



DEVELOPING A DIGITAL GOVERNANCE AND BUSINESS INTELLIGENCE FRAMEWORK FOR MODERN ISLAMIC EDUCATIONAL MANAGEMENT IN HIGHER EDUCATION

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Abstract

The rapid development of digital technology has encouraged higher education institutions to adopt integrated and data-driven governance systems to improve organizational performance and service quality. This study examines the integration of Digital Governance and Business Intelligence in developing modern Islamic educational management within a graduate program environment. A qualitative descriptive approach was employed through observations, in-depth interviews, and document analysis involving institutional leaders and academic staff. The findings indicate that the implementation of digital governance through Academic Information Systems, electronic administrative services, integrated academic and non-academic data management, and Financial Information Systems has enhanced institutional effectiveness, transparency, accountability, and service quality. The utilization of integrated data also supports evidence-based decision-making, reflecting the practical application of Business Intelligence in educational management. User satisfaction analysis involving 51 graduate students demonstrated a high level of acceptance, with an average satisfaction rate of 89.0% across academic, administrative, data management, and financial services. The study concludes that integrating Digital Governance and Business Intelligence contributes significantly to efficient, transparent, responsive, and sustainable educational management, providing a strategic model for strengthening the competitiveness of Islamic higher education institutions in the Society 5.0 era.



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I. INTRODUCTION

The development of information and communication technology has brought major changes to the governance system of educational institutions, including Islamic educational institutions. The era of the Industrial Revolution 4.0 and

Society 5.0 requires educational institutions not only to adapt to the digitization of academic services, but also to be able to build data-based decision-making systems. This transformation is a strategic need because Islamic educational institutions are currently faced with the challenges of improving service quality, governance transparency, institutional accountability, and global competitiveness. The management of education that is still conventional is considered to be less able to answer the needs of modern organizations that require speed of information access, data integration, and timely decision-making. Therefore, the integration of digital governance and Business Intelligence (BI) is one of the relevant approaches in the development of modern Islamic education management. Digital governance in Islamic education not only focuses on the use of technology as an administrative tool, but also includes the transformation of management systems that integrate information technology-based planning, organizing, implementation, and evaluation. The implementation of academic information systems, e-learning, digital administration, and performance monitoring dashboards has become important indicators in realizing Good Governance in Islamic educational institutions. Research by Fatkurohim, Arifin, and Efendi (2025) shows that digital transformation is able to increase the effectiveness of governance through strengthening data-based planning systems, organizational transparency, and improving the quality of education services that are more measurable and responsive to changes in the strategic environment.

The development of Business Intelligence provides new opportunities for Islamic educational institutions to optimize the use of data in the decision-making process. Business Intelligence allows academic, financial, human resource, and institutional performance data to be processed into strategic information that supports organizational planning and evaluation. Through data visualization, predictive analytics, and management dashboards, leaders of educational institutions can monitor various education quality indicators in real-time. Research on the Islamic education management model based on digital transformation explains that educational leadership supported by data systems and performance visualization is able to produce more effective, visionary, and evidence-based policies. The implementation of digital governance and Business Intelligence in Islamic educational institutions still faces various obstacles. Low digital literacy of human resources, limited technological infrastructure, organizational cultural resistance to change, and lack of optimal integration of information systems are the main challenges that are often found. A conceptual study on the transformation of Islamic education management in the digital era shows that the digital gap and organizational readiness are still obstacles in realizing a modern education management system that is adaptive to technological developments. This condition causes the use of organizational data to not run optimally as a basis for strategic decision-making.

