

EDUCATIONAL MANAGEMENT INFORMATION SYSTEM (EMIS) IN HIGHER INSTITUTIONS OF NIGERIA: METHODOLOGIES AND THEORETICAL APPROACHES FOR EFFECTIVE IMPLEMENTATION

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ABSTRACT

The study examined the approaches of educational management information system (EMIS) implementation in higher institutions of Nigeria. This study adopted the expository qualitative research design. Data were sourced from secondary sources. Based on the review, it was uncovered that systems-oriented approach, the participatory approach, technological approach, data-driven approach, contextual approach, and sustainability approach are the approaches of educational management information system (EMIS) implementation in Nigeria. Despite the advantages associated with these diverse approaches to EMIS, several challenges such as inadequate infrastructure, insufficient training, and resistance to change may hinder the successful implementation and acceptance of EMIS in educational settings. Furthermore, ethical considerations surrounding data privacy and security demand careful attention, as educational institutions navigate the delicate balance between transparency and confidentiality. Furthermore, by applying various theoretical approaches—such as the Technology Acceptance Model, Resource-Based View, and Socio-Technical Systems theory—organizations can develop a deeper understanding of the factors influencing the success of these systems. By leveraging these theories, institutions can create and implement e-MIS that not only meet technical requirements but also foster an inclusive and supportive environment for users, ultimately leading to improved organizational performance and competitive advantage in a rapidly evolving business landscape.

Keywords: Challenges, EMIS, EMIS approaches, EMIS Implementation.

1. INTRODUCTION

Management Information System (MIS) is a computer based system that is a very strong tool available to managers for planning, organizing, executing, monitoring, control and evaluation of their operations efficiently. It consists of three basic components: Management, Information and the System. Integrated use of these three components enables clarity in understanding the issues involved impact of each component on other seemingly independent inputs but interconnected with each other. The decisions taken in this way is appropriate in the context of the business requirements (Omanyo & Ndiege, 2025). MIS enables to adopt multi-disciplinary management approach considering all the aspects relating to operational, financial, materials, behavioral, organizational practices and policies; and computer related issues. Organization works in holistic manner with the help of MIS rather than in different segments. Decisions in different segments without taking a holistic approach have greater chances of failure. There is tremendous

avoidable waste in utilization of organizational resources (Chileshe, 2014).

In the educational system of Nigeria, Management Information System (MIS) or e-MIS or EMIS is also employed to play an important role in facilitating efficiency in educational operations. However, it would be wrong to assume that EMIS is not also used in the planning process since it is beginning to play an important role in facilitating the preparation of strategic plans at the state level (Stephen and Cummings, 2009). Moreover, the government has a clear understanding of what role e-MIS or EMIS will play in future planning activities, both at the federal and state levels (Salako, 2016). Despite the good intention of government, it is difficult to establish accurate quantitative targets for future plans due to lack of adequate base-line information (Haiyan & Herstein, 2014). For outsiders, according to them, it is difficult to understand how EMIS operates due to the different layers of government involved in the collection and collation of education data. For instance, the Federal Ministry of Education, the State Ministries of Education and the various local governments' educational administrations are all involved in the collection and collation of data. The relationships between the different layers of government are defined in legislation but not in practice, this often becomes blurred. All of these relationships have impact on how data are collected, collated and analyzed, including who is responsible for each of these activities.

In reforming its EMIS, Nigeria faces similar problems to those experienced by other countries including lack of capacity, limited commitment from stakeholders and difficulties associated with the collection of survey data (Salako, 2016). Given the complicated environment in which data collection takes place and the politics surrounding federal-state relationships, the government faces enormous challenges to develop an EMIS capable of capturing the inputs and outputs of the educational system, not to mention issues associated with measuring the efficiency of resource allocation (Haiyan & Herstein, 2014).

The government and donor community recognize these challenges and embarked on a series of major reforms, including the development of structures to improve coordination at the federal level and to focus resources on creating a sustainable EMIS at the state level. For instance, a centralized national EMIS committee was established to avoid fragmentation and ensure that data collection and collation take place in a coordinated manner (Haiyan & Herstein, 2014). However, on the downside, they opined that most of these reforms have been donor driven and the degree of support from the Federal Ministry of Education is questionable. Nevertheless, following the successful pilot of EMIS at the state level, a decision has been made to extend this decentralized approach to a further nineteen states in 2006. This offers lessons for other developing countries who are attempting to reform their EMIS in an environment where political tensions exist between central and local government levels (Salako, 2016).

