The Integration of Quality Management and Decision-Making Processes within Educational Organizations

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Abstrak

Penelitian ini bertujuan untuk mengeksplorasi bagaimana integrasi manajemen mutu dan proses pengambilan keputusan berbasis data dapat diimplementasikan secara efektif dalam organisasi pendidikan di Indonesia. Pendekatan penelitian yang digunakan adalah deskriptif kuantitatif, dengan pengumpulan data melalui survei yang didistribusikan ke berbagai sekolah dan institusi pendidikan, serta analisis data sekunder dari laporan pemerintah dan publikasi penelitian. Survei mencakup pertanyaan mengenai penerapan manajemen mutu, penggunaan sistem informasi manajemen pendidikan, dan efektivitas pengambilan keputusan berbasis data. Temuan utama penelitian ini menunjukkan bahwa sekolah-sekolah yang telah mengadopsi sistem informasi manajemen pendidikan mengalami peningkatan signifikan dalam kualitas pengambilan keputusan dan efisiensi operasional. Data menunjukkan bahwa sekitar 70 persen sekolah yang menggunakan sistem informasi melaporkan peningkatan dalam kemampuan mereka untuk menganalisis dan menggunakan data untuk mendukung keputusan strategis. Selain itu, penelitian ini menemukan bahwa implementasi manajemen mutu secara konsisten berkontribusi terhadap peningkatan kualitas pendidikan, terutama dalam hal kepuasan siswa dan hasil akademik. Implikasi dari temuan ini adalah bahwa integrasi manajemen mutu dan pengambilan keputusan berbasis data dapat menjadi strategi yang efektif untuk meningkatkan kualitas pendidikan di Indonesia. Pemerintah dan pengelola pendidikan diharapkan dapat mendorong adopsi sistem informasi manajemen pendidikan dan penerapan praktik manajemen mutu di lebih banyak sekolah. Namun, penelitian ini memiliki beberapa limitasi, termasuk keterbatasan dalam cakupan sampel survei dan data sekunder yang mungkin memiliki keterbatasan dalam hal keakuratan dan kekinian. Penelitian lebih lanjut dengan metode yang lebih komprehensif dan sampel yang lebih luas diperlukan untuk mengkonfirmasi temuan ini dan mengembangkan strategi implementasi yang lebih baik.

Kata Kunci: Manajemen Mutu, Pengambilan Keputusan Berbasis Data, Kualitas Pendidikan, Sistem Informasi Manajemen, Indonesia

Abstract

This study aims to explore how the integration of quality management and data-driven decision-making processes can be effectively implemented in educational organizations in Indonesia. The research approach used is descriptive quantitative, with data collection through surveys distributed to various schools and educational institutions, as well as secondary data analysis from government reports and research publications. The survey included questions regarding the implementation of quality management, the use of education management information systems and the effectiveness of data-based decision-making. The main findings of this study show that schools that have adopted education management information systems experience significant improvements in the quality of decision-making and operational efficiency. The data showed that about 70 percent of schools using information systems reported improvements in their ability to analyze and use data to support strategic decisions. In addition, this study found that the implementation of quality management consistently contributes to improved education quality, especially in terms of student satisfaction and academic outcomes. The implication of these findings is that the integration of quality management and data-driven decision-making can be an effective strategy to improve education quality in Indonesia. The government and education managers are expected to encourage the adoption of education management information systems and the implementation of quality management practices in more schools. However, this study has some limitations, including the limited scope of the survey sample and secondary data that may have limitations in terms of accuracy and currency. Further research with more comprehensive methods and a wider sample is needed to confirm these findings and develop better implementation strategies.

Introduction

In the context of intensifying global competition, the quality of education represents a pivotal element in a country's development trajectory (Florescu et al., 2019; Tajuddin, 2015), including that of Indonesia (Kusmawan, 2015; Subaidi et al., 2023). The provision of high-quality education can facilitate the development of superior and competitive human resources (Trisnaningsih & Permatasari, 2018). However, the challenges facing the Indonesian education system are multifaceted and significant. These include inadequate infrastructure, quality disparities between urban and rural areas, and suboptimal school management. The implementation of quality management in educational institutions represents a strategic effort to enhance the overall quality of education (Mateos-Ronco & Hernández Mezquida, 2018).

