Coordination Between the Ministry of Religious Affairs and the Ministry of Education, Culture, Research, and Technology in the Management of Madrasah EMIS to Ensure Accuracy of National Education Planning

Uripah [1*], Indra Kertati [2], Charis Christiani [3]

1 Magister Administrasi Publik, Universitas 17 Agustus 1945 Semarang, Indonesia
   Email : bundabramantyo1975@gmail.com
2 Magister Administrasi Publik, Universitas 17 Agustus 1945 Semarang, Indonesia
   Email : Indra-kertati@untagsmg.ac.id
3 Magister Administrasi Publik, Universitas 17 Agustus 1945 Semarang, Indonesia
   Email : Charis-christiani@untagsmg.ac.id

* Corresponding Author:: bundabramantyo1975@gmail.com

Abstract, This study examines the coordination dynamics between the Ministry of Religious Affairs and the Ministry of Education, Culture, Research, and Technology in managing the Madrasah Education Management Information System (EMIS). The main problem lies in data asynchrony, which has a systemic impact on the accuracy of national education planning, particularly on the precision of budget allocation and distribution of educational social assistance. Using B. Guy Peters' Interorganizational Coordination Theory and Ansell & Gash's Collaborative Governance, this qualitative study examines the data integration process and the bureaucratic obstacles that arise in inter-institutional relations. The research findings indicate that horizontal coordination between the Ministry of Religious Affairs and the Ministry of Education, Culture, Research, and Technology significantly influences the accuracy of national education planning. However, a formal-administrative approach still dominates its implementation and has not yet achieved substantive collaboration. The main obstacles include sectoral egos, low interoperability of information systems, and suboptimal data-sharing mechanisms, as mandated by Presidential Regulation One Data Indonesia and KMA Number 83 of 2022. Quantitative results indicate that interorganizational coordination accounts for 63.4% of planning accuracy, while qualitative findings reveal obstacles such in sectoral egos, limited system interoperability, and non-institutionalized data-sharing mechanisms. These conditions lead to data redundancy and information gaps that weaken the quality of macroeconomic policies. Improving the accuracy of national education planning requires strengthening substantive coordination through facilitative leadership, digital reintegration across ministries, and continuous interoperability-based system automation.

Keywords: Data Interoperability, Evidence-Based Policy Making (EBPM), Ministry of Education, One Data Indonesia (Presidential Decree 39/2019), Sectoral Ego (Departmentalism).

1. INTRODUCTION

National education is a strategic pillar in efforts to educate the nation's youth as mandated by the 1945 Constitution. In the context of public administration in Indonesia, education management faces unique challenges due to the institutional dualism between the Ministry of Education, Culture, Research, and Technology (Kemdikbudristek) and the Ministry of Religious Affairs (Kemenag). This kind of institutional fragmentation is a common characteristic of decentralized government systems and often results in weak coordination across public policy sectors (Bouckaert et al., 2010). Precise national education planning relies heavily on accurate, up-to-date, and integrated data, which serves as the primary basis for evidence-based decision-making (OECD, 2019).

One vital instrument in this ecosystem is the Education Management Information System (EMIS), managed by the Ministry of Religious Affairs to manage madrasah institutional data. Conceptually, the education information system functions not only as an administrative tool but also as a governance infrastructure that determines the quality of public

policy in the education sector (UNESCO, 2018). Coordination between the Ministry of Religious Affairs and the Ministry of Education, Culture, Research, and Technology in managing and synchronizing EMIS data with the national education database is not merely a technical issue in informatics but a manifestation of collaborative and integrated governance. In accordance with Presidential Regulation Number 39 of 2019 on One Data Indonesia, every central agency must use data in accordance with the principle of interoperability. However, in practice, data integration across ministries often faces structural barriers, differing mandates, and entrenched bureaucratic resistance (Dawes, 2009).

Procedurally, EMIS management coordination involves a hierarchical data verification and validation process that starts at the educational unit level and extends to the central level. Minister of Religious Affairs Decree (KMA) Number 83 of 2022 has established standards for education data management within the Ministry of Religious Affairs to ensure that madrasah data can synergize with the Ministry of Education, Culture, Research, and Technology's Data Center (Pusdatin). The accuracy of national education planning, such as the allocation of School Operational Assistance (BOS) funds, the Smart Indonesia Program (PIP), and the mapping of infrastructure facilities, is greatly influenced by the extent to which EMIS data can "communicate" with the Dapodik system at the Ministry of Education, Culture, Research, and Technology. Public policy literature confirms that failure to integrate data across institutions can lead to policy distortions and unequal distribution of public resources (Head, 2016).