Studies on Management information system (MIS) have been investigated by scholars in Nigeria and other nations. Ajayi and Omirin (2017) investigated the use of Educational Management Information Systems (EMIS) in decision-making on long-term planning, short-term planning and budgeting in the South-West Nigerian Universities. The study used the descriptive research design of the survey type. Data were collected from a sample of 600 subjects consisting of 400 academic staff holding administrative staff positions and 200 senior administrative staff heading units using stratified random sampling technique. Data collected were analyzed using frequency counts, percentages, means, standard deviation and t-test statistics. The three hypotheses generated were tested at 0.05 level of significance. The result showed EMIS was not adequately

used in decision making process on long-term planning, short-term planning and budgeting. There was no significant difference between Federal and State universities in terms of the use of EMIS for decision making on both long and short term planning. There was significant difference in the use of EMIS for decision making on budgeting between Federal and State universities in favour of the Federal universities.

Akram (2016) examined whether the selected financial institutions of Bahrain vary as to the use of Management Information Systems leadership of decision making for strategic and tactical planning purposes. The research adapted the quantitative research design to examine two research hypotheses. A total of 190 forms were equally distributed to those who are working at different management levels at the selected organizations. The results of the research showed that MIS was primarily used to enhance strategic planning in both financial institutions. The regression analysis revealed that Tactical planning is found to have no effect on Decision Making, while Strategic planning has a clear effect on the Decision Making Effectiveness in both organizations.

Abdulkareem, Alabi, Fashiku and Akinnubr (2016) examined the relationship between the use of Management Information System and senior staff job performance in Polytechnics in Kwara State, Nigeria. Three hundred and twenty respondents were selected using random sampling technique from the two Polytechnics in Kwara State. The sample was made up of 200 academic staff and 120 senior non-academic staff from the institutions. Researcher-designed instruments, tagged: "Management Information System Questionnaire" (MISQ) and "Job Performance Appraisal Questionnaire" (JPAQ) were used to elicit information from the respondents. The data collected were analysed using frequency counts and percentage to answer the research questions raised, while Pearson product-moment correlation coefficient was used to test the hypotheses formulated at 0.05 level of significance. The findings revealed that Senior Staff in the Polytechnics in Kwara State made effective use of both traditional and electronic-based management information system. There was significant relationship between the use of MIS and Senior Staff Job Performance in the institutions

Hassan and Saxena (2016) examined the concept of data, information and MIS. The importance of MIS, its rapid growth and latest trends in MIS are discussed in the paper. Education sector has a special place in the agenda of any government due to its importance for well-being of the citizens and the country as a whole. Education Management Information System (EMIS) plays an important role in developing appropriate plans, strategies and policies for improving the education system. Case studies of EMIS of Nigeria and Zambia have been discussed briefly to learn lessons from their experiences

Ajayi and Omirin (2017) investigated the use of Educational Management Information Systems (EMIS) in decision-making on long-term planning, short-term planning and budgeting in the South-West Nigerian Universities and found that EMIS was not adequately used in decision making process on long-term planning, short-term planning and budgeting. Abdulkareem, Alabi, Fashiku and Akinnubr (2016) examined the relationship between the use of Management Information System and senior staff job performance in Polytechnics in Kwara State, Nigeria and found that Senior Staff in the Polytechnics in Kwara State made effective use of both traditional and electronic-based management information system. Ebuara and Mbon (2015) examined management information system (MIS) and institutional effectiveness of universities in south-south geo-political zone of Nigeria and found that there is a relationship between management information system usage and institutional effectiveness in terms of examination conduct, students

records keeping, staff appraisal, library services.

Therefore, the objective of this paper is to review the approaches to educational management information system (EMIS) implementation. The specific objectives of the study are to review:

- 1) The methodological approaches for effective implementation of educational management information system (EMIS) in higher institutions of learning in Nigeria
- 2) The theoretical approaches and guidelines needed for effective implementation of educational management information system (EMIS) in higher institutions of learning in Nigeria

To achieve these objectives, this study adopted the qualitative-expository research design. Data were sourced from secondary sources using while secondary data from newspapers, textbooks, electronic journals, and the online publications were obtained via the internet. Hence, the rest of this paper was organized under four (4) major sub-heading namely: methodological approaches towards EMIS implementation in higher institutions, theoretical approaches towards EMIS implementation in higher institutions, conclusion and recommendations.

