The Impact of Educational Management Information Systems (EMIS) on Effective School Management in Tanzania

Julius Jonas Mbawala*[1], Slamet Lestari[1], Ambakisye Mwakalindile[2]

[1] Department of Educational Administration, Yogyakarta State University, Yogyakarta, Indonesia
[2] Department of Education, Catholic University of Mbeya (CUoM), Mbeya, Tanzania.

Abstract: The rapid advancement of science and technology has ushered in transformative changes in education management, embracing innovative tools and methods for more efficient and effective educational processes. The purpose of this study was to investigate the use of EMIS in enhancing effective school management and explore the challenges associated with it. The data were collected through semi-structured interviews with five principals of selected secondary schools found in Dodoma City, Tanzania. Qualitative data analysis techniques were used to analyze data with an audit trail and member checks to ensure the quality of the collected data. The research results show that EMIS plays a crucial role in efficiently managing schools. Principals rely on EMIS as a dependable repository for school data, for tracking attendance of both teachers and students, managing student enrollments, ensuring the efficient operation of school finances, enhancing communication, and improving the management of academic activities. However, challenges such as a shortage of ICT experts, inadequate internet connectivity, limited budgets, frequent electricity outages, the absence of user-friendly software, and difficulties in system integration and interoperability have been identified as hindrances to the effective utilization of EMIS in school management.

Keywords: EMIS; Effective School Management; ICT; Tanzania

Introduction

The development of science and technology has had a profound impact on various aspects of our lives, including the field of education management (Haleem et al., 2022). Over the years, technological advancements have revolutionized the way educational institutions operate, transforming traditional approaches into more efficient and effective systems. Education management has embraced new methodologies and tools to enhance teaching, learning, and administrative processes by integrating cutting-edge scientific discoveries and technological innovations (Hanımoğlu, 2018; Asio et al., 2022). One significant advancement in education management that has gained widespread recognition is the introduction of Education Management Information Systems (EMIS) in school management. EMIS is a system designed to systematically organize information related to the management of educational development through the collection, processing, analysis, publication distribution, and rendering of information services for users of educational information (UNESCO, 2018).

Around the world, many countries have introduced EMIS as a means to successful improvement of education outcomes. For example, Martins et al., (2019) highlighted the positive impact of Education Management Information Systems (EMIS) on the quality of information and services, supporting effective decision-making processes which are key factors determining the overall benefits of education institutions. Additionally, Ugwude and Ugwude (2020) highlighted the usefulness of EMIS in maintaining comprehensive records of students and staff, managing school accounts, preparing student report cards, and creating timetables. In Myanmar, the government considers EMIS as a crucial reform requirement for its

education sector. EMIS is used to improve access and quality of educational services, the efficiency of resource management in educational institutions, and educational administrators' ICT planning and professional competencies (UNESCO, 2021). In Pakistan, since the 1990's EMIS has been used as the standard-setting agency for collecting and consolidating educational data to establish linkages and develop the capacity of provinces or regions for the provision of quality education, in Uzbekistan, EMIS used as evidence-based planning of expansion and quality improvement of education, monitoring of results and sequence decision making (UNESCO, 2021). A recent study shows that EMIS in Nigeria is used for planning, generating reports, and identifying abnormalities in the education system (Odusanya, 2019).

In Tanzania, the first attempts to introduce EMIS in education became apparent in the 1980s, since the mid-1980s the government of Tanzania has invested significant resources into collecting better educational data through EMIS (Nkata & Dida, 2020). The primary objective of EMIS in Tanzania is to effectively gather, process, utilize, and distribute education data and relevant information to education stakeholders promptly. It provides data in six categories, covering education statistics, demographics, human resources, infrastructure, school performance, financial management, and various documents (Manyengo, 2021). These valuable data are disseminated through the Basic Education Statistics in Tanzania catalog and website, ensuring easy access for all interested parties (Manyengo, 2021).