The integration of quality management into the decision-making process in educational institutions can facilitate the creation of a more efficient and effective system (Jesus-Silva et al., 2023). In Indonesia, the implementation of quality management concepts continues to encounter several challenges, including a lack of understanding and commitment from key stakeholders, as well as limited resources (Hota et al., 2022). Indeed, the implementation of effective quality management can enable educational institutions to respond more effectively to the needs of their students and the wider community, facilitating continuous improvement based on accurate data and analysis.

The practice of data-driven decision-making is becoming increasingly prevalent in public service (Lawelai et al., 2023), including the context of modern education (Wiseman & Davidson, 2018). In Indonesia, a considerable number of schools and universities continue to rely on conventional decision-making methods that are not supported by valid and reliable data (Abdusyakur & Poortman, 2019). The integration of quality management with decision-making processes is anticipated to enhance the capacity of educational institutions to respond effectively to dynamic challenges and changes. Consequently, this study aims to explore the effective implementation of the integration of quality management and decision-making processes in educational organizations in Indonesia, as well as identify key factors that support its success.

A review of social data from Indonesia reveals that the quality of education remains highly variable and frequently inequitable (Dharmawan & Suryadarma, 2021). As evidenced by data from the Central Bureau of Statistics (BPS), significant disparities are evident in the human development index (HDI) across various Indonesian provinces. In some regions, the quality of education remains considerably below the national standard, particularly in remote and less developed areas. These disparities have a direct impact on the quality of human resources produced, which in turn affects national competitiveness (Tang et al., 2022).

Furthermore, the results of the Program for International Student Assessment (PISA) survey indicate that Indonesian students' proficiency in reading, mathematics, and science remains below the average of Organization for Economic Co-operation and Development (OECD) countries (Safari et al., 2020). This underscores the imperative for enhancing the caliber of education through a more systematic and integrated methodology. The implementation of quality management in the context of education provides a clear and structured framework for the enhancement of learning quality and educational outcomes. Nevertheless, this necessitates a robust commitment from all stakeholders, including the government, school administrators, and the broader community.

Moreover, research indicates that effective decision-making in educational management is significantly influenced by the quality of available data (Chen, 2024). In Indonesia, a considerable number of educational institutions have yet to implement comprehensive information systems that can effectively support decision-making processes (Limantara et al., 2019). As a result, decisions are frequently made based on intuition or subjective experience, rather than through the application of accurate and comprehensive data analysis. The integration of data-based quality management is anticipated to facilitate more informed decision-making and a positive impact on the overall quality of education at educational institutions (Jesus-Silva et al., 2023).

The concept of quality management has long been recognized in the field of education management as an effective approach to improving the quality of educational institutions (Firsova et al., 2024). Quality management is concerned with the ongoing enhancement of processes and outcomes through the strategic deployment of tools and techniques (Pramono et al., 2018), including SWOT analysis, benchmarking, and the application of international quality standards. The results of various studies have demonstrated that the consistent implementation of quality management can lead to an increase in student satisfaction, an improvement in the quality of teaching and learning processes, and an enhancement of academic outcomes.

Furthermore, the literature underscores the significance of data-driven decision-making in enhancing the efficacy of educational management (Gaftandzhieva et al., 2023). This approach entails the utilization of data and statistical analysis to buttress strategic, operational, and tactical decisions. The availability of accurate and relevant data allows education managers to identify problems with greater rapidity, allocate resources in a more optimal manner, and develop improvement strategies that are more precisely targeted. Therefore, the integration of quality management and data-driven decision-making is regarded as an exceptionally potent combination for attaining superior outcomes in higher education (Teng et al., 2023).

Moreover, the research highlights the significance of an organizational culture that fosters the implementation of quality management. An organizational culture that fosters innovation, collaboration, and continuous learning is essential for the success of quality management in educational institutions. The literature indicates that the absence of a robust organizational culture may impede the effectiveness of quality management initiatives, potentially leading to resistance and challenges in achieving the desired outcomes. Consequently, the establishment of a supportive organizational culture represents a pivotal aspect of the integration of quality management and decision-making in education.

