

Management of the Basic Education Data System (Dapodik) in Tolikara Regency: Challenges and Strategies for Strengthening Data-Driven Education Governance

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ABSTRACT

Digital transformation in education has encouraged the utilization of information systems as a primary instrument for data-driven educational governance. One of the strategic systems is the Basic Education Data System (Dapodik), which serves as the main source of educational data for planning, implementation, evaluation, and policy-making processes in Indonesia. However, the implementation of Dapodik in remote areas continues to face various challenges that may affect data quality and the effectiveness of educational policies. This article aims to analyze the strategic role of Dapodik in educational governance, identify challenges in managing Dapodik administration in Tolikara Regency, and formulate strategies to strengthen digital-based educational data management. This study employs a literature review method with a descriptive qualitative approach by analyzing scientific publications, government regulations, policy documents, and previous relevant studies. The findings indicate that Dapodik management in remote areas is constrained by limited human resource competencies, inadequate technological infrastructure, weak organizational governance, and the underutilization of data for decision-making processes. Therefore, strengthening strategies are required through capacity building for operators, digital infrastructure development, improved monitoring and evaluation systems, and the cultivation of a data-driven decision-making culture. Strengthening Dapodik management is expected to improve educational governance and support more effective, accurate, and sustainable educational policy formulation.

INTRODUCTION

Digital transformation has become one of the primary agendas in educational reform across many countries, including Indonesia. The rapid advancement of information and communication technologies has shifted educational management paradigms from conventional administrative systems toward more integrated, efficient, and accountable data-driven systems. In this context, data has emerged as a strategic asset that serves as the foundation for educational planning, implementation, monitoring, evaluation, and decision-

making processes. The availability of accurate, up-to-date, and reliable data is therefore a fundamental prerequisite for achieving quality educational governance.

As part of its efforts to establish data-driven educational governance, the Indonesian government, through the Ministry of Education, Culture, Research, and Technology, developed the Basic Education Data System (Dapodik) as the national educational data management system. Dapodik functions as an integrated information system that collects and manages various educational data, including student records, teachers and educational personnel, educational institutions, infrastructure, and other supporting information. The data stored within the Dapodik system serves as the primary basis for numerous strategic government policies, such as the allocation of School Operational Assistance (BOS), the Indonesia Smart Program (PIP), teacher workforce planning, educational quality mapping, and the formulation of national education policies.

The increasingly strategic role of Dapodik requires educational institutions to manage educational data accurately and sustainably. Nevertheless, the implementation of Dapodik across different regions in Indonesia continues to face numerous challenges. Previous studies have indicated that the quality of Dapodik management is influenced by several factors, including human resource competencies, technological infrastructure availability, institutional support, and the organizational culture of data utilization. When one or more of these factors are inadequate, the quality of educational data may be compromised, potentially affecting the accuracy and effectiveness of policy formulation and implementation.

These challenges become more complex in remote areas characterized by limited infrastructure and restricted access to technology. Tolikara Regency, located in the Papua Highlands Province, represents one such region with challenging geographical conditions. Most areas of Tolikara consist of mountainous terrain with limited transportation and communication access. These conditions have significant implications for various aspects of educational administration, including the management of digital-based educational systems such as Dapodik.

In the context of Dapodik management, limited internet connectivity, inadequate technological facilities, and insufficient operator competencies are among the most common challenges encountered in remote areas. Consequently, the processes of data entry, updating, and synchronization are often unable to operate optimally. Such conditions may create discrepancies between the data recorded in the system and the actual conditions in the field. Meanwhile, the quality of educational data plays a critical role in determining the effectiveness of planning and decision-making processes at both regional and national levels.

Beyond technical issues, Dapodik management is also closely related to managerial and organizational governance aspects. Effective educational data management requires not only reliable technological systems but also competent human resources, clear operational procedures, adequate supervision mechanisms, and an organizational culture that recognizes

the importance of data in decision-making processes. Therefore, strengthening Dapodik management should be viewed as an integral component of broader efforts to improve the quality of educational governance.