The introduction of EMIS in the management of the education system in many countries has been associated with several challenges. These challenges can be grouped into three critical areas: (i) sustainability issues related to incompatibility with existing systems, inadequate customization of new systems, limitations in staff capacity, constrained financial resources, and a lack of strong government commitment. (ii) accountability in service delivery for both the providers and recipients of information and (iii) efficiency when education statistics and records are not effectively maintained and decision-makers are not provided with accurate timely data (Bhatti & Adnan, 2010; Shah, 2014).

In Vietnam for instance, the lack of strong leadership and a clear vision of the functioning and objective of EIMS was reported to be the challenges facing the successful implementation of EIMS as there was no clear agreement whether EMIS aimed to collect and report statistical data to guide informed policy-making or it was a simply a system to store information (Husein et al., (2015). In Nigeria, the absence of EMIS seen as the reason behind the increased difficulties and challenges of accessing information in the school system

and planning staff personnel issues in schools (Okeke & Ikediugwu, 2021), lack of legal framework, modern ICT equipment and infrastructures, limited communication between data producers and data users reported in EMIS in Ethiopia by Mati, (2020), challenges in data collection and data entry level as many forms collected from schools came with several errors particularly for age and disability data in Liberia (UNESCO, 2020). System and technological challenges also emerged during the installation and software development of an information system due to incomplete technical specifications, especially in rural areas where low connectivity and internet networks are reported to be the main EMIS challenges (Manyengo, 2021).

Many empirical studies have reported that there have been concerns raised regarding the efficacy and usefulness of EMIS in enhancing effective school management in developing countries (Okeke & Ikediugwu, 2021; Mati, 2020). From a wide range of literature, there is a gap related to empirical studies about EMIS in Tanzania as little is known about the implementation of EMIS in school management. This study, therefore, sought to shed light on the implementation of EMIS in the secondary school management system in Tanzania. More specifically it drew to investigate the use of EMIS in enhancing effective school management and challenges facing the implementation of EMIS in public secondary schools.

Method

This study aims to obtain an overview of how EMIS is used by principals in effective school management and the challenges associated with it. It adopted a qualitative design to fully describe the situation, and gather substantial and reliable information about the use of EMIS in school management activities (Ary et al., 2010: Creswell, 2017) among five (5) public secondary schools located in Dodoma city, Tanzania, due to the reasons that the selected schools already use EMIS. The purposive sampling method was applied in recruiting the participants who are principals [P1], [P2], [P3], [P4], and [P5] due to their criteria of being involved in school management.

Semi-structured interviews were conducted to collect data. The interview guide contained a set of open-ended questions that were developed and divided into two parts. Part one focused on the role of EMIS in effective school management, while part two aimed to identify challenges in implementing EMIS. As a consequence of the distance to the research setting, online interviews lasting 45 minutes each were used to gather information due to its convenience, cost-effectiveness, and the ability to reach participants in different geographic locations (Clarke, & Braun, 2013).

The gathered data were transcribed and then analyzed using qualitative data analysis techniques. The process involved familiarizing with the data, generating initial codes, sorting coded data into overarching themes, reviewing and refining identified themes, naming them, and ultimately producing the final report presenting empirical data, analysis, and discussion of findings (Savin-Baden & Major, 2013). To validate the data, researchers conducted an audit trail and member checks. This involved sharing researchers' interpretations with study participants to confirm the credibility of the findings (Creswell, 2017; Merriam & Tisdell, 2015).

Result and Discussion

The Role of EMIS in Effective School Management

In this section, participants were first asked about their understanding of EMIS and all five (5) school principals were able to explain the meaning and the uses of EMIS in their management activities they worked together with deputy principals, academic masters, class teachers, subject teachers, and School Management Teams (SMT). They also shared about the kind of EMIS found in schools and all verified to have three main systems which are owned and controlled by the government; School Information System (SIS), Primary Records Manager (PReM), and Facility Financial Accounting and Reporting System (FFARS) and privately each school has its system for academic issues. PReMS is concerned with students' information, the transfer of students from one school to another, and registration of students for the national exams, SIS is synchronized with PReM and adds the attendance of teachers, information on buildings, furniture, teaching, and learning materials. The FFARS is used for receiving capitation grants from the government and also, private systems owned by schools for students' report card generation and also to communicate with parents. Based on the data obtained, it was found that EMIS helps principals in the effective management of schools as described below.