The imperative for this research is rooted in the urgent necessity to enhance the quality of education in Indonesia, which continues to confront a multitude of structural and operational challenges. The discrepancies in educational quality between different regions and the relatively low performance of Indonesian students in international assessments highlight the need for a more effective and integrated approach. It is anticipated that the integration of quality management and data-driven decision-making will enable educational institutions in Indonesia to address the challenges in a more efficient manner, thereby facilitating the production of a superior and more equitable standard of education.

Furthermore, in an increasingly competitive global context, Indonesia must equip its youth with the requisite skills and knowledge to compete in the global market. The provision of quality education represents the primary foundation for the achievement of this goal. This research is significant in that it can furnish insights and practical guidance for policymakers, school administrators, and other stakeholders in the implementation of more efficacious quality management and decision-making processes, thereby facilitating the overall enhancement of educational quality.

The objective of this research is to examine the potential for integrating quality management and decision-making processes in educational organizations in Indonesia. Specifically, the research will identify the key factors that facilitate the successful implementation of quality management in educational institutions and examine the role of data and analytics in improving decision-making processes. This analysis is anticipated to yield a model or approach that can be widely applied in various educational contexts in Indonesia.

Furthermore, this study offers practical guidance on integrating quality management and data-driven decision-making in educational institutions. The recommendations will be based on empirical evidence and exemplary practices from educational institutions that have successfully implemented this concept. It is hoped that the findings from this study will serve as a valuable resource to enhance the quality of education in Indonesia and encourage the advancement of more evidence- and data-based education policies.

Method

This research uses a descriptive quantitative approach (Buchholz, 2021), to analyze the integration of quality management and decision-making processes in educational organizations in Indonesia. This approach is chosen to provide a clear and measurable picture of the implementation of quality management and the effectiveness of data-driven decision-making in educational institutions. The data used in this study will be obtained from government publications, national surveys, and relevant previous research results.

Primary data will be collected through a survey distributed to various schools and educational institutions in Indonesia. The survey will include questions regarding the implementation of quality management, the use of education management information systems, and the effectiveness of data-based decision-making. Secondary data will be obtained from government reports and publications such as the Central Statistics Agency (BPS), the Ministry of Education and Culture (MoEC), as well as research results published in academic journals. This information will include education statistics, human development index, PISA results, and education performance reports.

The collected data will be analyzed using descriptive statistical techniques to describe the current state of quality management and data-driven decision-making in educational institutions. This analysis will include calculating frequencies, percentages, means and standard deviations for the various variables under study. In addition, correlation analysis will be used to identify the relationship between quality management implementation and decision-making effectiveness. The results of this analysis will be visualized in the form of tables, graphs and maps to facilitate interpretation and presentation of the findings.

To ensure the validity and reliability of the data, this study will use the triangulation technique, by comparing data obtained from various sources (Sánchez-Gómez et al., 2016). Survey results will be compared with secondary data from government publications and previous research results to ensure consistency of findings (Ruggiano & Perry, 2019). In addition, interviews with several education stakeholders, such as principals, teachers and education managers, will be conducted to gain deeper insights into the implementation of quality management and data-based decision-making.

This technique will help in identifying and understanding the various factors that influence the successful integration of quality management and decision-making processes in educational institutions in Indonesia.

Result and Discussion

Quality of Education in Indonesia

The quality of education in Indonesia is frequently the subject of scrutiny, particularly in comparison to international benchmarks (Gaus, 2019). The results of the Program for International Student Assessment (PISA) conducted by the Organization for Economic Co-operation and Development (OECD) indicate that Indonesian students' achievements in reading, mathematics, and science remain below the average of OECD countries. The 2018 Program for International Student Assessment (PISA) data indicates that the mean scores of Indonesian students are 371 for reading, 379 for mathematics, and 396 for science, which is considerably below OECD averages of 487, 489, and 489, respectively. As illustrated in the subsequent figure:
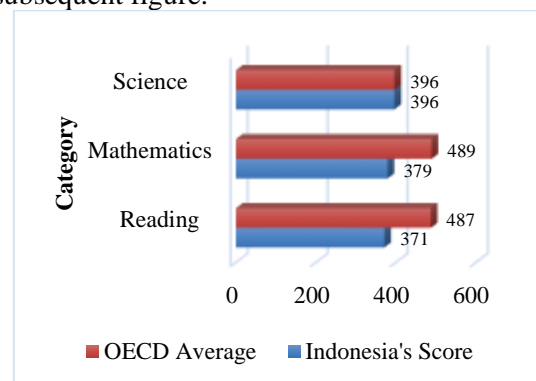