Previous research has largely discussed digital transformation in Islamic education, but most of it still focuses on the digitization of administration, e-learning, and the development of academic services. Ruddin's research (2023), for example, highlights the implementation of digital transformation in administrative management to improve the quality of academic services in madrasas. The results of the study show that digitalization is able to improve the efficiency of academic services, but it has not been in-depth to study the integration of Business Intelligence as a system to support education management decisions. Similarly, the research of Fatkurohim et al. (2025) emphasizes more on the digital transformation model based on Islamic values

without specifically describing the application of Business Intelligence in the strategic data management of Islamic educational institutions. There is a research gap related to the integration of digital governance and Business Intelligence in the development of modern Islamic education management. In fact, these two concepts have great potential to improve the effectiveness, efficiency, transparency, accountability, and quality of decision-making in Islamic educational institutions. Therefore, research on the Integration of Digital Governance and Business Intelligence in the Development of Modern Islamic Education Management is important to produce an educational governance model that is adaptive to technological developments, data-based, and still based on Islamic values such as trust, sura, justice, and professionalism. The results of this research are expected to be a conceptual and practical contribution in realizing a modern, innovative, and globally competitive Islamic education management system.

II. THEORITIS

1. Tata Kelola Digital (*Digital Governance*)

Digital Governance is a management approach that utilizes information and communication technology to improve the effectiveness, efficiency, transparency, accountability, and quality of organizational services. According to Gil-Garcia, Dawes, and Pardo (2018), digital governance is the process of utilizing digital technology in supporting organizational management, decision-making, public services, and coordination between work units in an integrated manner. In the context of education, digital governance functions as a mechanism to manage all academic and non-academic activities through an information system that is connected and electronically documented. Janowski (2015) explains that digital governance is not only oriented towards the use of technology, but also includes organizational transformation through the integration of policies, business processes, human resources, and technological infrastructure to produce more effective and responsive services. Thus, digital governance is the main foundation in realizing a modern educational organization that is adaptive to technological developments. In Islamic educational institutions, digital governance can be realized through the implementation of the Academic Information System (SIKAD), *Learning Management System* (LMS), digital financial system, *e-office*, and institutional performance *monitoring dashboard*. The implementation allows for comprehensive data integration to support more transparent and accountable education management. In this study, digital governance is the main variable that plays a role as an infrastructure for data management and educational services. Digital *governance* is the foundation for building a modern Islamic education management system that is based on technology and integrated with *Business Intelligence* to support strategic decision-making.

2. *Business Intelligence* (BI)

Business Intelligence (BI) is a set of methodologies, processes, architectures, and technologies used to transform raw data into meaningful information for organizational decision-making. According to Turban, Sharda, Delen, and King (2022), *Business Intelligence* is a system that integrates data collection, data storage, data analysis, visualization, and reporting to produce

information that supports organizational strategic decisions. Negash and Gray (2008) define BI as a system designed to acquire, store, access, and analyze data to help organizational leaders understand organizational conditions more comprehensively. Business Intelligence not only generates historical reports, but is also capable of conducting predictive analysis to support future planning. The main components of Business Intelligence include *Data Warehouse*, *Data Mining*, *Online Analytical Processing (OLAP)*, *Dashboard* and *Visualization*, *Decision Support System (DSS)*. In the education sector, BI is used to analyze data on students, lecturers, finance, accreditation, research, community service, and other indicators of education quality. Business Intelligence is a strategic instrument in this research because it is able to process Islamic education data into information that supports the policies and decisions of institutional leaders. The integration of BI with digital governance allows the creation of a *data-driven education management system*.

3. Islamic Education Management Theory

Islamic education management is the process of planning, organizing, implementing, and supervising all educational resources based on Islamic values to achieve educational goals effectively and efficiently. According to Mujamil Qomar (2018), Islamic education management is the process of managing educational institutions that are oriented towards achieving educational goals by prioritizing sharia principles, professionalism, and the benefit of the people. Ramayulis (2017) explained that the management of Islamic education must integrate the values of monotheism, trust, justice, deliberation (*shur*), and responsibility in every organizational activity. Therefore, the success of Islamic educational institutions is not only measured from the academic aspect, but also from the ability of the organization to realize governance in accordance with Islamic values. The main functions of Islamic education management include planning, organizing, actuating, and controlling. These four functions require accurate data support and an integrated information system for the decision-making process to run effectively. This research seeks to develop modern Islamic education management through the integration of digital governance and Business Intelligence. Therefore, Islamic education management theory is a conceptual foundation in explaining how technology can be used to improve the quality of management of educational institutions that remain oriented to Islamic values.

