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DIGITALIZATION OF EDUCATION MANAGEMENT SYSTEMS FOR SUSTAINABILITY

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Abstract

The digitalization of education management systems (EMS) is a transformative force in global education, enhancing administrative efficiency, resource optimization, and sustainability. This study critically examines the benefits of digitalization in education governance, analyzing its contribution to institutional agility, cost reduction, environmental impact, and accessibility. The study adopted a survey research method. A randomly selected population sample of 600 educational administrators comprising of 300 male and 300 female respectively. Two research questions and a null hypothesis guided the study and was tested at a 0.05 level of significance. The research instrument used for data collection is a 4 point rating scale, The instrument was validated by three specialist; two in educational management and planing and one from education measurement and evaluation. The reliability of the instrument was established at 0.78 using cronnbach alpha statistics. Mean rating was used to answer the two research questions while t-test of Linear correlation statistic was used to test the hypothesis. The study concluded that; enhanced efficiency and automation, centralized data management, improved communication and collaboration, personalized learning experiences, seamless integration with e-learning platforms, real-time performance tracking, cost reduction, scalability and resource optimization, financial transparency and energy efficiency in institutions are the benefits and digital divide, cyber security risks, resistance to change and infrastructure costs as the challenges of digitalization of educational management system for sustainability. Recommendation of stronger data protection regulations, ethical AI governance in education, and public-private partnerships with regulatory oversight was made based on the findings.

Keywords: Digitalization, education management systems and sustainability

Introduction

Education has long been recognized as a cornerstone of societal development, yet its administration has often been constrained by outdated, labor-intensive management systems. Traditionally, education management has relied on manual record-keeping, paper-based documentation, and bureaucratic processes that are not only time-consuming but also prone to inefficiencies, errors, and high operational costs (Selwyn, 2021). This conventional approach to education governance, while functional in the past, is becoming increasingly unsustainable in an era where technological advancements are redefining institutional operations. The rapid emergence of artificial intelligence (AI), cloud computing, big data analytics, and digital automation has revolutionized the way educational institutions function. Secondary schools, universities, and education ministries worldwide are integrating digital solutions into their management structures, leading to increased efficiency, improved accessibility, and enhanced decision-making processes (Oputa, 2023).

These innovations have facilitated real-time data analysis, automated administrative workflows, and enabled remote learning capabilities, making education more adaptable to evolving societal and economic demands. According to Ethel (2018), much of the discourse surrounding digitalization in education management has focused on

cost reduction and operational efficiency leading to a more profound transformation. The shift toward digital education management is not merely a technological upgrade, rather, it represents a systemic transformation that redefines institutional governance, resource allocation, and sustainability. As Selwyn (2021) emphasizes, digitalization enhances institutional agility by reducing costs, streamlining administration, and enabling a data-driven decision-making culture. However, this perspective only scratches the surface of the broader implications of digitalization in education.Ibe (2022) asserted that The digitalization of Education Management Systems (EMS) has become a critical strategy for improving efficiency, accessibility, and sustainability in the education sector. By integrating digital technologies, institutions can enhance administrative processes, reduce environmental impact, and foster data-driven decision-making.

However, despite the acknowledged importance and benefits of digitalization in educational management as a strategic pathway toward sustainability, persistent concerns remain over the lapses in clearly defined roles and the inadequacy of coherent implementation strategies. These shortcomings hinder the effective integration of digital tools and compromise the long-term sustainability and equity of educational systems. According to Obizue, Nwachukwu and Ezeji (2024), irrespective of the recognized importance of digitalization in educational management as a catalyst for enhancing sustainability, significant concerns persist regarding existing lapses and systemic flaws within the educational landscape. These challenges raise critical questions about the effectiveness, equity, and ethical implementation of digital solutions across diverse educational contexts. The worries about tis concern prompted the researchers to examined the benefits of digitalization in EMS, challenges, and its contribution to sustainability.