Figure 1. The quality of education in Indonesia
Source:
https://www.oecd.org/pisa/publications/pisa-2018-results.htm)

The Program for International Student Assessment (PISA) 2018 results for Indonesia, when compared to the average of the Organization for Economic Co-operation and Development (OECD) countries, indicate a notable discrepancy in academic performance.

The relatively low score is indicative of the significant challenges currently facing Indonesia's education system. One of the principal factors is the quality of teaching, which still requires improvement. A significant number of teachers have not received sufficient training to enable them to teach in an effective and up-to-

date manner. Furthermore, the curriculum is frequently incongruent with the demands of the professional world and is unable to foster students' creativity and critical thinking abilities.

Furthermore, the issue of access to quality education represents a significant challenge in Indonesia. There are notable disparities between urban and rural areas, with schools in remote locations frequently lacking adequate facilities and qualified teaching staff. This results in students in these areas being denied equal access to quality education, which in turn affects their learning outcomes.

In addition to the challenges, issues pertaining to school management and decision-making have yet to be fully optimized. A considerable number of educational institutions continue to utilize conventional management techniques that are not data-driven. Indeed, decision-making processes that are informed by accurate data and rigorous analysis can facilitate the expeditious identification of problems and the development of more efficacious solutions. For example, the use of data enables schools to ascertain which areas require improvement, whether related to teaching methods, the curriculum, or school facilities.

To address these issues, the Indonesian government has implemented a series of reforms, including curriculum reform, improvements in the quality of teacher training, and the development of educational infrastructure, particularly in remote areas. Furthermore, there are initiatives to enhance the integration of technology in the educational sector. One such initiative is the school digitalization program, which is designed to address disparities in access to technology and to improve the quality of teaching.

Nevertheless, these endeavors must be continually enhanced and tailored to align with the evolving needs of the contemporary era. It is imperative to engage a diverse array of stakeholders, encompassing the government, educational institutions, communities, and the private sector, in the pursuit of enhancing the quality of education in Indonesia. With robust collaboration and unwavering dedication from all stakeholders, it is anticipated that the quality of education in Indonesia will continue to improve, enabling it to contend with other countries globally.

Education Disparities between Regions

Disparities in the quality of education between regions in Indonesia are a serious and complex issue (Rosser, 2020). Based on data from the Central Bureau of Statistics (BPS), the Human Development Index (HDI), which includes education, shows significant differences between provinces. For example, the province of DKI Jakarta has a relatively high HDI of 82.22 in 2021, reflecting better access to quality education, adequate facilities, and more competent teachers. In contrast, provinces such as Papua have a much lower HDI for education, reaching only 60.84, illustrating major challenges in access and quality of education.
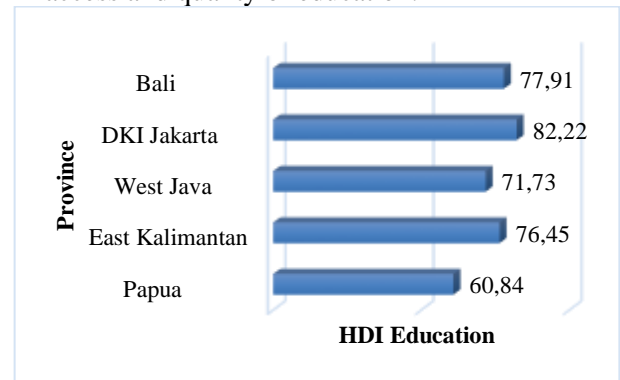

Figure 2. HDI for Education by Province 2021 Source: (https://www.bps.go.id/indicator/26/413/1/-metode-baru-indeks-pembangunan-manusia.html)

The HDI by province provides a more nuanced understanding of this inequality. A positive correlation exists between the level of economic development and the education index in a given area. Conversely, isolated or less developed areas tend to exhibit lower figures in this regard. This inequality is influenced by several factors, including limited infrastructure, a lack of adequate educational facilities, and a shortage of qualified teaching staff. Furthermore, geographical factors are also significant, with remote areas frequently inaccessible, impeding the dissemination of educational resources.