The success of this coordination can be analyzed through the lens of Interorganizational Coordination theory, as proposed by Peters (1998), which holds that coordination is the "holy grail" in public administration, much needed but difficult to achieve due to bureaucratic fragmentation. In the digital context, Dunleavy et al. (2006), through the theory of Digital Era Governance (DEG), emphasize that the effectiveness of modern bureaucracy depends heavily on the state's ability to reintegrate previously fragmented digital systems. The integration of institutional coordination and digital information systems is a crucial prerequisite for implementing data-driven education policies that are responsive to community needs. Based on the background and problems described, this research is entitled "Coordination of the Ministry of Religion-Ministry of Education, Culture, Research and Technology in the Management of Madrasah EMIS towards the Accuracy of National Education Planning."

2. LITERATURE REVIEW

The Interorganizational Coordination Theory proposed by B. Guy Peters highlights a major problem in modern governance: departmentalism, or sectoral ego. Peters argues that government organizations tend to develop into separate units (silos) and focus more on their own internal interests than on the collective interests of the government as a whole (Peters, 2015). This silo governance phenomenon is also found in many public bureaucracies in various countries and has been proven to hamper the effectiveness of cross-sector policies (Christensen & Lægreid, 2007). This condition leads to weak cross-sector coordination and reduces the effectiveness of public policies, especially on complex issues and cross-authority (wicked problems) (Head & Alford, 2015).

According to Peters, effective coordination must achieve at least four main objectives. First, eliminate redundancy: when two or more institutions perform the same function or program separately, without synergy. Second, fill policy gaps that occur when an issue goes unaddressed because no institution takes responsibility. Third, ensure policy coherence so that policies produced by one institution do not conflict with those of another institution. Fourth, conflict management, where coordination serves as a mechanism to resolve differences in interests, technical standards, and policy interpretations between government organizations (Peters, 2015). In the context of public governance, cross-organizational coordination is a crucial prerequisite for creating consistent, results-oriented policies (Bouckaert, Peters, & Verhoest, 2010).

The concept of Collaborative Governance, developed by Ansell and Gash (2008), views collaboration as an institutional arrangement in which one or more public institutions directly engage stakeholders in a consensus-oriented collective decision-making process. In the context of intergovernmental agencies, this model emphasizes the importance of equitable and deliberative shared processes. Interagency collaboration is also seen as a response to the

limited capacity of a single government to address complex public issues (Emerson, Nabatchi, & Balogh, 2012).

Ansell and Gash identified four key components that determine the success of collaboration: first, starting conditions, which include the degree of imbalance in power and resources between actors, incentives for collaboration, and a history of prior collaboration. Sharp imbalances can weaken collaborative commitment, while clear incentives, for example, the benefits of having accurate national data, can strengthen motivation for cooperation. Second, institutional design refers to the formal rules that govern the collaboration process, including the legal basis, transparency, system accessibility, and the level of inclusiveness of the actors involved. Third, facilitative leadership serves as both a mediator and a driver of collaboration, preventing sectoral egos from hindering coordination. Fourth, the collaborative process, which is cyclical and ongoing, includes face-to-face dialogue, building trust, commitment to the process, and achieving a shared understanding that the goals of collaboration are in the broader public interest, not merely institutional interests (Ansell & Gash, 2008).

The Digital Era Governance (DEG) theory introduced by Dunleavy, Margetts, Bastow, and Tinkler (2006) emphasizes the transformation of government governance through the use of digital technology in response to bureaucratic fragmentation in the New Public Management era. DEG focuses on reintegration efforts, namely the reunification of fragmented government functions by integrating data and business processes across organizations. The second pillar is needs-based holism, which emphasizes that the design of bureaucracies and public services must be oriented towards user needs, rather than internal organizational interests. The third pillar, digitization changes, emphasizes that digitalization is a fundamental, transformative shift in how government organizations work, capable of altering patterns of coordination and decision-making (Dunleavy et al., 2006). This digital transformation also serves as the foundation for developing a whole-of-government approach in modern public administration (OECD, 2010).