EMIS is used as a trustworthy school data repository. All principals verified that EMIS serves as an invaluable resource for schools looking to maintain accurate and up-to-date records. With EMIS, schools can easily access and manage important information, including attendance records, grades, and demographic data. It's a tool that helps schools improve their operations, better serve their students, and ultimately achieve their academic goals.

"EMIS gives us clear and reliable data. It helps to know how many students the school has, chairs and tables, books... by looking at the system the ratio of teachers, teaching and learning materials, and buildings are displayed and helps me to know what I have and what I need [P4]."

"Most of the time, the Government doesn't have the right actual data, because of these systems we can tell them the real data which is used for planning of the next academic year [P2]."

Moreover, the use of EMIS found to be beneficial for principals in managing both teachers' and students' behavior, as it facilitates easy tracking of attendance. This makes it easy for principals to manage the effectiveness of teachers and their students. Principals verified that;

"Reporting time for teachers is 7:30 a.m. once they sign on biometrics, even if I'm not in the school environment, I'm able to know how many teachers have attended at the right time and who came late. [P2]."

Soon after the teacher makes roll calls, I can know how many students have attended the lesson today and how many students have not and why, so it's very easy to make analysis and make decisions [P5]."

For teachers, knowing that there is a system managing their activities helps them stay focused, adhere to the plan, and avoid any meandering (truancy). [P4]".

In addition to this, EMIS found to be used for effective school financial management operations. Schools utilize EMIS for efficient financial management operations as it streamlines budget allocation, expenditure tracking, and resource planning, enabling schools to make informed decisions about resource allocation and expenditure priorities.

"The school's financial data is documented within the FFARS, and the government utilizes this existing information to allocate funds to schools based on student enrollment numbers [P2]."

"FFARS serves the purpose of both planning and monitoring school budgets, and it is directly connected to school bank accounts [P4]."

"My school has a camp for students preparing for national exams, so the system helps us identify those who have contributed to the camp fees and streamlines income and expenditure tracking [P1]."

Furthermore, EMIS enhances communication. The use of EMIS helps principals to improve communication at all levels of school. It is the fastest way to reach out to

teachers, students, and even parents both collectively or individually. By using the information inputted into the system, EMIS used as a means of communication with the government to know the school deficit in different aspects.

> "It is easy to report to the government about the changes and needs of schools from infrastructures and teaching and learning materials as everything is within the system[P5]."
> The EMIS helps to communicate with parents most efficiently by sending them a single SMS to all [P2]....to communicate with all teachers by sending them all an automated SMS within a second [P1]."

And lastly, the use of EMIS helps in better management of school academic activities. Through the utilization of EMIS, participants attest to the ease of managing examinations, allowing teachers to efficiently schedule exams and share relevant information on the academic portal. Additionally, this portal serves as a convenient tool for monitoring students 'grades and informing parents of their children's progress, thereby alleviating some of the responsibilities placed on teachers.

> "EMIS helps teachers analyze grades and prepare students' reposts systematically [P5]...... prepare and process internal school reports, and school timetables [P3]...... tracking students' continuous assessment, and follow-up for teaching and non-teaching activities [P4]."

By streamlining various processes, facilitating data-driven decision-making, and improving communication among stakeholders, EMIS contributes to the efficiency and effectiveness of educational institutions. It empowers educators and administrators to make informed choices, allocate resources judiciously, and ultimately create a more conducive learning environment for students.

Challenges Associated with the Use of EMIS.

Different challenges were reported by the school principals in the use of EMIS. Most of these challenges were identical from one principal to another and can be categorized as issues within schools and the systems.

Within schools, all participants reported having an insufficient number of ICT experts to deal with the systems, assist teachers, and fix the system when experiencing errors. On the other hand, one principal reported using teachers with prior knowledge of ICT to assist in operating these systems. However, when system errors occurred, they were unable to resolve them.

Another challenge reported is the shortage of electronic devices, which was found to be a significant issue for most participants when utilizing EMIS in school management. The EMIS software requires devices to run and process the required data, but some principals reported not having enough devices.