Previous studies have examined Dapodik implementation from various perspectives, including system effectiveness, information service quality, educational data utilization, and the implementation of the One Data Education policy. However, most existing studies have focused on regions with relatively adequate technological infrastructure and access. Research specifically addressing the challenges of Dapodik management in remote areas with limited infrastructure, particularly in Tolikara Regency, remains limited. This lack of focused research indicates a significant research gap that warrants further academic attention.

The novelty of this article lies in its comprehensive analysis of Dapodik administration within the context of remote regions by highlighting the interrelationships among human resource capacity, technological infrastructure, organizational governance, and data utilization culture. This study not only identifies the key challenges affecting Dapodik management but also proposes strategic approaches for strengthening data-driven educational governance that are relevant to the unique characteristics of remote regions.

Based on the foregoing discussion, this article aims to analyze the strategic role of Dapodik in educational governance, identify the major challenges associated with Dapodik administration in Tolikara Regency, and formulate strategies for strengthening educational data management to support effective, accurate, and sustainable educational policymaking.

METHOD

This study employed a literature review method using a descriptive qualitative approach. The literature review was selected to obtain a comprehensive understanding of the administration and management of the Basic Education Data System (Dapodik), particularly the challenges and development strategies associated with its implementation in geographically remote areas such as Tolikara Regency.

The research data were collected from various relevant literature sources, including national and international journal articles, scholarly books, government regulations, educational policy documents, and official publications issued by the Ministry of Education, Culture, Research, and Technology related to Dapodik and data-driven educational governance.

The analysis was conducted through three stages: literature identification, source selection and evaluation, and thematic synthesis. The selected literature was critically examined to identify patterns, challenges, and management strategies related to Dapodik that are relevant to the context of remote regions. The findings were then presented descriptively to provide a deeper understanding of strategies for strengthening data-driven educational governance.

RESULTS AND DISCUSSION

Results

1. The Strategic Role of the Basic Education Data System (Dapodik) in National Educational Governance

The rapid advancement of information technology has transformed educational management from conventional administrative practices into a data-driven governance framework. Within this context, the Basic Education Data System (Dapodik) serves as a strategic instrument functioning as the central repository of educational data in Indonesia. Dapodik not only facilitates the collection of administrative data but also serves as a primary reference for formulating educational policies at the national level.

The information stored within Dapodik encompasses student data, teachers and educational personnel records, educational institutions, infrastructure, and other supporting educational components. These data are utilized by the government for educational planning, teacher allocation, the distribution of School Operational Assistance (BOS) funds, the Indonesia Smart Program (PIP), and the development of educational quality improvement initiatives.

From a modern educational management perspective, the availability of accurate and reliable data is a fundamental requirement for effective decision-making. Consequently, the quality of Dapodik management is closely linked to the quality of educational policies produced by government agencies and educational institutions. The more accurate and comprehensive the available data, the more effective and evidence-based educational policies can be formulated.

According to the Information Systems Success Model proposed by DeLone and McLean (2003), the effectiveness of an information system is determined by system quality, information quality, and service quality. These dimensions are essential indicators for evaluating the effectiveness of Dapodik as a national educational information system. Weaknesses in any of these dimensions may reduce the overall effectiveness of the system and potentially lead to less accurate policy decisions.

2. Challenges in Dapodik Management in Remote Areas

The implementation of Dapodik across Indonesia demonstrates varying levels of effectiveness. One of the primary factors influencing this variation is the geographical and infrastructural characteristics of different regions. Remote areas generally face more complex challenges than urban regions due to limitations in infrastructure, human resources, and access to information technology.

Tolikara Regency represents one such region where these challenges are evident. Its predominantly mountainous terrain limits transportation and communication accessibility, directly affecting the effectiveness of educational information management systems, including Dapodik.

The first challenge concerns human resource capacity. Effective Dapodik management requires technical competencies in operating the application, understanding data management principles, and conducting regular data validation. However, limited training opportunities and inadequate technical support have resulted in uneven levels of competency among Dapodik operators in many remote regions.