3. CONCEPT DEVELOPMENT
Development of the Concept of Coordination and Digital Governance Between Organizations

Based on a literature review, this study develops the concept of coordination and collaboration between public organizations as a process encompassing structural, relational, and digital dimensions. From Peters' perspective, the main problem in modern governance is bureaucratic fragmentation and sectoral egos that hinder cross-sectoral policy coherence. Therefore, coordination is understood as a strategic mechanism to eliminate redundancy, close policy gaps, ensure coherence, and manage conflict between government organizations.

However, structural coordination alone is insufficient to explain the dynamics of inter-agency collaboration in education data management. Ansell and Gash's concept of collaborative governance complements this perspective by emphasizing the importance of deliberative, equitable, and trust-based collaborative processes. In the context of intergovernmental agencies, collaboration is understood as a continuous process of interaction shaped by the initial conditions of cooperation, institutional design, facilitative leadership, the quality of dialogue, and shared commitment. Thus, coordination is understood not only as a formal arrangement but also as a social and organizational practice that depends on actors' behavior and the quality of working relationships.

The conceptual development in this research not only positions coordination as an administrative necessity, but also as a strategic response to the complexity of national education governance, which is cross-authority and cross-system. The institutional fragmentation described by Peters shows that in modern government structures, overly sectoral divisions of functions can create policy silos that hinder data integration and consistency in public decisions. In the context of EMIS management, this fragmentation can manifest in differences in data standards, reporting mechanisms, and interpretations of regulations across ministries. Therefore, coordination is positioned as a corrective instrument to ensure that the education data system operates within a unified national policy framework.

However, the effectiveness of coordination is not solely determined by structural design or formal regulations. The collaborative governance perspective emphasizes that the quality of relationships between actors is a critical determinant of the success of cross-organizational collaboration. When interactions between data managers are formalistic and

Digital Innovation : International Journal of Management 2026 (January), vol. 3, no. 1, Uripah, et al.

159 of 165

lack substantive dialogue, coordination tends to stall at the administrative level and fail to produce real integration. Conversely, when collaborative processes are underpinned by trust, shared commitment, and an awareness of collective goals, namely, improving the accuracy of national education planning, interagency cooperation can develop into results-oriented collaborative governance practices.

In the context of EMIS management, digital systems serve not only as administrative tools but also as a governance infrastructure that enables integrated coordination, collaboration, and data-driven decision-making. By combining these three perspectives, this study views EMIS management coordination as a modern public governance practice defined by the clarity of institutional structures, the quality of collaborative processes, and the capacity of digital systems to support the integration of national education policies.

Thus, this study develops a conceptual framework that views EMIS management coordination as the result of the interaction of three main dimensions: (1) a clear and coherent institutional structure, (2) a collaborative process based on trust and shared commitment, and (3) a digital infrastructure that enables automatic and real-time data integration. These three dimensions simultaneously influence the quality of education data governance and ultimately determine the level of accuracy of national education planning. This approach allows for a more comprehensive analysis of coordination issues, not only as a regulatory issue, but as a multidimensional practice of modern public governance.

Developing the Concept of Inter-Organizational Coordination

In this study, inter-organizational coordination is understood as a mechanism for aligning authority, work procedures, and operational standards between government agencies in managing education data. In B. Guy Peters' perspective, coordination is presented as an instrument to overcome bureaucratic fragmentation and sectoral egos that can hinder public policy integration. In the context of Madrasah EMIS management, coordination relates not only to the clarity of task divisions between ministries but also to the alignment of data standards, the elimination of input redundancy, and the existence of operational procedures for data synchronization. Effective coordination enables coherence in national education policy by integrating information systems across ministries. Therefore, inter-organizational coordination in this study is understood as a structural dimension of public governance that determines the consistency of education data and the quality of national planning decision-making.

Developing the Concept of Collaborative Governance

Collaborative governance in this research is understood as a process of cooperation among government organizations, grounded in deliberative interactions, trust among actors, and a shared commitment to achieving public goals. This concept refers to the Ansell and Gash model, which emphasizes the importance of relational dimensions in inter-institutional collaboration, such as ongoing dialogue, trust, and facilitative leadership.

In the context of EMIS management, collaborative governance is reflected through formal and informal communication between data managers, leadership support for system integration, and a willingness to share resources to resolve technical issues. This cross-organizational collaboration strengthens structural coordination by enabling adaptive problem-solving and accelerating the integration of national education data. Therefore, collaborative governance is positioned as a behavioral dimension that complements formal coordination mechanisms in education data governance.