Considering these circumstances, it is imperative that efforts be made to reduce the existing disparities in educational opportunities. The Indonesian government has taken several measures to address this issue, including increasing the education budget, constructing schools in remote areas, and implementing scholarship programs for outstanding students from less developed regions. Nevertheless,

obstacles persist, particularly regarding policy implementation and guaranteeing that the assistance reaches those who require it.

One efficacious strategy for reducing educational disparities is through the reinforcement of education information and management systems. By leveraging information technology, education data can be gathered and analyzed in a more efficacious manner, thereby enabling decision-makers to formulate more targeted policies. For instance, geographic information systems (GIS) can be employed to map locations in need of educational interventions, thus facilitating the allocation of resources in a more efficient and effective manner.

Moreover, it is imperative that the central government, local governments, and the private sector collaborate to address these disparities. Initiatives such as partnership programs with private companies for the construction of educational facilities or the provision of educational technology have the potential to facilitate the accelerated improvement of educational quality in disadvantaged areas. Moreover, it is imperative to provide training and professional development opportunities for teaching staff in remote areas, ensuring that they possess the requisite skills and knowledge to deliver quality education.

Consequently, the reduction of disparities in educational outcomes between regions necessitates a comprehensive and sustainable approach. It is not sufficient to increase budgets and physical development; innovations in education management and cross-sector collaboration are also necessary. It is anticipated that coordinated and sustained efforts will result in a further reduction in the disparities in education between regions in Indonesia. This will ensure that every Indonesian child, regardless of geographical location, has access to quality education.

The Application of Data-Driven Decision-Making in the Context of Education

The application of data-driven decision-making in education has emerged as a pivotal area of focus in the pursuit of enhanced educational quality and efficiency (Teng et al., 2023). In the Indonesian context, the adoption of technology and information systems for educational management is still in a nascent stage of development. An increasing number of educational institutions are recognizing the value of data in informing strategic and operational decision-making processes. An education management information system provides a framework for the collection, analysis, and interpretation of relevant data, which can then be utilized to inform decision-making processes.

The implementation of education management information systems in Indonesian schools has yielded positive outcomes. As illustrated in the following graph, approximately 65 percent of schools have adopted information systems to facilitate their management processes. The system is not only effective in the management of student data, but also in the management of resources, curriculum, and teacher performance.

Table 1. Key Considerations for Higher Education Institutions and Key Opportunities:

Key Considerations for Higher Education Institutions	Key Opportunities
1. Re-define Digital Education Challenge in providing engaging online courses at scale and implementing holistic digital solutions e.g. admissions, lectures, examinations, graduation	• Re-define digital learning pedagogy for both students and lecturers considering synchronous / asynchronous learning methods • Deepen digital engagement / UX across student and faculty value chain
2. Protect and Expand Revenue Challenge in meeting expectations of current / incoming cohorts and seeking new growth opportunities	• Strengthen existing propositions • Identify additional and alternative revenue streams across segments • Diversify customer base and international student concentration
3. Seek Immediate Cost Optimization Challenge in identifying essential and non-essential cost 'buckets' and quantum of cost reductions required to maintain quality service / products	• Assess cost base to focus on costs which create differentiation, reduce spend in certain areas to ensure minimum operations • Eliminate non-core spend
4. Re-Organize for Longer Term Growth Challenge in responding to longer term structural impacts from the pandemic e.g. prolonged social distancing measures	• Re-define aspects of strategy and consider longer term transformation initiatives and associated new capabilities / partnerships

Source: Priyanto & Suhandi, (2022).

Table 1 provides a comprehensive framework for understanding the challenges and opportunities inherent to the management of higher education, particularly in the context of data-driven decision-making. The table

encompasses four principal domains: the redefinition of digital education, the protection and expansion of revenue streams, the optimization of costs, and the reorganization of institutions for long-term growth. Each area has direct implications for the manner in which data can be utilized to inform strategic decision-making processes within educational institutions.