Methodological Approaches towards EMIS Implementation in Higher Institutions

Educational Management Information Systems (EMIS) have become integral to the functioning and administration of educational institutions. These systems are vital for collecting, processing, storing, and disseminating information relevant to education management and planning. As educational landscapes evolve, the approach to EMIS has diversified significantly, reflecting variations in institutional goals, technological advancements, and educational policies (Sajid, Mirzah, Mustafa & Shabala, 2024). This section explores the various approaches to EMIS, highlighting their significance, applications, and the challenges they face in contemporary education management.

The systems-oriented approach: To begin, the systems-oriented approach serves as a cornerstone of EMIS. This perspective views institutions as complex systems composed of interrelated components — students, educators, administrative staff, and policymakers. In this approach, EMIS functions as a central hub for data collection and analysis, facilitating seamless communication and information flow (Pařová & Vejačka, 2022). By employing this model, educational leaders can not only monitor performance and resource allocation but also predict outcomes and trends capable of informing policy decisions. Consequently, the systems-oriented approach enhances the strategic planning of educational institutions, allowing for a responsive and adaptive management style.

The participatory approach: Another significant approach to EMIS is the participatory method. This approach emphasizes the involvement of various stakeholders, including teachers, students, parents, and community members, in the development and implementation of the information system (Sajid, Mirzah, Mustafa & Shabala, 2024). By encouraging active participation, EMIS becomes more user-centered, ensuring that the data collected reflect the needs and priorities of the educational community. Moreover, this approach allows for feedback loops that enhance the system's accuracy and relevance. The participatory model fosters a sense of ownership among

stakeholders, which can ultimately lead to improved data quality and utilization in decision-making processes (Bhima, Zahra, Nurtino, & Firli, 2023).

Technological approach: The technological approach is also pivotal in shaping modern EMIS. Rapid advancements in technology have transformed how information is processed and disseminated. The integration of cloud computing, mobile applications, and data analytics has streamlined data management and has improved accessibility to information for stakeholders at all levels (Omanyo & Ndiege, 2025). This technological orientation not only supports efficiency and accuracy but also enables real-time data access, which is critical in dynamic educational environments. However, while technological advancements bring benefits, they also pose challenges such as data security, privacy concerns, and the need for ongoing technical training for users.

The data-driven approach: The data-driven approach underscores the importance of leveraging collected data for decision-making and policy formulation. This approach acknowledges the expansive role of data analytics in deriving insights that can profoundly influence educational outcomes. By employing predictive analytics and data visualization techniques, educational leaders can identify patterns and correlations that may not be immediately apparent from raw data alone. This method encourages educational institutions to adopt an evidence-based culture, where decisions are grounded in empirical evidence rather than intuition or conventional wisdom (Bhima, Zahra, Nurtino, & Firli, 2023). Such a shift is essential for improving institutional effectiveness and enhancing student success rates.

The contextual approach: This is another vital facet of EMIS, which takes into account the specific socio-cultural, economic, and political contexts of different educational settings. Recognizing that EMIS is not a one-size-fits-all solution, this approach advocates for the customization of systems to meet local needs. By tailoring the EMIS to reflect the unique circumstances of each institution, stakeholders can ensure that the system is both relevant and functional. This contextual sensitivity not only enhances the system's effectiveness but also aligns it with local educational policies and cultural values, thereby increasing buy-in and utilization by various stakeholders (Pařová & Vejačka, 2022).

The sustainability approach: Moreover, the sustainability approach to EMIS emphasizes long-term viability and resilience. As educational environments are prone to change, sustainability becomes critical in ensuring that systems remain functional and relevant over time. This approach calls for continuous evaluation and adaptation of EMIS to respond to emerging trends and challenges in the education sector. Sustainable EMIS should prioritize capacity building, stakeholder engagement, and the integration of innovative practices that promote a culture of continuous improvement (Omanyo & Ndiege, 2025). Thus, sustainability is not only about maintaining operational efficiency but also about fostering a dynamic environment that can adapt to future demands.