4. Data-Driven Decision-Making Theory

Data-Driven Decision Making (DDDM) is a decision-making approach that uses data as the primary basis for determining organizational policies and strategies. According to Marsh, Pane, and Hamilton (2006), DDDM is a systematic process of collecting, analyzing, interpreting, and using data to improve the effectiveness of organizational decisions. In the context of education, Mandinach and Gummer (2016) explained that the use of integrated data can help leaders of educational institutions in identifying problems, evaluating performance, and designing strategies to improve the quality of education more objectively. Through this approach, organizational decisions are no longer based on mere intuition, but on empirical facts obtained from the

results of data analysis. *Business Intelligence* integrated with digital governance will result in a data-driven decision-making system. Therefore, DDDM theory is a conceptual bridge that connects *digital governance* with the development of modern Islamic education management.

The conceptual model explains that digital governance provides data management infrastructure, Business Intelligence processes data into strategic information, Data-Driven Decision Making becomes an evidence-based decision-making mechanism, and all of these processes support the realization of modern Islamic education management that is effective, transparent, accountable, and in line with Islamic principles such as trust, fairness, *ihsan*, and professionalism.

III. RESEARCH METHODS

3.1. Types of Research

This study uses a descriptive qualitative approach that aims to understand in depth the implementation of the integration of digital governance and Business Intelligence in the development of modern Islamic education management in the Master of Islamic Education Management (MPI) Postgraduate Study Program of STIT Pringsewu. The qualitative approach was chosen because it is able to explore the phenomena, perceptions, experiences, and policies applied by stakeholders in the management of technology-based Islamic higher education. According to Creswell and Creswell (2018), qualitative research focuses on exploring and understanding the meaning given by individuals or groups to a social and organizational problem.

The object of this research is the Master of Islamic Education Management (MPI) Postgraduate Study Program of STIT Pringsewu Lampung. The selection of the research location is based on the institution's efforts in developing digital-based academic governance and the use of information systems to support the management of education, academic services, and managerial decision-making. This research focuses on aspects of planning, implementation, evaluation, and utilization of digital data in supporting the development of effective, efficient, and educational quality management of Islamic education.

3.2. Data Collection Techniques

1. Observations

Observation is a data collection technique that is carried out by directly observing the research object to obtain information that is in accordance with real conditions in the field. According to Sugiyono (2023), observation is used to understand behaviors, activities, and phenomena that occur in a research environment systematically. In this study, observations were made in the Master of Islamic Education Management (MPI) Postgraduate Study Program of STIT Pringsewu to identify the implementation of digital governance that has been implemented in supporting education management.

Observation activities are focused on several important aspects, namely the digital-based academic governance system, the use of the Academic Information System (SIKAD), electronic-based student administration services, academic and non-academic data management, and the use of information technology in the process of monitoring and evaluating study programs. Through observation, the researcher obtained a factual picture of the level of use of digital technology in supporting the effectiveness of educational services and decision-making in the Postgraduate environment of STIT

Pringsewu. The results of the observations were also used to validate the data obtained through interviews and documentation studies.

2. Interview

Interviews are a data collection technique that is carried out through a direct question and answer process between researchers and informants to obtain in-depth information about the phenomenon being studied. According to Creswell and Creswell (2018), interviews in qualitative research aim to explore informants' experiences, perceptions, views, and interpretations of a problem comprehensively. In this study, interviews were conducted in a semi-structured manner so that the researcher had a guideline for questions but still gave the informant the freedom to explain his views broadly. The research informants were selected purposively because they have a strategic role in the development and management of the Postgraduate STIT Pringsewu. The informants consisted of the Chairman of the STIT Pringsewu Foundation Dr. Abdul Hamid, M.Pd.I., the Chairman of STIT Pringsewu Iis Maisaroh, M.Pd., the Director of Postgraduate Dr. Salamun, M.Pd.I., and the Postgraduate Lecturer Dr. Moh. Masrur, M.Pd.I. The interviews focused on digital governance policies, the implementation of academic information systems, the use of data in decision-making, the application of the concept of Business Intelligence in education management, as well as the challenges and strategies for the development of modern Islamic education. The data obtained from the interviews is the main source in understanding how the integration of digital governance and Business Intelligence is applied in Islamic education management at the MPI STIT Pringsewu Postgraduate.