> "The insufficient number of devices makes it challenging to operate the system. Since the school only has two computers that all teachers use, they are forced to conduct manual roll calls first and then input the data into the system (SIS). [P2]."
> "Because of the shortage of computers, teachers sometimes resort to using their cell phones, which leads to some mistakes when entering data into the systems……. there is a time system that does not function properly when accessed via cell phones [P4]."

Additionally, the issue of the internet was also reported by all participants as a challenge to the successful use of EMIS in school management in two ways: the lack of a strong internet connection when accessing the system or uploading data into the system, and the expense of data bundles, which hinders the accessibility of school data as there is no free Wi-Fi in all schools and in capitation fee, the government doesn't indicate money for internet.

> "We (my school) are experiencing a poor budget situation as we have to pay around USD 180 annually for the school management software system, in addition to those owned by the government (PReMS, SIS, and FFARS)….. [P5]."

On the other hand, the problem of power outages seemed to affect some participants, as they reported experiencing it when using EMIS in their schools. This affected schools in two ways, resulting in the loss of data and the inability to use the systems.

> "We frequently experience load shedding (not stable), and sometimes we have blackouts, which make it difficult to use the systems since we have to wait for the power to return. [P4]
> As a result, we lose both data and time because nothing can be done without electricity. [P1]."

Furthermore, the challenges within these systems as reported by all participants can be grouped into two; inadequate user-friendly software and limited integration and interoperability across systems. For the first challenge, software errors, inflexibility, and system jams hinder principals in using these systems leading to incorrect reporting, downtime, and delays in accessing important information.

"SIS is not user-friendly as sometimes it is difficult to log into the system when you need to access the information also some data are erased without our prior knowledge. [P5]."

There was a time during annual exams when teachers marked and input student results into the system for generating reports, suddenly all data disappeared without knowing what happened [P3]."

"We register students' biodata into the system but you may find that in some cases the government requests the same data (date of birth) after we have submitted it to them for the last two years, this means the information in the system is sometimes missing. [P1]."

"Recently, there was a case when I was registering my form four students. Some students were claimed by the examination council to be unqualified to sit for the final examination due to a lack of data regarding whether they had taken the Form Two examination…. I had to confirm their eligibility by sending their Form Two results and other necessary documents. [P2]."

Notwithstanding, the data capture and storage systems are reported to suffer from inadequate integration or, in some cases, no integration whatsoever. This lack of integration poses difficulties in the assessment and decision-making processes, as there is minimal compatibility between the software applications employed for various aspects of EMIS.

"These three management systems have the same management functions but are not coordinated together…… as in each system you need to feed the same information three times [P5]."

This lack of integration undermines the effectiveness of these systems, particularly in the assessment and decision-making processes. The minimal compatibility between software applications used for different aspects of EMIS hinders the seamless flow of information and compromises the ability to make data-driven decisions.

Discussion

The findings presented above show that EMIS has great contributions to effective school management in both office activities and ensures the efficient storage and distribution of school information. By the help of these management systems principals testify that their duties are easily and effectively done even when they are not physically at school. This aligns with Maryani et al.

(2023), who clarify that management systems help an organization support operations, guide managerial decision-making, provide a strategic and competitive advantage, and improve the quality of educational output. Due to the development of science and technology, these systems now greatly assist school managers in determining the aims of the school, formulating strategic plans, distributing resources, and evaluating staff performance, as well as measuring organizational success (Priscila & Venkatesan, 2020; Shah, 2014).

EMIS is found to be a trustworthy information hub, as all school information is stored and retrieved from databases. Principals can specify the type of information needed, which is then sent to them with a single click (Schildkamp, 2019). Additionally, EMIS reduces teachers' workload by enabling quick access to and generation of student academic information, progress, and performance. Principals also benefit from EMIS by gaining control over and monitoring both students' and teachers' behavior, attendance, and effectiveness. This is supported by a study conducted by UNESCO (2020), which demonstrates that EMIS helps manage students' data in various ways, including enrollment, transfer between schools, dropouts, and student repetition, as well as grade scores.

