs in Yogyakarta supports the importance of data owner awareness. The study explains that SIMPATIKA allows data to be updated online and viewed by the provincial office, enabling information to be presented accurately and validly. SIMPATIKA is

also used as a basis for policy and mapping, including in teacher transfer processes. The study notes that SIMPATIKA data can help the provincial office map teacher placement, while teachers who update their personal data incorrectly will find it more difficult to manage their administrative interests (Damayanti & Rizal, 2021). This finding strengthens the argument that GTK data should not be understood as the operator's responsibility alone, but as the personal responsibility of GTK, facilitated by the system and assisted by operators.

The sixth root cause is the variation in operator competence. The field findings show that not all operators experience the same obstacles. Some madrasah operators stated that they did not experience significant problems and assumed that the complaints of other operators might be influenced by age, technological competence, educational background, and the background of their appointment as operators. Some operators are young, accustomed to working with laptops, and hold a bachelor's degree, which makes it easier for them to explore the application. However, there are also older operators, operators whose highest level of education is senior high school, or operators who were appointed because they had long worked at the madrasah when the need for digitalization emerged. This variation is important because it shows that training cannot be delivered through a single approach. Skilled operators may only need technical guidance and question-and-answer forums, while less experienced operators require more basic, repeated, and practice-based assistance. Differences between madrasah levels should also be considered. The feature needs of private MI may not be as complex as those of MTs or MA, particularly state madrasahs that have more complex structures of teachers, subjects, additional duties, and teaching loads.

The seventh root cause is the suboptimal integration of data across ministries or institutions. In the field findings, diploma validation emerged as one example of this problem because there was no adequate integration with the ministry or institution responsible for the relevant education data. As a result, operators had to carry out manual checking. If integration is developed, data validation under the authority of other ministries or institutions can be carried out more easily and accurately. This integration problem shows that digitalization does not automatically reduce administrative burdens when the systems used are not interconnected. In the context of EMIS GTK IMP, data integration is crucial because GTK data are related to many interests, including employment status, educational background, certification, allowances, teaching load, teacher needs, teacher transfer, and teacher distribution mapping.

Overall, these findings indicate that the obstacles in GTK data collection are rooted in interconnected technical, organizational, and human resource problems. The application transition created a new governance direction, but it also generated adaptation pressures at the user level. Incomplete data migration caused repeated work and uncertainty regarding the continuity of previous data. System instability increased work time and the risk of input errors. High operator workload made real-time data updating difficult to achieve. Low awareness among GTK as data owners shifted responsibility excessively to operators. Variations in operator competence required more differentiated forms of technical assistance. Finally, weak data integration across ministries and institutions kept several validation processes dependent on manual work. Therefore, improving GTK data collection requires not only the improvement of the application, but also the

strengthening of user readiness, organizational support, shared responsibility among data owners, and cross-institutional data integration.

4.3 Strategies for Improving Teacher and Education Personnel Data Readiness

The problem of teacher and education personnel data unreadiness should not be addressed merely as a technical problem of data input. It requires a multi-layered governance strategy that corresponds to the position, authority, and responsibility of each actor within the data collection structure. At the central level, the first priority is to ensure that the new application truly meets the basic operational needs of users before it is fully enforced. In this context, the new system should not be treated only as a technological product, but as a public service infrastructure in the education sector. Therefore, system deployment needs to be preceded by field-based testing involving operators from different levels, regions, and types of madrasah. The testing process should include madrasah ibtidaiyah, madrasah tsanawiyah, madrasah aliyah, public and private madrasahs, small and large institutions, and operators with different levels of digital competence. Such testing is important so that the central authority does not only receive feedback from highly skilled users, but also from users who represent actual field conditions. This strategy is consistent with recent literature on public sector digital transformation, which emphasizes that digital change is shaped not only by technology, but also by organizational capacity, implementation processes, and critical success factors within public institutions (Al Maazmi et al., 2024; Haug et al., 2024).

The first strategy also requires a gradual transition and the application of minimum readiness principles. Before the old application is fully discontinued, the new application should already contain core features equivalent to those in the previous system, in addition to new features that reflect the objectives of system development. Crucial features related to teaching hours, the conversion of education personnel into teachers, subject selection, diploma validation, homeroom teacher assignment, and data recapitulation should become development priorities. If these basic features are not yet available, users will perceive the new system as unready, even if conceptually it is designed to be more integrated. Since the application has already been introduced to the field while still not fully stable, central management should avoid demanding that field operators immediately complete all administrative tasks. Instead, central management needs to provide transitional tolerance, clarify realistic deadlines, issue periodic technical updates, and prepare institutional explanations regarding data accuracy in the event of an audit, without shifting responsibility to field operators. Digital transformation in the public sector often involves both incremental and transformative change, so implementation should be managed as a staged institutional transition rather than a sudden technological replacement (Haug et al., 2024).