3. Literature Study

Literature study is a data collection technique that is carried out by examining various literature sources that are relevant to the focus of the research. According to Zed (2018), literature studies aim to obtain theoretical foundations, concepts, previous research results, and various scientific information that can be used to support research analysis. In this study, a literature study was conducted by examining various references related to digital governance, Business Intelligence, Islamic education management, digital transformation of education, and data-based decision-making. The literature sources used include scientific books, articles from reputable national and international journals, conference proceedings, higher education policy documents, National Standards for Higher Education (SN-DIKTI), accreditation documents, institutional strategic plans, academic guidelines for the Postgraduate MPI STIT Pringsewu, as well as various regulations that support the development of digital-based higher education. Through a literature study, researchers obtained a strong theoretical framework to explain the relationship between digital governance, Business Intelligence, and the development of modern Islamic education management.

IV. RESULTS AND DISCUSSION

4.1. Research Results

1. Implementation of Digital-Based Academic Governance at the MPI Postgraduate STIT Pringsewu

Based on the results of observations and interviews with informants, the Postgraduate Study Program of the Master of Islamic Education Management (MPI) STIT Pringsewu has implemented digital-based academic governance as

part of efforts to modernize education management. The digital system is used in the management of academic activities ranging from new student admissions, filling out Study Plan Cards (KRS), managing lecture schedules, monitoring the attendance of lecturers and students, to managing student final projects. The implementation shows a transformation of governance from a conventional administrative system to a more integrated and information technology-based system.

The Chairman of the STIT Pringsewu Foundation, Dr. Abdul Hamid, M.Pd.I, explained that the digitalization of governance is a strategic need in facing the current development of higher education.

"We encourage all work units to develop a technology-based work culture so that academic services become faster, more transparent, and more accountable. Digitalization is no longer an option, but a necessity in improving the quality of higher education."

The findings are in line with the *Digital Governance* theory put forward by Gil-Garcia, Dawes, and Pardo (2018), which states that digital governance is an effort to integrate information technology in supporting organizational effectiveness, improving service quality, and making more responsive decisions. The implementation of digital governance in the MPI Postgraduate shows that technology has become the main instrument in supporting the administrative and management process of education.

2. Optimizing the Use of Academic Information Systems (SIKAD)

The results of the observation show that the Academic Information System (SIKAD) is the center of academic data management at the Postgraduate School of MPI STIT Pringsewu. All academic activities of students and lecturers have been documented in a system that can be accessed online. The available features include filling out KRS, Study Result Cards (KHS), lecture schedules, grade management, attendance, lecturer data, and academic reporting.

The Chairman of STIT Pringsewu, Iis Maisaroh, M.Pd, explained that the existence of SIKAD has a significant impact on the effectiveness of academic services.

"SIKAD helps us in integrating all academic data in real-time. Students can access academic information at any time, while leaders can monitor academic progress more quickly and accurately."

These findings support the view of Janowski (2015) who explains that digital transformation in educational organizations focuses not only on the use of technology, but also on the ability of systems to integrate business processes and organizational services as a whole. With SIKAD, the academic administration process becomes more efficient and reduces the potential for errors due to manual data management.

3. Electronic-Based Student Administration Services

Student administration services at the MPI STIT Pringsewu Postgraduate have utilized various digital platforms to support the effectiveness of services. Based on the results of observations, various student administrative needs such as active lecture letters, research letters, academic payments, academic consultations, and submission of academic documents are carried out through an electronic system that is integrated with campus administration services.

Director of Postgraduate, Dr. Salamun, M.Pd.I, explained that the digitization of administrative services provides convenience for students, most of whom have the status of teachers, principals, and education personnel.

"The majority of Postgraduate students have dense work activities. Therefore, electronic-based administrative services are very helpful for them in accessing various academic services without having to come directly to campus."

Based on the theory of Good University Governance (Fielden, 2008), one of the indicators of good university governance is the availability of services that are transparent, responsive, and easily accessible to all stakeholders. The digitization of administrative services implemented by the MPI Postgraduate shows the implementation of the principles of transparency, accountability, and effectiveness in the implementation of Islamic higher education.