Furthermore, the findings suggest that EMIS supports evidence-based decision-making in school management. According to Helal et al., (2021), EMIS enables schools to analyze data trends and patterns, helping them identify areas for improvement and develop targeted interventions. One of the key benefits of EMIS is its ability to ensure the efficient distribution of resources, such as teaching and learning materials, human resources, buildings, and furniture. By identifying areas where these resources are most essential, EMIS helps align resource allocation with strategic goals (Mati, 2020; UNICEF, 2020). This targeted distribution of resources enables schools to address issues promptly and effectively, ultimately improving the overall quality of education.

Additionally, EMIS plays a crucial role in enhancing accountability and transparency in school management. As highlighted by UNESCO (2020), it enables schools to track financial expenditures, monitor teacher performance, and evaluate the effectiveness of educational programs. This ability to track and monitor various aspects of school operations helps ensure that resources are used efficiently and effectively. Consequently, it fosters a culture of transparency and accountability, where decisions are based on evidence rather than anecdotes or intuition (Vaiz & Altinay, 2017).

It can be learned from the presented data that, EMIS enhances communication and collaboration among stakeholders within the education system. The

Education Management Information System (EMIS) serves as a central platform that allows for the sharing of data and information among various stakeholders in the education sector, including teachers, administrators, parents, and policymakers. This sharing of information leads to improved coordination and alignment of efforts, as all parties work towards achieving common educational goals (Asio et al., 2022; Odusanya, 2019).

Apart from the usefulness of EMIS, the findings illustrate several challenges found within the systems and schools. Lack of ICT expertise, inadequate electronic devices, and Internet access were revealed by all participants as hindrances to the successful use of EMIS in schools. The results show that the majority of school principals repeatedly cited these challenges as the main obstacles to the implementation of EMIS in their daily school management activities. As highlighted by Mwambo, (2019), the successful use of EMIS for better outcomes in education requires expertise in ICT skills and knowledge of how to run and operate these systems, as one needs to be adept and knowledgeable because data and information are essential commodities that help in decision-making and planning the most appropriate action. Having been equipped with ICT skills may make it easier and more motivating for stakeholders to successfully implement the EMIS (Fenech et al., 2019; Fernández-Batanero et al., 2021). This emphasizes the importance of providing adequate training and support to enhance ICT skills among school teachers, administrators, and staff, which can improve the successful implementation of EMIS.

Inadequate internet connectivity, particularly low bandwidth, has been identified as a significant challenge in the effective EMIS, as it hinders the system's ability to handle the volume of data management required for high impact. Low bandwidth limits the capacity of schools to handle the volume of data required for efficient management, leading to delays and inefficiencies in data processing. According to Wang et al., 2020), the primary function of a management information system is to deliver data and information rapidly, on time, in a timely way, on target, comprehensively, flexibly, reliably, and clearly to its users without allowing for multiple interpretations of the information. This limitation hinders the timely and accurate collection, processing, and dissemination of educational data (Enteria & Role, 2018). Addressing these challenges requires investments in improving internet infrastructure and bandwidth allocation, as well as implementing strategies for data optimization and offline data management to ensure that EMIS can operate effectively in low-bandwidth environments.

In making decisions, an EMIS needs to have accurate and complete information (data). Studies suggest that in any information management system, data is a core part of the system through which decisions can be made (Prasetyo et al., 2023). Unfortunately, the study reported that most principals sometimes lack the correct information in their management system database, and sometimes the government does too. This conflicts with the argument that the quality of education, monitoring, and evaluation require updated and relevant data, along with the leadership of the school head, to make decision-making effective (Schildkamp, 2019). It is also emphasized by Enteria & Role (2018) that in the pursuit of quality education for all, the significance of timely, cost-effective, and accurate data in evaluating education policy, determining education planning, and monitoring progress toward the attainment of development goals is increasingly important. This can be used as a wake-up call for the government and stakeholders to consider how they can effectively utilize EMIS with correct and accurate data, as incorrect data may lead to wrong decision-making in the education sector.