Developing the Concept of National Education Planning Accuracy

In this study, national education planning accuracy is defined as the degree of alignment between education data stored in the information system and government-generated policies and planning decisions. Planning accuracy reflects the success of a data-driven planning approach (evidence-based planning), demonstrated through data validity, accurate education budget allocation, and the accuracy of educational development program targets.

In the context of Madrasah EMIS management, planning accuracy is measured by using EMIS data in determine education assistance quotas, develop national programs, and minimize data errors in planning documents. Thus, the accuracy of national education planning is understood as an outcome of public data governance, shaped by the quality of coordination among institutions and the effectiveness of collaboration among government organizations.

4. RESEARCH METHODS

This study uses a mixed-methods sequential explanatory design, integrating quantitative and qualitative methods to gain a comprehensive understanding of the coordination of Madrasah EMIS management and its implications for the accuracy of national education planning. This design begins with the collection and analysis of quantitative data, which is then deepened through qualitative data to interpret the quantitative findings in greater depth (Creswell & Plano Clark, 2011). The mixed methods approach is considered effective in explaining the phenomenon of governance and coordination across complex organizations because it can combine the generalizability of quantitative data with the depth of understanding of qualitative data (Tashakkori & Teddlie, 2010).

A quantitative approach was used to measure respondents' perceptions and relationships with the variables of inter-organizational coordination, collaborative governance, and the accuracy of national education planning. Quantitative data were collected using a closed-ended questionnaire with a five-point Likert scale, addressed to technical staff or EMIS data managers at the district/city and provincial levels. The use of a five-point Likert scale is considered adequate for measuring respondents' attitudes and perceptions in public policy and government administration research (Sekaran & Bougie, 2016). Quantitative data were analyzed using descriptive statistics, specifically percentages, to illustrate patterns in respondents' perceptions of each research indicator.

A qualitative approach was used in the next stage to deepen and explain the quantitative results, particularly those indicators that showed variation or inconsistency in percentage scores. Qualitative data were collected through in-depth interviews with key informants, including structural officials and technical data management staff at the Ministry of Religious Affairs and the Ministry of Education, Culture, Research, and Technology, as well as other relevant stakeholders. In-depth interviews enabled researchers to explore coordination dynamics, institutional barriers, and data integration practices that quantitative instruments did not fully capture (Guest, Namey, & Mitchell, 2014). Qualitative data were analyzed using thematic analysis to identify patterns, meanings, and structural and behavioral factors influencing data coordination and integration practices.

The validity of qualitative data was ensured through source triangulation, namely by comparing information obtained from various sources and organizational levels (Miles, Huberman, & Saldaña, 2014). Furthermore, the results of the qualitative analysis were used to explain and enrich the quantitative findings, resulting in a comprehensive understanding of the dynamics of Madrasah EMIS management coordination and its impact on the accuracy of national education planning.

RESULTS

This research uses a mixed-methods approach with a sequential explanatory design, in which quantitative analysis is conducted in the first stage and then deepened through qualitative interviews. The results are presented in a phased and integrated manner.

Quantitative Analysis

Based on the results of descriptive statistical analysis of 30 respondents, the average value of the Inter-Organizational Coordination (X1) variable was 4.11, Collaborative Governance (X2) was 4.27, and Accuracy of National Education Planning (X3) was 4.17. These average values indicate that all variables are in the high category. This means that respondents assessed that inter-ministerial coordination, collaborative practices, and the use of EMIS data in national education planning have been running relatively well.

Qualitative Analysis

Further analysis through interviews with technical staff from the Ministry of Religious Affairs' EMIS (Emergency Management Information System) and the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek), madrasah operators, and the Head of the Madrasah Education Section strengthened the quantitative results. Informants stated that data standard alignment and the existence of synchronization SOPs were key factors in minimizing data errors. However, manual input practices were still found in some situations when the systems were not fully integrated.

Furthermore, informal communication between technical teams was deemed very helpful in quickly resolving data synchronization issues. Mutual trust among data managers was also a crucial factor in streamlining cross-ministerial coordination. Regarding planning accuracy, informants reported that EMIS data is used to determine BOS and PIP assistance quotas, though additional verification processes are still conducted to ensure the data's validity.