The second challenge relates to technological infrastructure. Unstable internet connectivity remains a major obstacle to data synchronization processes. In addition, limited access to computer equipment and insufficient electricity supply in certain areas further affect the quality of educational data management.

The third challenge involves organizational governance. In many educational institutions, Dapodik operators are required to perform multiple administrative responsibilities simultaneously. This increased workload can reduce the effectiveness and accuracy of data management activities.

Furthermore, the culture of data utilization remains underdeveloped in many educational settings. Educational data are often collected solely to fulfill administrative requirements rather than being actively utilized as a basis for planning and policy development. As a result, the strategic function of Dapodik as a decision-support tool has not yet been fully realized.

3. Analysis of Dapodik Management in Tolikara Regency

Within the context of Tolikara Regency, Dapodik management can be viewed as part of a broader process of educational digital transformation that continues to face substantial limitations. Administratively, the implementation of Dapodik follows national regulations, requiring schools to regularly update and synchronize educational data through the established system.

Nevertheless, the effectiveness of implementation is influenced by both internal and external factors. Internally, limited competencies among data managers remain a significant challenge. High-quality data management requires continuous verification, validation, and updating processes. Without adequate technical skills, the likelihood of data inaccuracies increases considerably.

Externally, geographical conditions and infrastructural limitations significantly affect the implementation of digital educational administration. Inconsistent internet availability often hinders timely data synchronization, resulting in delays in data updates and potentially reducing the quality and reliability of information stored within the system.

From an educational information systems perspective, these conditions suggest that the effectiveness of Dapodik management in remote areas is influenced not only by technological factors but also by human and organizational dimensions. Therefore, improvement efforts should adopt a holistic approach rather than focusing exclusively on technological solutions.

4. Strategies for Strengthening Dapodik Management

Improving the quality of Dapodik management requires comprehensive and sustainable strategies. The first strategy involves strengthening human resource capacity through continuous training and professional development programs for Dapodik operators. Such initiatives can enhance both technical and managerial competencies necessary for effective data management.

The second strategy focuses on improving technological infrastructure. Local governments should prioritize the provision of reliable internet access, computer facilities, and other technological resources necessary to support educational data management. In areas with limited connectivity, the development of hybrid offline-online synchronization mechanisms may provide a practical solution.

The third strategy involves strengthening organizational governance through the development and implementation of clear Standard Operating Procedures (SOPs). Well-defined procedures help ensure that data management activities are conducted systematically, consistently, and accountably.

The fourth strategy is the enhancement of monitoring and evaluation systems. Regular supervision can help identify data inaccuracies at an early stage, thereby improving overall data quality. Monitoring mechanisms also contribute to greater accountability among stakeholders involved in Dapodik management.

The fifth strategy is fostering a culture of data utilization in educational decision-making. Educational data stored within Dapodik should be actively utilized for planning, performance evaluation, and policy formulation. Through this approach, Dapodik can function not merely as an administrative tool but also as a strategic instrument for improving educational quality.

5. Implications for Educational Policy

The quality of Dapodik management has significant implications for the broader educational system. Accurate data contribute to more effective and targeted educational policies, whereas poor-quality data may result in planning errors and ineffective policy implementation.

In remote regions such as Tolikara Regency, improving the quality of Dapodik management can provide substantial benefits for both local governments and educational institutions. Reliable educational data enable more accurate assessments of educational needs, including teacher distribution, infrastructure development, and the allocation of educational assistance programs.

Furthermore, strengthening Dapodik management supports the implementation of Indonesia's One Data Education policy, which has become a key governmental priority. Effective data integration enhances educational governance while promoting transparency and

accountability in decision-making processes. Therefore, Dapodik management should be regarded as a strategic investment in sustainable educational development.

Discussion

1. Basic Education Data System (Dapodik)

The Basic Education Data System (Dapodik) is Indonesia's national educational data management system developed by the Ministry of Education, Culture, Research, and Technology as the primary database for educational administration and governance. Dapodik integrates various educational data, including student records, teachers and educational personnel, educational institutions, and educational infrastructure into a standardized information system.