Conclusion

The Education management information system in Tanzania plays a crucial role in the efficient management of schools. All school principals were observed to heavily rely on EMIS for decision-making, as it serves as the primary source of clear and dependable school-related data. EMIS collects and provides statistics on student enrollment and progress across various educational levels, categorized by grade or year, gender, and age. This simplifies administrative tasks and monitoring processes within schools. Furthermore, EMIS also allows schools to access information about the quantity and condition of school facilities and equipment. Lastly, EMIS has been instrumental in assisting policymakers in effectively overseeing and improving the education system to produce high-quality outcomes. Therefore, much effort is needed by schools, stakeholders, and the government to create a conducive environment for the successful use of EMIS, as it causes school management to become more effective. To enhance administrative decision-making processes and ensure that decision-making, policy analysis, formulation, planning, monitoring, and the management of education become a reality, effective EMIS operations should be adequately available to all schools in Tanzania.

References

Ary, D., Cheser, L. & Sorensen, C. (2010). *Introduction to Research in Education (8th ed.)*. Belmont: Thomson Wadsworth.

Asio, J. M. R., Leva, E. F., Lucero, L. C., & Cabrera, W. C. (2022). Education Management Information System (EMIS) and Its Implications to Educational Policy: A Mini-Review. *International Journal of Multidisciplinary: Applied Business and Education Research*, *3*(8), 1389–1398. https://doi.org/10.11594/ijmaber.03.08.01

Bhatti, S. A., & Adnan, A. (2010). *Challenges in Education Management Information System in develpoing countries. 2010 International Conference on Information and Emerging Technologies, ICIET 2010, May*. https://doi.org/10.1109/ICIET.2010.5625692.

Clarke, V. and Braun, V. (2013) *Successful qualitative research: A practical guide for beginners*. London: Sage.

Creswell, J. W. (2017) *Research design: Qualitative, quantitative, and mixed methods approach*. 4th Edition: Sage publications, Ch.2 pp 1-71.

Enteria, O. C., & Role, M. S. (2018). Education Management and Information System (EMIS) for Public Elementary Schools. *International Journal of Scientific Research and Management (IJSRM)*, *6*(06). https://doi.org/10.18535/ijsrm/v6i6.el012

Fenech, R., Baguant, P., & Ivanov, D. (2019). The changing role of human resource management in an era of digital transformation. *Journal of Management Information and Decision Sciences*, *22*(2), 176–180.

Fernández-Batanero, J. M., Román-Graván, P., Reyes-Rebollo, M. M., & Montenegro-Rueda, M. (2021). Impact of educational technology on teacher stress and anxiety: A literature review. *International Journal of Environmental Research and Public Health*, *18*(2), 1–13. https://doi.org/10.3390/ijerph18020548

Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, *3*, 275–285. https://doi.org/10.1016/j.susoc.2022.05.004

Hanımoğlu, E. (2018). The Impact Technology Has Had on High School Education over the Years. *World Journal of Education*, *8*(6), 96. https://doi.org/10.5430/wje.v8n6p96

Helal, M. S. A., Ahmed, I., & Bhuiyan, M. E. M. (2021). Impact of Education Management Information System (EMIS) on Teaching-Learning Development. *International Journal of Academic Research in Progressive Education and Development*, *10*(2). https://doi.org/10.6007/ijarped/v10-i2/10443.

Husein, A.-H., Maurice, S., & Namrata, S. (2015). *Improving student learning through informed decisions: The role of education management information systems (English). Education Notes. Washington, D.C.: World Bank Group.* Retrieved from https://documents1.worldbank.org/curated/en/529131468338532010/pdf/955550BRI0Box300Notes0EMIS00PUBLIC0.pdf

Manyengo, P. R. (2021). *Digitalization in teaching and education in the context of COVID-19: United Republic of Tanzania: Digitalization, the future of work and the teaching profession project (Background report). Geneva: International Labour Organisation.* Retrieved from https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_783733.pdf

Martins, J., Branco, F., Gonçalves, R., Au-Yong-Oliveira, M., Oliveira, T., Naranjo-Zolotov, M., & Cruz-Jesus, F. (2019). Assessing the success behind the use of education management information systems in higher education. *Telematics and Informatics*, *38*, 182–193. https://doi.org/10.1016/j.tele.2018.10.001

Maryani, L., Nur, J., Utami, S., Nurnaifah, I. I., & Farida. (2023). Strengthening School Management with Digital Education Technology to Improve the Quality of Educational Output. *Indonesian Journal of Educational Research and Review*, *6*(2), 446–465. https://doi.org/10.23887/ijerr.v6i2.66039

Mati, W. (2020). *Assessment of Educational Management Information System (EMIS) Implementation in Oromia Regional State, Ethiopia* (Unpublished master thesis). Jimma University, Ethiopia.