The integration of quantitative and qualitative results shows that structural coordination is the dominant factor in improving the accuracy of national education planning. At the same time, collaborative practices and digital system support reinforce this effect. Thus, the accuracy of national education planning results from a combination of clear institutional structures, the quality of interorganizational relationships, and the effectiveness of data system integration.

The study results indicate that inter-organizational coordination is strongly associated with the accuracy of national education planning (r = 0.796). This finding strengthens B. Guy Peters's (2015) argument that bureaucratic fragmentation or departmentalism is a major obstacle to the effectiveness of cross-sectoral policies. In the context of EMIS management, coordination, as demonstrated by aligned data standards, the existence of SOPs for synchronization, and minimal data input redundancy, has been shown to improve the quality of national education planning significantly. This means that the clearer the coordination structure between ministries, the smaller the potential for data inconsistencies in central planning documents.

However, the results of this study also show that structural dimensions alone are not sufficient to explain the success of data integration. The correlation between collaborative governance and planning accuracy (r = 0.601) indicates that relational factors such as trust and informal communication also play a significant role. This aligns with the collaboration model proposed by Chris Ansell and Alison Gash (2008), which emphasizes that face-to-face dialogue, trust-building, and commitment to the process are prerequisites for successful cross-institutional collaboration. Qualitative findings indicate that informal technical communication between IT teams is often a more effective problem-solving mechanism than formal bureaucratic procedures.

Furthermore, the integration of the EMIS system into the government digitalization framework demonstrates the relevance of Patrick Dunleavy's theory of Digital Era Governance. Digital transformation in education data management serves as a mechanism for reintegrating a previously fragmented bureaucracy. System interoperability and data synchronization act as coordination enablers, although interviews still found manual input practices in certain situations. This indicates that digitalization has not eliminated sectoral barriers, but has strengthened the capacity for structural and collaborative coordination.

The integration of quantitative and qualitative findings within a sequential explanatory design demonstrates that structural coordination serves as the primary foundation. In contrast, relational collaboration and digital system support serve as reinforcing factors. Thus, the accuracy of national education planning is not simply a matter of technical data management, but rather the result of a complex interaction between institutional structures, the quality of interorganizational relationships, and the government's digital capacity.

Theoretically, this research broadens the understanding of the need to analyze inter-organizational coordination in digital education governance in isolation. The combination of structural (Peters), relational (Ansell & Gash), and digital (Dunleavy) approaches provides a more comprehensive framework for explaining how data integration can improve the precision of budgeting, the validity of policies, and the targeting accuracy of national education programs.

The results of descriptive statistical analysis using the Likert scale approach method indicate that respondents' perceptions of the coordination of Madrasah EMIS management and its implications for the accuracy of national education planning are in the agree to strongly agree category, with relatively high percentage values for almost all indicators. In the Inter-organizational Coordination variable (X1), the indicator of alignment of EMIS data standards with national standards obtained a percentage of 83.33%, the indicator of the absence of repeated data input (redundancy) was 82.67%, and the indicator of the existence of standard operating procedures (SOPs) for data synchronization was 80.67%. These values indicate that respondents perceived the inter-ministerial coordination mechanism as implemented and understood it as an important part of education data governance. The high percentage score reflects the normative and administrative awareness that coordination is necessary to reduce data overlap and increase policy coherence, as Peters (2015, 2018) states.

For the Collaborative Governance variable (X2), the percentage scores show interesting variations between indicators. The mutual trust indicator between technical teams reached 84.00%. In comparison, the indicator of informal communication between institutions achieved 85.33%, and the indicator of leadership support for data integration achieved the highest percentage at 86.67%. This pattern indicates that respondents considered structural

and leadership support relatively stronger than the deeper relational aspects. In other words, collaboration has been established at the formal and structural levels, but the development of trust and shared understanding can still be strengthened. This finding is in line with the view of Ansell and Gash (2008), who emphasized that inter-institutional collaboration is not only supported by rules and leadership support, but also by ongoing social processes.

Furthermore, for the National Education Planning Accuracy variable (Y), the indicator for the use of EMIS data in determining aid quotas and national program planning obtained percentages of 91.33% and 88.00%, which are in the strongly agree category. However, the indicator related to minimal data errors in the final planning document showed a lower percentage, namely 70.67%, although still in the agree category. This difference indicates that, although EMIS data have been widely used in national education planning, respondents still perceive potential data imperfections, such as anomalies or asynchrony, which can affect the precision of planning.