To fully comprehend the role of digitalization in education management, it must be examined from multiple perspectives. Digitalization is not merely a tool for improving efficiency; rather, it represents a paradigm shift that reshapes how educational institutions function, make decisions, and pursue sustainable development. This transformation is best understood through three interrelated dimensions. First, digitalization serves as a systemic transformation that redefines institutional governance. It does more than enhance administrative processes; it fundamentally restructures how decisions are made and how institutions operate. By digitizing records, automating workflows, and incorporating AI driven analytics, institutions can shift from reactive to proactive governance. Tools such as predictive analytics enable more accurate tracking of student performance, forecasting of enrollment patterns, and planning of resource allocation. This not only enhances operational precision but also supports long term institutional planning. Furthermore, digitalization promotes a decentralized governance structure where data driven decisions reduce bureaucratic delays and eliminate redundancies, thus fostering a more responsive and efficient educational system (Oputa, 2023). Second, digitalization functions as a sustainability enabler by minimizing the environmental impact of traditional educational operations. The shift from paper based to digital platforms reduces deforestation, lowers carbon emissions, and decreases solid waste generation (UNESCO, 2023). The automation of routine administrative tasks reduces the reliance on extensive physical infrastructure, leading to more energy efficient operations. Additionally, the use of cloud based solutions optimizes data storage and minimizes the environmental footprint associated with on premise servers. Remote learning capabilities further contribute to sustainability by reducing the need for transportation and physical classroom infrastructure. Third, while digitalization brings numerous advantages, it also acts as a potential disruptor by introducing ethical and policy challenges. The growing integration of AI and machine

learning in educational systems raises serious concerns about data privacy, algorithmic bias, and cyber security vulnerabilities (Ethel, 2018). Many institutions operate without comprehensive data governance frameworks, exposing students and staff to risks of surveillance, data breaches, and digital marginalization. Moreover, the involvement of private technology firms in educational service delivery raises questions about the commercialization of student data and the ethical implications of allowing corporate influence in public education (Mejias, 2019).

The digitalization of education management systems, which refers to the use of software based platforms to oversee academic, administrative, and financial functions, is central to achieving sustainability in education. These systems leverage technologies such as cloud computing, artificial intelligence, blockchain, and big data analytics. Key features include student information management, which streamlines enrollment and academic record keeping; integration with e learning platforms and learning management systems (LMS); administrative automation covering payroll, scheduling, and grading; and data driven decision making that improves institutional performance. Cloud based collaboration tools further enhance remote learning and support real time communication among students, teachers, and administrators (Ibe, 2022). The sustainability of digitalized education management systems can be assessed along environmental, economic, and social dimensions. Environmentally, paperless operations reduce paper consumption and minimize deforestation and waste, while smart technologies support energy efficient campuses. Online learning significantly reduces carbon emissions by limiting the need for travel and physical infrastructure. Economically, digital systems lower operating costs through reduced paperwork, labor, and storage demands. These systems also allow for institutional scalability without major physical expansion and promote financial transparency through technologies like blockchain and AI (Ethel, 2018). Socially, digitalization enhances inclusive education by providing access to learners in remote and underserved areas. AI driven platforms facilitate personalized learning experiences that respond to individual student needs. Teachers also benefit through professional development and curriculum management tools that empower them to improve instructional delivery. Therefore, the digitalization of education management systems plays a vital role in advancing sustainability by reducing environmental impacts, enhancing operational efficiency, and broadening access to education. However, these benefits are not without challenges. A significant issue is the digital divide, where unequal access to technology limits adoption in under resourced or rural regions. Cyber security threats remain a concern, as do institutional resistance to technological change and the high initial costs of acquiring digital infrastructure and training staff. Overcoming these barriers is critical to ensuring that digital transformation contributes meaningfully to a sustainable and equitable educational future.

The digitalization of Education Management Systems (EMS) has significantly transformed the operations of educational institutions, bringing improvements in efficiency, sustainability, and accessibility across various dimensions. Administratively, digital EMS has improved efficiency by automating routine tasks such as student enrollment, attendance tracking, grading, and fee management. This automation minimizes paperwork and reduces human errors in record keeping. It also accelerates decision making by providing real time data on institutional performance. Centralized data management is another key administrative benefit, as all records related to students, faculty, and institutions are stored securely in digital systems. Cloud based EMS platforms ensure accessibility from multiple locations, supporting both remote work and learning.