Mwambo, L. J. (2019). The Impact of Principals use of Information and Communication Technologies ICTS in Effective Administration in Public Secondary Schools in Fako Division. *International Journal of Trend in Scientific Research and*

Development, *Volume-3*(Issue-2), 687–701. https://doi.org/10.31142/ijtsrd21468

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative Research A Guide to Design and Implementation*. San Francisco: CA Wiley.

Nkata, A. S., & Dida, M. A. (2020). A Framework for Implementing an Education Management Information System in Tanzanian Secondary Schools to Improve Delivery of Quality Education and Students' Academic Achievement. *Journal of Information Systems Engineering and Management*, *5*(2). https://doi.org/10.29333/jisem/7858

Odusanya, O. (2019). Use of Educational Management Information System in University of Lagos Distance Learning Education. *International Journal of Engineering and Information Systems (IJEAIS)*, *3*(4), 55–59.

Okeke, U., & Ikediugwu, N. (2021). Assessment of Principals' Implementation of Education Management Information Systems in Secondary Schools in Anambra State. *AJEMATES African Journal of Educational Management, Teaching and Entrepreneurship Studies*, 2, 422–443.

Prasetyo, D. D., Ilya, A. H., Hidayat, S., & Citraningsih, D. (2023). Application of Education Management Information System in the Online Learning Process in Madrasah. *AL-ISHLAH: Jurnal Pendidikan*, *15*(1), 423–432. https://doi.org/10.35445/alishlah.v15i1.2863

Priscila, S. S., & Venkatesan, N. (2020). Education Management Information System in the Schools/Colleges - A Case Study of Tamilnadu Division. *International Journal of Research in Engineering, Science and Management*, *3*(9), 32–37. https://doi.org/10.47607/ijresm.2020.281

Savin-Baden, M. & Major, C. (2013) *Qualitative research: The essential guide to theory and practice*. London: Routledge.

Schildkamp, K. (2019). Data-based decision-making for school improvement: Research insights and gaps. *Educational Research*, *61*(3), 257–273. https://doi.org/10.1080/00131881.2019.1625716

Shah, M. (2014). Impact of Management Information Systems (MIS) on School Administration: What the Literature Says. *Procedia - Social and Behavioral Sciences*, *116*, 2799–2804. https://doi.org/10.1016/j.sbspro.2014.01.659

Ugwude, A., & Ugwude, D. (2020). Challenges of Education Management Information Systems on Primary School Administration in Nsukka Local Government Education Authority of Enugu State. *National Journal of Educational Leadership (NJOEL)*, *Vol.5 No.2*, 49–56.

UNESCO. (2020). *The role of education management information systems in supporting progress towards SDG 4 Recent trends and international experiences*. Retrieved from *https://doi.org/https://doi.org/10.54675/IYVM7139*.

UNESCO. (2021). *Module 3: Improving Education Management Information Systems (EMIS)*. Retrieved from. https://apa.sdg4education2030.org/sites/apa.sdg4education2030.org/files/2021-07/module-3.pdf.

Vaiz, M. E., & Altinay, Z. (2017). Reaching out merits of information technology: Conflict management in schools. *Eurasia Journal of Mathematics, Science and Technology Education*, *13*(7), 2979–2992. https://doi.org/10.12973/eurasia.2017.00732a

Wang, D., Yang, D. M., Zhou, H., Wang, Y., Hong, D., Dong, Q., & Song, S. (2020). A novel application of educational management information system based on micro frontends. *Procedia Computer Science*, *176*, 1567–1576. https://doi.org/10.1016/j.procs.2020.09.168