4. Information System-Based Academic and Non-Academic Data Management

The results of the study show that the MPI Postgraduate has developed a data management system that includes academic and non-academic data. Academic data includes information on students, lecturers, curriculum, research, scientific publications, and learning outcomes. Meanwhile, non-academic data includes student activities, institutional cooperation, community service, and data supporting study program accreditation.

According to Dr. Moh. Masrur, M.Pd.I, integrated data management is very helpful in the evaluation and planning process of study programs.

"Currently, data is an important asset for universities. With an integrated system, we can evaluate the program more objectively because all the information is available in one easily accessible system."

The findings are in line with *the Business Intelligence* theory put forward by Turban et al. (2022), that modern organizations need systems that are able to collect, integrate, and manage data from various sources to generate information that supports decision-making. Although the formal implementation of *Business Intelligence* has not been fully implemented, the integrated data management carried out by the MPI Postgraduate shows the initial foundation towards the application of the BI concept in Islamic higher education.

5. Financial Information System as a Support for Transparency and Accountability

Based on the results of observations, financial management at the MPI STIT Pringsewu Postgraduate has utilized a financial information system that is integrated with student academic data. The system is used to manage the payment of education fees, record financial transactions, monitor student arrears, and prepare institutional financial statements.

The Chairman of the Foundation, Dr. Abdul Hamid, M.Pd.I, said that the use of financial information systems aims to increase transparency and accountability in the management of education funds.

"We strive to ensure that all financial transactions can be monitored systematically to support transparent and professional corporate governance."

These results are in line with *the theory of Good Governance* which emphasizes the importance of transparency and accountability in organizational management. The financial information system allows the provision of financial data quickly and accurately, supporting the internal and external audit process and increasing stakeholder trust in the institution.

6. Leveraging Data for Strategic Decision Making

The findings of the study show that the data generated from SIAKAD, electronic administration systems, and financial information systems are beginning to be used by MPI Postgraduate leaders as a basis in the decision-making process. The data is used to evaluate the number of active students, graduation rate, academic achievement, lecturer performance, service effectiveness, and institutional development program planning. The Director of Postgraduate, Dr. Salamun, M.Pd.I, explained:

"Today's decision-making is no longer only based on experience or intuition, but is supported by data available on campus information systems so that the decisions taken are more objective and measurable."

The findings support the Data-Driven Decision-Making theory put forward by Marsh, Pane, and Hamilton (2006), that the use of data as a basis for decision-making can improve the quality of organizational policies. In the context of this study, the integration of digital governance, SIAKAD, electronic services, data management, and financial information systems has formed an information ecosystem that supports the development of modern Islamic education management that is more effective, efficient, transparent, and evidence-based.

4.2. Discussion

The results of the study show that the implementation of digital governance in the MPI STIT Pringsewu Postgraduate Program has had a positive impact on the effectiveness of Islamic higher education management. The integration of the Academic Information System (SIAKAD), electronic-based administrative services, academic and non-academic data management, and Financial Information System is able to create a faster, more accurate, and more transparent service system. These findings strengthen the *theory of Digital Governance* put forward by Gil-Garcia et al. (2018), that the use of digital technology can improve the quality of organizational governance through the integration of services and more effective information management. The implementation of SIAKAD used by the Postgraduate MPI STIT Pringsewu has become a center for the management of academic activities of students and lecturers. The system allows the management of KRS, KHS, lecture schedules, attendance, and academic reporting to be carried out in an integrated manner. These findings are in line with the research of Fatkurohim et al. (2025) which states that the digitization of education governance is able to improve the efficiency of academic administration and accelerate access to information for all education stakeholders. Ease of access to academic information is also one of the important indicators in realizing modern Islamic education management that is adaptive to technological developments.