The second strategy is to improve the model of socialization and technical guidance. Socialization through online meetings is realistic because the central authority cannot directly meet thousands of regional and madrasah operators. However, field findings indicate that general socialization is not sufficient. Madrasah operators require technical answers to highly specific problems encountered during system use. Therefore, socialization should be transformed into case-based technical assistance. The materials can be divided into several technical clinics, such as data migration clinics, diploma validation clinics, teaching load clinics, teacher schedule clinics, GTK status change clinics, and system error resolution clinics. The regional office can function as a

collector of cases from madrasahs, while the central office provides official technical answers that can be redistributed to all operators. This approach would make socialization more operational rather than merely informational. Recent studies on digital skills training in the public sector show that public workers need structured training to prepare for digital transformation, especially in areas such as data management and digital communication systems (Lopes et al., 2023).

The third strategy is to establish a documented helpdesk and problem-reporting system. Madrasah operators who encounter problems should be guided to report issues systematically, including screenshots, time of occurrence, feature name, sequence of actions taken, account type, and the impact of the problem on their work. Such documentation will help the regional and central offices distinguish whether a problem comes from input errors, incomplete data, user account configuration, application features, server performance, or system bugs. Without proper documentation, operators' complaints will remain general information that is difficult to forward to developers. In a digital system, the quality of user feedback strongly affects the speed and accuracy of system improvement. Therefore, madrasahs need to be encouraged not only to communicate complaints orally, but also to construct technical evidence of problems. This recommendation is supported by recent software maintenance research showing that initial bug reports often lack important diagnostic and user-activity information, while screenshots and textual descriptions are among the most common forms of evidence used to explain system problems (Wang et al., 2025).

The fourth strategy is to reorganize the workload of madrasah operators. Operators should not become the destination for all digital and administrative tasks. Madrasah principals need to establish a clear division of responsibility among GTK, homeroom teachers, vice principals, administrative staff, and operators. Substantive data should be prepared by the data owner or relevant unit, while the operator should assist with technical formatting, uploading, and system validation. Personal GTK data should be checked by each GTK before being locked or submitted. With this division of work, the operator remains an important actor but no longer becomes the only party carrying the administrative burden and the risk of data errors. Research on school operators in Indonesia shows that operators are not only responsible for managing Dapodik data, but also handle other data systems such as e-reports, ARKAS, and PMP, while facing unclear workload recognition and welfare issues. A systematic review on teacher workload also indicates that administrative tasks, non-teaching duties, and long working hours contribute to workload pressure and well-being problems in educational institutions (Mahsur & Margana, 2023; Wahab et al., 2024).

The fifth strategy is to strengthen GTK responsibility for their personal data. The slogan already promoted by the regional office, "My data, my responsibility," can be developed into a principle of GTK data governance. Its implementation can be carried out through periodic data verification every semester. Each GTK should be required to check identity data, address, latest educational qualification, certification status, teaching history, additional duties, and supporting documents. After checking the data, each GTK can provide a statement indicating whether the data are correct or need revision. The operator then assists with the technical updating process in the system. Through this mechanism, operators will no longer be treated as fully responsible for data that

substantively belong to GTK. This principle can also reduce the tendency of data updates being carried out only when teachers pursue allowances or face administrative problems. The idea is in line with the concept of data stewardship, which emphasizes that data management should involve responsibility toward relevant stakeholders, legitimate rights, and a trusted data ecosystem (Wendelborn et al., 2023). It is also consistent with data governance literature that links effective governance with data quality, organizational control, and the capacity to generate value from data (Bernardo et al., 2024).

The sixth strategy is to strengthen the validation of source documents and inter-agency data integration. In the medium term, the Ministry of Religious Affairs needs to build integration with other databases so that data originating from different ministries or institutions can be validated systematically. This is important because some GTK data cannot be verified only through internal madrasah input. Educational qualifications, population identity, employment status, certification, and other administrative records may require connection with external data sources. Therefore, the new application should not function merely as an input platform, but as an information system capable of producing valid, connected, and usable data for decision-making. Recent research on data interoperability in government shows that data standards, inter-agency coordination, data exchange policies, infrastructure development, personnel training, and periodic validation are necessary to prevent duplication and improve data quality. These principles are relevant to the GTK data system because the main issue is not only data entry, but also the ability of the system to connect, verify, and use data across institutional boundaries (Bernardo et al., 2024; Wahyuni et al., 2024).