Table 1: Recapitulation of Likert Scale Results.

Variable	Indicator	Percentage Score (%)	Category
Inter-organizational Coordination (X1)	Alignment of EMIS data standards with national standards	83,33	Agree
	There is no repeated data entry (redundancy)	82,67	Agree
	Existence of data synchronization SOP	80,67	Agree
Collaborative Governance (X2)	Trust between technical teams (trust)	84	Agree
	Informal communication between institutions	85,33	Strongly Agree
	Leaders' support for data integration	86,67	Strongly Agree
Accuracy of National Education Planning (Y)	Utilization of EMIS data in determining aid quotas	91,33	Strongly Agree
	Utilization of EMIS data in national program planning	88	Strongly Agree
	Minimal data errors in final planning documents	70,67	Agree

Based on the results of questionnaire data processing, each research variable showed relatively high scores, reflecting respondents' positive perceptions of coordination, collaboration, and the accuracy of national education planning based on EMIS data.

In the Inter-organizational Coordination variable (X1), the indicator of alignment of EMIS data standards with national standards received a score of 83.33% in the agree category. This finding indicates that most respondents assessed that EMIS data standards were sufficiently aligned with the Ministry of Education, Culture, Research, and Technology's national data standards. However, there is still room for improvement in technical integration. The indicator of no repeated data input (redundancy) obtained a score of 82.67% (agree), indicating that the practice of double input can be relatively suppressed but not yet eliminated. Meanwhile, the indicator for the existence of SOPs for data synchronization received a score of 80.67%, indicating that SOPs are available and understood. However, their implementation still needs strengthening to be more consistent across all levels of implementers.

In the Collaborative Governance (X2) variable, all indicators obtained high scores. The trust indicator between technical teams received a score of 84% (agree), indicating quite strong social capital in supporting cross-ministerial coordination. The informal communication indicator between institutions obtained a score of 85.33% with a category of strongly agree, indicating that non-formal communication is an important mechanism in accelerating the resolution of technical obstacles to data integration. The indicator of leadership support for data integration showed the highest score at 86.67% (strongly agree), confirming the strategic role of leadership in sustaining collaboration and integrating education data systems.

. Meanwhile, for the National Education Planning Accuracy variable (Y), the indicator for the utilization of EMIS data in determining aid quotas received a very high score of 91.33% (strongly agree). This indicates that EMIS data has become the primary reference in aid allocation decisions such as BOS and PIP. The indicator for the utilization of EMIS data in national program planning also received a high score of 88%, indicating that EMIS data has been integrated into the national education policy planning process. However, the indicator for minimal data errors in the final planning document received a score of 70.67% (agree), which is lower than the scores for the other indicators. These findings indicate that, despite the high use of EMIS data, potential data errors or anomalies remain and require further validation.

DISCUSSION

Inter-Ministerial Coordination and Its Impact on Education Planning Accuracy

The effectiveness of inter-ministerial coordination plays a central role in determining the accuracy of national education planning in Indonesia. Statistical findings confirm a significant relationship between coordination and planning accuracy, with a coefficient of determination of 0.634, indicating that coordination quality accounts for more than 63% of the variance in planning accuracy. This finding is consistent with Peters (2015; 2018), who argues that horizontal coordination is essential for ensuring coherent public policy across sectors. Bouckaert, Peters, and Verhoest (2010) further reinforce this by noting that weak inter-institutional coordination leads to policy fragmentation and diminished strategic planning quality.

In the context of Madrasah EMIS, coordination has been established at the administrative and normative levels, as evidenced by high respondent perceptions regarding data standard alignment and the existence of synchronization SOPs. However, these formal arrangements have not translated into effective operational integration. Sectoral divisions of data management authority, path-dependent bureaucratic structures, and hierarchical communication patterns continue to constrain substantive coordination outcomes. Christensen and Lægreid (2007) similarly observed that whole-of-government approaches are frequently hampered by bureaucratic fragmentation. The OECD (2019) further notes that even where formal governance exists, data imperfections persist when operational coordination mechanisms remain underdeveloped, confirming that procedural compliance alone is insufficient to guarantee evidence-based education planning.