In the aspect of electronic-based student administration services, the results of the study show that digitization of services is able to reduce dependence on manual administrative processes. Students can access various academic services online without having to attend the campus in person. These findings support the research of Ruddin (2023) who explains that digital transformation in education administration provides ease of access to services, increases user satisfaction, and reduces service time. In the context of modern Islamic education, digital services also reflect the values of professionalism and efficiency that are part of the principles of quality educational institution governance. Integrated management of academic and non-academic data

shows that MPI Postgraduate has applied the basic principles of Business Intelligence. Data on students, lecturers, research, publications, collaborations, and other academic activities are stored in a system that can be used as a basis for program evaluation and planning. This condition is in accordance with the Business Intelligence theory put forward by Turban et al. (2022), that modern organizations need a system that is able to process data into strategic information to support a more effective and evidence-based decision-making process.

In terms of Financial Information Systems, the study found that the digitization of financial management contributes to increasing transparency and accountability of institutions. The system is able to record student transactions, monitor payments, and produce faster and more accurate financial reports. This finding strengthens the concept of Good University Governance put forward by Fielden (2008), that good university governance must be supported by an information system that is able to provide transparent, accountable, and easily accessible data by the authorities. The use of data from various available information systems also shows the implementation of Data-Driven Decision Making. Postgraduate leaders use academic, administrative, and financial data as a basis for evaluating study programs, curriculum development, monitoring lecturer performance, and institutional strategic planning. These findings are in line with the research of Mandinach and Gummer (2016) which states that educational organizations that make optimal use of data tend to produce more objective, effective, and oriented decisions towards continuous quality improvement. The results of the study show that the integration of digital governance and Business Intelligence has formed the foundation of modern Islamic education management at the MPI STIT Pringsewu Postgraduate. The successful implementation of this not only increases the effectiveness of academic and administrative services, but also supports the realization of transparent, accountable, responsive, and data-based university governance. This condition shows that digital transformation can be an important strategy in increasing the competitiveness of Islamic educational institutions in the era of Society 5.0.

4.3. User Satisfaction Level Analysis

The measurement of user satisfaction level was carried out on 51 MPI STIT Pringsewu Postgraduate students, consisting of 23 Semester II students and 28 Semester III students. The results of the analysis showed that the level of satisfaction with the use of the Academic Information System (SIKAD) reached 90.2%, which indicates a very good category. Students assessed that the system was able to provide convenience in filling out KRS, access grades, lecture schedules, and academic information in real-time. The satisfaction rate with electronic-based administrative services reached 88.6%, which shows that the digitization of services has helped students obtain various academic services faster and more efficiently. The level of satisfaction with academic and non-academic data management obtained a score of 87.5%, while Financial Information Systems reached 89.8%. These results show that students feel that academic and financial information can be accessed easily, accurately, and transparently. Overall, the average level of user satisfaction with IT governance at the MPI STIT Pringsewu Postgraduate reached 89.0%, which indicates that the implementation of digital governance has been very well received by users and has contributed positively to improving the quality of Islamic higher education services.

V. CONCLUSION

The conclusion in this study shows that the integration of digital governance and Business Intelligence has an important role in the development of modern Islamic education management in the Master of Islamic Education Management (MPI) Postgraduate Program of STIT Pringsewu. The implementation of digital-based academic governance through the use of the Academic Information System (SIKAD), electronic-based student administration services, academic and non-academic data management, and Financial Information Systems has been able to increase the effectiveness, efficiency, transparency, and accountability of the management of Islamic higher education. The digital system implemented allows all academic and administrative processes to be carried out faster, integrated, and easily accessible by students and institutional managers. The results of the study also show that the use of data through an integrated information system has supported the data-based decision-making process. Academic, administrative, and financial data are used as the basis for evaluation, monitoring, and strategic planning of study programs so that the management of the institution becomes more objective and measurable. This condition shows that the application of the Business Intelligence concept is beginning to take shape through the integration of data management in supporting modern Islamic education governance. The level of user satisfaction with IT governance at the MPI STIT Pringsewu Postgraduate showed excellent results with an average percentage of 89.0%. The high level of student satisfaction with SIKAD services, electronic administration, data management, and financial information systems proves that digital transformation has a positive impact on the quality of education services. Thus, the integration of digital governance and Business Intelligence can be an effective strategy in realizing modern, adaptive, professional, and competitive Islamic education management in the Society 5.0 era.

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