The seventh strategy is to develop processed-data dashboards for policy makers. Field findings indicate that the central level still needs supporting features, for example, a feature that can identify the need for teachers in certain subjects and regions. Such a feature is important because data collection should not stop at data input, but should produce policy-relevant information. GTK data need to be processed into maps of teacher needs, teacher distribution, teacher surplus and shortage by subject, certification status, teaching load, potential teacher mobility, and competency development needs. If the application only functions as a place for data entry, operators will continue to perceive it as an administrative burden. However, if the data generate clear and useful decisions for madrasahs, GTK, regional offices, and the central authority, the awareness to update data will be easier to build. Recent studies on educational dashboards emphasize that dashboards can support leadership and policy when they are incorporated into organizational structures, designed through stakeholder involvement, and used to improve decision-making rather than merely display data (Curran et al., 2024; Mohseni & Masiello, 2026).

5. CONCLUSION AND SUGGESTIONS

5.1. Conclusions

This study concludes that the obstacles in madrasah teacher and education personnel data collection cannot be understood merely as technical problems of data input or operator

performance. The transition from SIMPATIKA to EMIS GTK IMP reveals a broader governance problem involving policy direction, application readiness, data migration, system stability, operator workload, GTK awareness as data owners, and inter-agency data integration. Field findings show that the new system has strategic potential to strengthen GTK data governance under the Ministry of Religious Affairs, but its implementation still faces practical challenges, particularly in relation to incomplete feature readiness, repeated verification, semi-automatic synchronization, server instability, and unequal operator capacity. Therefore, GTK data unreadiness is the result of interaction between technical, organizational, and human resource factors. This study contributes to the discussion on Islamic education information systems by positioning GTK data application transition as a multi-level governance issue rather than simply an administrative digitalization process..

5.2. Suggestions

Improvement of madrasah GTK data collection should be carried out through a multi-layered strategy involving the central ministry, regional offices, madrasah leaders, operators, and GTK as data owners. At the central level, the application should be strengthened through gradual implementation, field-based testing, completion of core features, better migration mechanisms, and clearer technical guidance. At the regional level, socialization should be transformed into case-based technical assistance, supported by a documented helpdesk and systematic problem-reporting mechanism. At the madrasah level, operator workload needs to be reorganized so that data collection becomes an institutional responsibility, not merely an individual operator's task. GTK should also be required to verify their own personal and professional data periodically. Future studies may expand this research by comparing several provinces, examining user acceptance of EMIS GTK IMP quantitatively, or evaluating the effectiveness of the system after its full implementation in the new academic year.

Ethical & Author Statements
Credit Statement: Finan Ahsani Taqwim: Conceptualization, Methodology, Writing – Original Draft, Data Curation, and Supervision. **Zaefa Khatun and Karwadi:** Formal Analysis, Investigation, and Writing – Review & Editing.
Data Policy: Supporting data are available from the corresponding author (**24204092030@student.uin-suka.ac.id**) upon reasonable request.
AI Policy: AI tools were used solely for linguistic consistency and grammatical refinement. The final analysis, interpretation of GTK data collection are original human outputs

6. REFERENCES

Al Maazmi, A., Piya, S., & Araci, Z. C. (2024). Exploring the Critical Success Factors Influencing the Outcome of Digital Transformation Initiatives in Government Organizations. In *Systems* (Vol. 12, Issue 12, p. 524). https://doi.org/10.3390/systems12120524

Barchard, K. A., & Pace, L. A. (2011). Preventing human error: The impact of data entry methods on data accuracy and statistical results. *Computers in Human Behavior*, *27*(5), 1834–1839. https://doi.org/10.1016/j.chb.2011.04.004

Bernardo, B. M. V., Mamede, H. S., Barroso, J. M. P., & dos Santos, V. M. P. D. (2024). Data governance & quality management—Innovation and breakthroughs across different fields. *Journal of Innovation & Knowledge*, *9*(4), 100598. https://doi.org/https://doi.org/10.1016/j.jik.2024.100598

Buzogány, A., & Pülzl, H. (2024). *Chapter 9: Top-down and bottom-up implementation* (pp. 116–126). Edward Elgar Publishing. https://doi.org/10.4337/9781800885905.00016

Coleman, A., BILLINGS, J., ALLEN, P., MIKELYTE, R., CROKE, S., MACINNES, J., & CHECKLAND, K. (2021). Ambiguity and Conflict in Policy Implementation: The Case of the New Care Models (Vanguard) Programme in England. *Journal of Social Policy*, *50*(2), 285–304. https://doi.org/DOI: 10.1017/S0047279420000082