This approach reduces data duplication and improves accuracy. Furthermore, digital EMS enhances communication and collaboration by integrating email, chat, and video conferencing tools. Teachers, students, and administrative staff interact more effectively, while parents are also able to monitor student progress and maintain communication with educators through dedicated digital portals. From an educational perspective, digital EMS supports personalized learning experiences. AI driven systems adapt to individual student needs, creating customized learning paths. Educators are empowered with learning analytics to identify struggling students and provide targeted support. EMS also seamlessly integrates with e learning platforms and learning management systems to support online courses, digital assessments, and virtual classrooms. This integration facilitates both hybrid and remote learning models, thereby expanding accessibility. Real time performance tracking is also a critical educational benefit, as digital grading and analytics tools offer immediate feedback that helps teachers adjust their teaching strategies based on data informed insights.

Economically, digital EMS contributes to substantial cost reduction by decreasing the need for printing, paper, and manual processes. Operational expenses are minimized through automation, and the support for remote learning reduces infrastructure costs associated with physical facilities. The system also promotes scalability and optimal resource use, allowing institutions to expand their operations without heavy investment in buildings or physical infrastructure. Real time data helps in the efficient allocation of faculty, classrooms, and institutional resources. Additionally, digital EMS strengthens financial transparency. Automated financial management systems reduce the risk of fraud and enhance accountability. Secure online payment portals streamline tuition and other transactions, supporting efficient financial operations. In terms of environmental benefits, digital EMS promotes a significant reduction in paper usage by digitizing records, replacing textbooks with e books, and facilitating online assignments. These paperless processes reduce deforestation and help minimize campus waste. The adoption of online learning and remote administration further reduces the carbon footprint by decreasing the need for commuting. Cloud based storage eliminates physical file storage requirements, saving both space and resources. Energy efficiency is also enhanced through IoT enabled EMS platforms that help monitor and optimize energy consumption. Smart lighting and HVAC systems contribute to environmentally responsible campus management.

Socially, digital EMS increases access and inclusion by making education more reachable for students in remote locations and for those living with disabilities. The systems support multilingual features and assistive technologies, allowing learners with diverse needs to engage more fully in the learning process. Student engagement and experience are also improved through interactive digital tools, gamified learning, and AI powered tutors. Virtual and augmented reality tools further enrich the educational experience by creating immersive environments. Teacher and staff productivity are also positively affected. By reducing administrative burdens, teachers can devote more time to instruction. Digital EMS also provides access to professional development resources and encourages collaboration among educators. Security and compliance are additional important areas of impact. Digital EMS platforms ensure the protection of sensitive information through secure cloud storage, encryption, and other cyber security measures. Block chain technology reinforces the integrity and authenticity of academic records, reducing the risk of tampering or data loss. Moreover, EMS systems support institutional compliance with educational regulations and accreditation standards. Automated reporting functions streamline the preparation of audit materials and quality assurance documents,

ensuring institutions remain accountable and transparent. Generally, the digitalization of education management systems offers a comprehensive range of benefits that support operational efficiency, sustainability, inclusivity, and institutional accountability in modern education.

Despite its potential to enhance sustainability, digitalization also brings significant risks and unintended consequences. Oputa (2023) opined that these challenges include the digital divide, cyber security risks, resistance to change, and the high costs associated with technological infrastructure. These issues stem from the very technologies that drive efficiency, creating a paradox where digital solutions may simultaneously introduce new vulnerabilities and worsen existing inequalities. One of the most pressing concerns in digital education management is the presence of algorithmic bias embedded within AI driven decision making systems. Increasingly, educational institutions are turning to algorithms for tasks such as student admissions, resource allocation, grading, and predictive analytics. Although these systems are designed to promote objectivity, research indicates that AI models frequently reflect and reinforce existing systemic inequalities, particularly along socioeconomic, racial, and gender lines (Ethel, 2018). For example, automated grading systems have been criticized for disadvantaging students from marginalized communities due to training datasets that disproportionately favor learners from affluent and well resourced institutions. Similarly, AI based resource allocation tools may unintentionally direct support toward elite schools, while underfunded public institutions are deprioritized, thereby perpetuating educational disparities. These biases arise because algorithms are often trained on historical data, which carry the social prejudices and structural inequities of the past. Instead of correcting these inequities, digital systems may inadvertently entrench them further.