The redefinition of digital education underscores the significance of developing engaging online courses and implementing comprehensive digital solutions, including those pertaining to student admissions, lectures, examinations, and graduation (Priyanto & Suhandi, 2022). In the context of data-driven decision-making, educational institutions can utilize data to gain insight into student needs and preferences pertaining to online learning. The application of data analytics can facilitate the design of more personalized and effective learning experiences, as well as the assessment of the efficacy of diverse digital learning methodologies. For instance, data regarding student enrollment in online courses can be employed to ascertain areas that necessitate enhancement or innovation.

To protect and expand their income streams, educational institutions must meet the existing and future expectations of their student bodies, while also seeking out new avenues for growth. The implementation of data-driven decision-making is of paramount importance in the process of identifying potential sources of income and diversification strategies. The analysis of enrollment trends, course preferences, and labor market data can facilitate the development of new programs that align with student interests and industry needs. Moreover, financial data can assist institutions in the more efficient management of their resources and investments, thereby maximizing revenue.

The optimization of costs requires the identification of costs that are essential to maintaining the quality of service and those that are not. In order to maintain the quality of the service provided, a determination must be made as to the extent of the cost reductions necessary. In this context, the application of data-driven decision-making enables educational institutions to undertake more comprehensive and detailed cost analyses. The analysis of operational cost data can facilitate the identification of areas where efficiency can be enhanced without

compromising the quality of the service provided. For example, an analysis of facility maintenance costs and administrative expenses may reveal potential avenues for cost savings and enhanced operational efficiency.

The reorganization of institutions for long-term growth is confronted with challenges resulting from the long-term structural consequences of the pandemic, including the prolonged implementation of social distancing measures. The implementation of data-driven decision-making can assist institutions in formulating long-term strategies that are more adaptive and sustainable. The utilization of data pertaining to enrollment trends, student satisfaction, and academic performance can facilitate the formulation of policies and strategies that fortify the institution's capacity to confront forthcoming changes and challenges. For instance, data on the efficacy of distance learning programs during the pandemic can be employed to develop a more flexible and inclusive hybrid learning model.

The utilization of data in the decision-making process enables educational institutions to demonstrate greater responsiveness to the needs and challenges they encounter. The integration of data from disparate sources, including education management information systems, student surveys, and financial analysis, enables institutions to make more informed and strategic decisions. The utilization of accurate and pertinent data provides a robust basis for the formulation of novel solutions and strategies that can enhance the quality of education, operational efficacy, and the competitive standing of institutions.

Conclusion

This research explores the integration of quality management and data-driven decision-making processes in educational organizations in Indonesia through three main sub-topics. First, the quality of education in Indonesia, which still performs poorly in international assessments such as PISA, reflects the urgent need for systematic improvement. Second, significant education disparities between regions show that urban areas tend to have better education quality than rural areas, demanding more focused policy interventions. Third, data-driven decision-making in education shows that schools that have adopted education management information

systems are able to improve the quality of decision-making and operational efficiency.

In terms of theory, this study reinforces the importance of quality management and data-driven decision-making as effective approaches to improving education quality. The integration of these two concepts not only helps in continuous improvement but also provides a clear framework for more informed and strategic decision-making. In terms of practice, the findings indicate that the adoption of education management information systems and the implementation of quality management practices should be encouraged in more schools. Governments and education managers need to allocate adequate resources and support to ensure effective implementation. Practical recommendations from this study include building capacity for data analysis in schools and improving access to education technology.

This study has some limitations that need to be acknowledged. Firstly, the survey sample coverage may not fully represent the entire spectrum of schools in Indonesia, which may affect the generalizability of the findings. Secondly, the secondary data used from government publications and previous research results may have limitations in terms of accuracy and currency. Thirdly, this study used a quantitative descriptive approach, so it did not explore in depth the qualitative aspects that might provide additional insights into the implementation of quality management and data-driven decision making. Further research is recommended to use more comprehensive methods and a wider sample to confirm these findings and develop better implementation strategies. In addition, additional qualitative studies could help understand the barriers and challenges schools face in adopting education management information systems and quality management practices.

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