Creswell, J. W., & Poth, C. N. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (4th ed.). SAGE Publications. https://lccn.loc.gov/2016052733

Curran, F. C., Carlo, S., & Harris-Walls, K. (2024). Making the Data Visible: A Systematic Review of Systems-Level Data Dashboards for Leadership and Policy in Education. *Review of Educational Research*, *96*(1). https://doi.org/10.3102/00346543241288249

Damayanti, S., & Rizal, D. A. (2021). Pemanfaatan Sistem Informasi Pendidik dan Tenaga Kependidikan (SIMPATIKA) Sebagai Dasar Pengambilan Keputusan dan Kebijakan di Kementerian Agama. *Nusantara: Jurnal Pendidikan Indonesia*, *1*(1). https://journal.rumahindonesia.org/index.php/njpi/index

DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Management Information Systems*, *19*(4), 9–30. https://doi.org/10.1080/07421222.2003.11045748

Direktorat Jenderal Pendidikan Islam. (2026). *Surat Edaran: Impelementasi EMIS-GTK Madrasah (baru)*. Direktorat Jenderal Pendidikan Islam, Kementerian Agama Republik Indonesia. https://srikandi.arsip.go.id/result-scan/155tSLSaKgqjKM7m0-leLw

Fajar. (2021). *Transformasi Digital Pendidikan Keagamaan, Kemenag Rilis EMIS 4.0* (Berita). Kanwil Kementerian Agama Provinsi DKI Jakarta. https://dki.kemenag.go.id/berita/transformasi-digital-pendidikan-keagamaan-kemenag-rilis-emis-40-ot3KW

Ghalavand, H., Shirshahi, S., Rahimi, A., Zarrinabadi, Z., & Amani, F. (2024). Common data quality elements for health information systems: a systematic review. *BMC Medical Informatics and Decision Making*, *24*(1), 243. https://doi.org/10.1186/s12911-024-02644-7

Haug, N., Dan, S., & Mergel, I. (2024). Digitally-induced change in the public sector: a systematic review and research agenda. *Public Management Review*, *26*(7), 1963–1987. https://doi.org/10.1080/14719037.2023.2234917

Hill, M., & Hupe, P. (2003). The multi-layer problem in implementation research . *Public Management Review*, *5*(4), 471–490. https://doi.org/10.1080/1471903032000178545

Islami, M. J. (2021). Implementasi Satu Data Indonesia: Tantangan dan Critical Success Factors (CSFs). *Jurnal Komunika: Jurnal Komunikasi, Media Dan Informatika*, *10*(1). https://doi.org/10.31504/komunika.v9i1.3750

Isnani, P., Irwansyah, & Zuliana, E. (2023). Manajemen Operator dalam Meningkatkan Akurasi Administrasi di Sekolah (Studi di MIS Terpadu Al-Ikhwan) Tanjung Morawa. *Jurnal Review Pendidikan Dan Pengajaran*, *6*(3), 160. http://journal.universitaspahlawan.ac.id/index.php/jrpp

Kementerian Agama Republik Indonesia. (2022). *Keputusan Menteri Agama Republik Indonesia Nomor 83 Tahun 2022 tentang Pengelolaan Data Pendidikan pada Kementerian Agama*. Kementerian Agama Republik Indonesia.

Kirmadi, Y., Suryaman, M., & Ismaya, B. (2025). Efektivitas Penggunaan Data Pokok Pendidikan (Dapodik) Sebagai Instrumen Manajemen Pendidikan di Sekolah Menengah Atas. *Jurnal Tahsinia*, *6*(9), 1417–1431. https://doi.org/10.57171/w4jqa069

Kupzyk, K. A., & Cohen, M. Z. (2015). Data Validation and Other Strategies for Data Entry. *Western Journal of Nursing Research*, *37*(4), 546–556. https://doi.org/10.1177/0193945914532550

Lopes, A. S., Sargento, A., & Farto, J. (2023). Training in Digital Skills—The Perspective of Workers in Public Sector. *Sustainability*, *15*(13), 1–15. https://doi.org/None

Luktafiani, S. (2024). Penerapan Education Management Information System (Emis) Sebagai Sistem Informasi Manajemen Pada Madrasah Tsanawiyah. *JURNAL MAPPESONA*, *7*(2), 87–97. https://doi.org/10.30863/mappesona.v7i2.5522

Mahsur, & Margana. (2023). The Roles of School Operators in Managing Information Data as Guarantors of the Quality of Education Services. *Jurnal Manajemen Pendidikan: Jurnal Ilmiah Administrasi, Manajemen Dan Kepemimpinan Pendidikan*, *5*(2), 51–57. mailto:mahsur.2022@student.uny.ac.id

Matland, R. E. (1995). Synthesizing the Implementation Literature: The Ambiguity-Conflict Model of Policy Implementation. *Journal of Public Administration Research and Theory*, *5*(2), 145–174. https://doi.org/10.1093/oxfordjournals.jpart.a037242

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE Publications, Inc.