Theoretical Approaches to EMIS implementation

In today's fast-paced business environment, effective educational management information

systems (EMIS) are essential for organizations to achieve strategic goals. E-management information systems, which integrate traditional MIS with electronic platforms, have become increasingly significant in facilitating decision-making processes and enhancing operational efficiency. Various theoretical approaches guide the development and implementation of these systems, contributing to their effectiveness across diverse organizational settings. This section explores three prominent theoretical frameworks: the Technology Acceptance Model (TAM), the Resource-Based View (RBV), and the Socio-Technical Systems (STS) theory.

The Technology Acceptance Model (TAM) is central to understanding users' acceptance and use of e-management information systems. Developed by Davis in 1989, this model posits that perceived ease of use and perceived usefulness significantly influence individuals' decisions to adopt technology. In the context of e-MIS, these factors help organizations assess user receptiveness and build systems that align with users' needs and expectations. When applied effectively, the principles of TAM can lead to increased user engagement, greater productivity, and overall improved performance of the management information system within an institution (Delello, Sung, Mokhtari, Hebert, Bronson, & De Giuseppe, 2025).

The Resource-Based View (RBV) provides another lens through which e-management information systems can be analyzed. This theory, rooted in strategic management, emphasizes the importance of internal resources and capabilities in achieving competitive advantage. According to the RBV, organizations should focus on leveraging their unique resources—such as technology, human capital, and operational processes—to maximize the potential of their e-MIS (Ajayi, & Omirin, 2017). By aligning the capabilities of their e-management systems with organizational strengths, companies can create tailored solutions that not only meet their internal needs but also provide a robust foundation for competitive differentiation in the marketplace.

In contrast to the individual-focused theories like TAM and RBV, the Socio-Technical Systems (STS) theory examines the interplay between social and technical elements within organizations. This approach recognizes that successful implementation of e-management information systems depends not only on technological advancements but also on understanding and addressing the social dynamics at play (Chugh, Turnbull, Cowling, Vanderburg, & Vanderburg, 2023). The STS framework promotes collaboration between IT specialists and end-users to ensure that both technical and organizational needs are met. By adopting a holistic view of technology integration, organizations can enhance user satisfaction and system effectiveness, fostering an environment where e-management systems can thrive.

Integrating these theoretical frameworks offers a more comprehensive understanding of the complexities involved in e-management information systems. While TAM highlights the importance of user acceptance and usability, the RBV underscores the strategic resource capabilities that can enhance competitive advantage (Haiyan & Herstein, 2014). Meanwhile, the STS theory brings attention to the organizational culture and social interactions that can influence the successful deployment and operation of e-MIS. Together, these approaches facilitate a more nuanced understanding of how to optimize e-management systems, addressing the multifaceted challenges organizations face in the digital age.

2. CONCLUSION

Despite the advantages associated with these diverse approaches to EMIS, several challenges must be addressed to maximize their potential. Issues such as inadequate infrastructure, insufficient training, and resistance to change can hinder the successful implementation and acceptance of EMIS in educational settings. Furthermore, ethical considerations surrounding data privacy and security demand careful attention, as educational institutions navigate the delicate balance between transparency and confidentiality. Addressing these challenges requires a coordinated effort among educational authorities, technology providers, and stakeholder communities to create supportive environments conducive to effective EMIS deployment. In conclusion, the approaches to Educational Management Information Systems are numerous and varied, each contributing uniquely to the enhancement of educational management and administration.

Furthermore, by applying various theoretical approaches—such as the Technology Acceptance Model, Resource-Based View, and Socio-Technical Systems theory—organizations can develop a deeper understanding of the factors influencing the success of these systems. By leveraging these theories, institutions can create and implement e-MIS that not only meet technical requirements but also foster an inclusive and supportive environment for users, ultimately leading to improved organizational performance and competitive advantage in a rapidly evolving business landscape.

3. RECOMMENDATIONS

The following recommendations are made on the study:

1. The government should increase funding of tertiary institutions and establish more information management units (IMU) to ensure proper data collection, storage and retrieval for decision making purposes by information users.
2. Adequate state of arts facilities should be provided in tertiary institutions through the support of the government and other financial support agencies such as tertiary educational trust fund (TETFUND) for higher institutions. This will involve replacement of obsolete facilities with modern information technologies to promote EMIS in Nigeria.
3. Lastly, tertiary institutions should adopt alternative means of funding to augment funds from government and properties

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