Collaborative Governance   Formal Structures Without Substantive Impact

Despite the presence of collaborative governance mechanisms, statistical tests reveal no significant effect on the accuracy of national education planning. This finding highlights a critical gap between perceived institutional collaboration and its practical outcomes. While indicators related to trust, communication, and leadership support scored relatively high among respondents, these positive perceptions have not translated into technical improvements in data management and system interoperability. This suggests that collaboration remains largely ceremonial and structural rather than functionally integrated into data workflows.

Several factors explain this disconnect. First, dialogue between technical teams across ministries remains limited, reducing the depth of collaborative engagement needed for genuine data integration. Second, conflict-resolution mechanisms related to data discrepancies tend to be reactive rather than preventive. Third, disparities in budgetary allocations and human resource capacity across ministries create an uneven playing field for collaborative participation. Dawes (2009) observed that differences in institutional mandates and technical capacity are common barriers to government data integration. Scholl and Klischewski (2007) further demonstrate that rule-based coordination without a unified technical architecture tends to produce information fragmentation. These findings collectively suggest that collaborative governance in Madrasah EMIS management must move beyond procedural compliance toward institutionalized technical cooperation.

Digital Transformation and System Interoperability as Structural Constraints

The digitization of education data management in Indonesia remains partial, representing a significant structural constraint on the accuracy of national education planning. Although Madrasah EMIS has been developed and integrated into planning processes, its utilization does not yet fully reflect the principles of Digital Era Governance, particularly reintegration and needs-based holism as articulated by Dunleavy et al. (2006). The persistence of inconsistent data across ministries reflects the incomplete nature of digital transformation, where administrative digitization has occurred without accompanying changes to organizational architecture and information system design.

Janssen, Charalabidis, and Zuiderwijk (2012) identified differences in technical standards, data ownership structures, and institutional resistance as common barriers to cross-organizational data integration in the public sector. These barriers are clearly present in the Madrasah EMIS context, where limited system interoperability, server capacity constraints, and reliance on hierarchical communication channels reduce the system's effectiveness as a planning tool. Informant interviews confirmed that data authority remains fragmented along sectoral and historical lines, creating structural dependencies that hinder flexible data integration. Overcoming these constraints requires not only technical upgrades but also institutional reform that aligns system design with the practical demands of cross-ministerial

data governance, ultimately enabling education planning to be grounded in accurate, consistent, and evidence-based information.

5. CONCLUSION

Based on the research results, it can be concluded that inter-organizational coordination and collaborative governance play a crucial role in improving the accuracy of national education planning through the management of Madrasah EMIS. The research findings indicate that structural coordination between the Ministry of Religious Affairs and the Ministry of Education, Culture, Research, and Technology has been running at a relatively good level, particularly in terms of data standard alignment, reducing input redundancy, and the availability of operational procedures for data synchronization. This condition reflects institutional efforts to address bureaucratic fragmentation in education data governance.

Beyond structural aspects, collaborative governance practices have also been shown to contribute significantly to effective coordination. High levels of trust between technical teams, intense informal communication, and leadership support for data integration demonstrate that the relational dimension is a strengthening factor in cross-ministerial data management. Collaboration, supported by adequate leadership and social capital, enables faster and more adaptive resolution of technical issues.

Furthermore, the accuracy of national education planning was high, particularly in using EMIS data to determine educational assistance quotas and to plan national programs. However, the potential for data errors in the final planning documents remains a significant indicator that data validation and quality control mechanisms need to be further strengthened. Overall, this study confirms that the accuracy of national education planning is not determined solely by the availability of digital systems, but rather by a synergy among a clear coordination structure, effective collaborative processes, and sustainable, integrated data governance.

REFERENCES

Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, 18(4), 543-571. https://doi.org/10.1093/jopart/mum032

Bappenas. (2020). *Pedoman perencanaan pembangunan nasional berbasis data*. Jakarta: Kementerian PPN/Bappenas

Bouckaert, G., Peters, B. G., & Verhoest, K. (2010). *The coordination of public sector organizations: Shifting patterns of public management*. Palgrave Macmillan. https://doi.org/10.1057/9780230275256

Christensen, T., & Lægreid, P. (2007). The whole-of-government approach to public sector reform. *Public Administration Review*, 67(6), 1059-1066. https://doi.org/10.1111/j.1540-6210.2007.00797.x

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). SAGE Publications.