In practice, Dapodik functions not only as an administrative information system but also as the primary source of data for evidence-based educational policymaking. Various government programs, such as the School Operational Assistance Program (BOS), the Indonesia Smart Program (PIP), teacher distribution planning, and educational development initiatives, rely on data generated by Dapodik as the basis for decision-making processes.

2. Education Management Information System (EMIS)

Dapodik can be understood as a component of the broader Education Management Information System (EMIS). UNESCO defines EMIS as a coordinated system involving people, institutions, technologies, and processes designed to generate high-quality data that support educational decision-making. EMIS plays a crucial role in improving educational planning, monitoring, evaluation, and overall governance.

According to UNESCO, the effectiveness of an EMIS is determined not only by the availability of technological infrastructure but also by the capacity of human resources, the quality of governance, and the ability of institutions to utilize data effectively in decision-making processes. Therefore, the management of Dapodik as part of the EMIS framework requires a comprehensive and sustainable approach to ensure the reliability and usefulness of educational data.

3. DeLone and McLean Information Systems Success Model

To analyze the effectiveness of Dapodik management, this study adopts the Information Systems Success Model developed by William H. DeLone and Ephraim R. McLean. This model is among the most widely applied theoretical frameworks in information systems research and has been extensively used to evaluate the performance of organizational information systems.

DeLone and McLean propose that the success of an information system is determined by six key dimensions: system quality, information quality, service quality, system use, user

satisfaction, and net benefits. The interaction among these dimensions influences the overall effectiveness of an information system in achieving organizational objectives.

In the context of Dapodik, system quality refers to the availability of technological infrastructure and the usability of the application. Information quality relates to the accuracy, completeness, and timeliness of educational data. Service quality concerns the technical and institutional support provided to system users. These dimensions are particularly important in determining the effectiveness of Dapodik management in remote regions such as Tolikara Regency.

4. Data-Driven Decision Making in Educational Governance

The development of educational information systems has encouraged the emergence of Data-Driven Decision Making (DDDM), an approach in which decisions are based on the analysis of valid, reliable, and relevant data. Within this paradigm, data serve not merely as administrative records but as a strategic resource for planning, implementation, monitoring, and evaluation activities.

UNESCO emphasizes that an effective educational information system should be capable of generating data that support accurate educational planning and evidence-based policymaking. Consequently, the quality of Dapodik management has direct implications for the effectiveness of educational governance and the successful implementation of educational development programs. Through the application of data-driven decision-making principles, educational institutions and policymakers can formulate more responsive, efficient, and sustainable educational policies.

CONCLUSION

The Basic Education Data System (Dapodik) plays a highly strategic role in supporting data-driven educational governance in Indonesia. Beyond functioning as an educational administrative system, Dapodik serves as a primary instrument for educational planning, implementation, evaluation, and policymaking at various levels of government and educational institutions. Consequently, the quality of data generated through Dapodik is a critical factor in determining the effectiveness of educational policies and programs.

Based on the findings of this literature review, Dapodik management in remote regions such as Tolikara Regency continues to face multidimensional challenges. These challenges include limited human resource competencies, inadequate information technology infrastructure, weak organizational governance, and the underdeveloped culture of data utilization in decision-making processes. Such constraints may negatively affect the quality of educational data and, consequently, the accuracy and effectiveness of educational policies.

Addressing these challenges requires comprehensive and sustainable strengthening strategies. These include enhancing the capacity of Dapodik operators through continuous

training and professional development, improving digital infrastructure, strengthening monitoring and evaluation mechanisms, establishing clear standard operating procedures, and fostering a culture of data-driven decision-making. Through these efforts, Dapodik can function more effectively as a foundation for educational governance that is transparent, accountable, efficient, and sustainable.

This article recommends greater attention to the management of educational information systems in remote regions as part of broader efforts to promote equitable educational quality and strengthen evidence-based educational policymaking in Indonesia. Future policies should prioritize both technological and human resource development to ensure that data-driven educational governance can be implemented effectively across all regions, including geographically disadvantaged areas.

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