Mohseni, Z. A., & Masiello, I. (2026). Co-designing, developing, and implementing multiple learning analytics dashboards for data-driven decision-making in education: a design-based research approach. *Educational Technology Research and Development*, *74*(2), 517–548. https://doi.org/10.1007/s11423-025-10577-9

Mubarok, H. (2022). Implementasi Education Management Information System (EMIS) Dalam Mengelola Data Lembaga Di Madrasah Tsanawiyah Darussa'adah Gubugklakah Kecamatan Poncokusumo Kabupaten Malang. *Leadership: Jurnal Mahasiswa Manajemen Pendidikan Islam*, *3*(1), 876. https://doi.org/10.32478/leadership.v3i1.876

Müller-Bloch, C., & Kranz, J. (2015). A Framework for Rigorously Identifying Research Gaps in Qualitative Literature Reviews. *Proceedings of the 36th International Conference on Information Systems (ICIS)*. https://aisel.aisnet.org/icis2015/proceedings/ResearchMethodology/11

Nurzen, M. (2022). Data-based decision making for education planning: strategies for principal success. *Jurnal Konseling Dan Pendidikan*, *10*(4), 589–596. https://doi.org/10.29210/189500

Patton, M. Q. (2015). *Qualitative Research & Evaluation Methods: Integrating Theory and Practice* (4th ed.). SAGE Publications. https://lccn.loc.gov/2014026331

Rahayuningsih, S. (2021). Pengelolaan Dana Bantuan Operasional Sekolah (BOS). *Alhamra Jurnal Studi Islam*, *1*(2), 110–117. https://doi.org/10.30595/ajsi.v1i2.10128

Sabatier, P. A. (1986). Top-Down and Bottom-Up Approaches to Implementation Research: a Critical Analysis and Suggested Synthesis. *Journal of Public Policy*, *6*(1), 21–48. https://doi.org/DOI: 10.1017/S0143814X00003846

Salsabila, N. F. (2026). *Pengaruh Integrasi Sistem Informasi SIMPATIKA/EMIS (EMIS 4.0) Terhadap Efektivitas Kinerja Pegawai di Kementerian Agama Kabupaten Jember*. Program Studi Manajemen Pendidikan Islam, Fakultas Ilmu Tarbiyah dan Keguruan, Universitas Islam Negeri Maulana Malik Ibrahim Malang.

Trisna, R. E., Hidayah, N., Sahudi, & Maarif, S. (2025). Eksistensi Aplikasi EMIS GTK Dalam Meningkatkan Efektivitas Dan Efisiensi Pengelolaan Data Pendidikan Islam. *Kariman: Jurnal Pendidikan Keislaman*, *13*(2 SE-Articles), 256–270. https://doi.org/10.52185/kariman.v13i2.901

Wahab, N. Y. A., Rahman, R. A., Mahat, H., Hudin, N. S., Ramdan, M. R., Razak, M. N. A., & Yadi, N. N. M. (2024). Impacts of Workload on Teachers' Well-Being: A Systematic Literature Review. *TEM Journal*, *13*(3), 2544–2556. https://doi.org/10.18421/TEM133-80

Wahyuni, H., Mutiarin, D., Pribadi, U., Ismail, N. S. A., Purnomo, E. P., & Kumorotomo, W. (2024). Maturity of data interoperability cross-organizations in supporting the concept of one employment data at the ministry and regional government levels. *Cogent Social Sciences*, *10*(1). https://doi.org/10.1080/23311886.2024.2407936

Wang, D., Galster, M., & Morales-Trujillo, M. (2025). Information needs in bug reports for web applications. *Journal of Systems and Software*, *219*, 112230. https://doi.org/https://doi.org/10.1016/j.jss.2024.112230

Wendelborn, C., Anger, M., & Schickhardt, C. (2023). What is data stewardship? Towards a comprehensive understanding. *Journal of Biomedical Informatics*, *140*, 104337. https://doi.org/https://doi.org/10.1016/j.jbi.2023.104337

Wibowo, A. (2021). *MANAJEMEN PERUBAHAN, Change Management*. Yayasan Prima Agus Teknik Bekerja sama dengan Universitas Sains & Teknologi Komputer (Universitas STEKOM).