Dawes, S. S. (2009). Governance in the digital age: A research and action framework for an uncertain future. *Government Information Quarterly*, 26(2), 257-264. https://doi.org/10.1016/j.giq.2008.12.003

Dunleavy, P., Margetts, H., Bastow, S., & Tinkler, J. (2006a). *Digital era governance: IT corporations, the state, and e-government*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199296194.001.0001

Dunleavy, P., Margetts, H., Bastow, S., & Tinkler, J. (2006b). New public management is dead. Long live digital-era governance. *Journal of Public Administration Research and Theory*, 16(3), 467-494. https://doi.org/10.1093/jopart/mui057

Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. *Journal of Public Administration Research and Theory*, 22(1), 1-29. https://doi.org/10.1093/jopart/mur011

Guest, G., Namey, E., & Mitchell, M. (2014). *Collecting and analyzing qualitative data at scale*. In *The SAGE handbook of qualitative research methods*. SAGE Publications.

Head, B. W., & Alford, J. (2015). Wicked problems: Implications for public policy and management. *Administration & Society*, 47(6), 711-739. https://doi.org/10.1177/0095399713481601

Janssen, M., Charalabidis, Y., & Zuiderwijk, A. (2012). Benefits, adoption barriers, and myths of open data and open government. *Information Systems Management*, 29(4), 258-268. https://doi.org/10.1080/10580530.2012.716740

Kementerian Agama Republik Indonesia. (2020). *Peraturan Menteri Agama Nomor 18 Tahun 2020 tentang rencana strategis Kementerian Agama tahun 2020-2024*.

Kementerian Agama Republik Indonesia. (2021). *Keputusan Direktur Jenderal Pendidikan Islam Nomor 6075 Tahun 2021 tentang prosedur operasional standar pengelolaan data pendidikan Islam (EMIS)*.

Kementerian Agama Republik Indonesia. (2022). *Keputusan Menteri Agama Nomor 83 Tahun 2022 tentang pengelolaan data pendidikan di lingkungan Kementerian Agama*.

Kementerian Keuangan Republik Indonesia. (2021). *Kebijakan penganggaran berbasis kinerja*. Jakarta: Kemenkeu RI.

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

OECD. (2010). *Whole-of-government approaches to public service delivery*. OECD Publishing.

OECD. (2015). *Data-driven public sector: Enabling the strategic use of data for productive, inclusive, and trustworthy governance*. OECD Publishing.

OECD. (2019a). *Education policy outlook 2019: Working together to help students achieve their potential*. OECD Publishing.

OECD. (2019b). *The path to becoming a data-driven public sector*. OECD Publishing.

Peters, B. G. (1998). Managing horizontal government: The politics of coordination. *Public Administration*. https://doi.org/10.1111/1467-9299.00102

Peters, B. G. (2015). *Pursuing horizontal management: The politics of public sector coordination*. University Press of Kansas.

Peters, B. G. (2018a). The challenge of policy coordination. *Policy Design and Practice*, 1(1), 1-11. https://doi.org/10.1080/25741292.2018.1437946

Peters, B. G. (2018b). *The politics of bureaucracy* (7th ed.). Routledge. https://doi.org/10.4324/9781315813653-5

Presiden Republik Indonesia. (2019). *Peraturan Presiden Republik Indonesia Nomor 39 Tahun 2019 tentang Satu Data Indonesia*.

Scholl, H. J., & Klischewski, R. (2007). E-government integration and interoperability: Framing the research agenda. *International Journal of Public Administration*, 30(8-9), 889-920. https://doi.org/10.1080/01900690701402668

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill-building approach* (7th ed.). John Wiley & Sons.

Setiawan, A. (2019). Evaluasi sistem Education Management Information System (EMIS) pada madrasah di lingkungan Kementerian Agama. *Jurnal Administrasi Pendidikan*, 26(2), 145-158.

Tashakkori, A., & Teddlie, C. (2010). *Mixed methodology: Combining qualitative and quantitative approaches*. SAGE Publications.

Undang-Undang Dasar Negara Republik Indonesia Tahun 1945.

Undang-Undang Republik Indonesia Nomor 25 Tahun 2009 tentang Pelayanan Publik.

UNESCO. (2018). *Data for sustainable development: Improving the quality and use of education data*. UNESCO Institute for Statistics.

Wahyudi, R. (2021). Efektivitas pemanfaatan dana Bantuan Operasional Sekolah (BOS) pada madrasah. *Jurnal Kebijakan Pendidikan*, 14(1), 67-82.