As educational institutions become increasingly reliant on digital Education Management Systems, student records, academic histories, and administrative data are now stored on cloud based platforms and centralized databases. Although this transition improves institutional efficiency and data accessibility, it also exposes the system to cyber security threats, data breaches, and surveillance concerns (Obizue, Nwachukwu, and Ezeji, 2024). Incidents involving unauthorized access to student information, hacking of school databases, and data leaks are becoming more frequent, highlighting weaknesses in institutional security frameworks. Moreover, the integration of technologies such as biometric authentication, online proctoring, and AI enabled student tracking has raised ethical concerns about student privacy and the potential for mass surveillance. Without strong data governance policies in place, educational institutions risk violating students' rights to privacy and autonomy; rather than empowering students, unchecked digital surveillance may convert educational spaces into zones of constant monitoring. Another critical issue is the growing environmental impact of electronic waste, which reveals a contradiction in the sustainability goals associated with digitalization. Although digital tools reduce the need for paper based processes, they contribute to a growing accumulation of obsolete electronic equipment. As institutions adopt new technologies and migrate to cloud based systems, the lifespan of devices such as computers, tablets, and servers becomes shorter. According to UNESCO (2023), the education sector has become a notable contributor to global electronic waste. This problem is especially pronounced in developing countries, where outdated technologies are often exported and discarded in informal e waste dumps, causing environmental degradation and public health risks. The question then arises: Can digitalization be considered truly sustainable if it results in environmental damage elsewhere? For education systems to remain environmentally

responsible, they must adopt circular economy principles, ensuring that digital infrastructure is reused, recycled, and managed in an ecologically sound manner. Digital transformation, therefore, must not be viewed as an end in itself but as a strategically guided process that takes into account its long term technological and ecological consequences.

Digitalization in education does not occur in a neutral or isolated context. It is deeply influenced by global economic interests, geopolitical power structures, and corporate agendas. The expansion of digital education management has been driven not only by technological innovation but also by the growing privatization of education technology and the dominance of multinational digital firms. Private sector actors such as Google, Microsoft, and Amazon now play a central role in shaping how digital education is implemented. While they offer essential infrastructure, cloud storage, and AI powered learning tools, their influence raises critical questions about data ownership and institutional autonomy. Many educational institutions have become dependent on proprietary software and services provided by these corporations. This dependency creates lock in effects that make it difficult for schools and universities to transition to alternative systems. Moreover, the commercial use of educational data, including the use of student information for advertising or research, raises ethical concerns. Limited public oversight of these companies means that digital education policies may prioritize corporate profit motives over educational integrity. This prompts a larger question: Should the future of digital education be controlled by private corporations or by public institutions?

Developing countries face unique challenges related to technological dependence, a phenomenon increasingly described as digital colonialism. Most cloud computing services, AI driven platforms, and learning management systems are developed and controlled by firms located in North America and Europe. Consequently, education systems in the Global South rely heavily on external technologies and infrastructures, often without the capacity to build indigenous alternatives (Mhlanga, 2022). This reliance mirrors historical patterns of economic dependence, whereby countries in Africa, Asia, and Latin America are influenced by foreign technological agendas. Without intervention, these regions may find themselves consumers rather than co creators in the global digital education landscape. Addressing this challenge requires strategic investment in local digital infrastructure, robust data sovereignty laws, and international partnerships that promote equitable technological development rather than continued dependence. Another pressing concern is the lack of adequate policy and regulatory frameworks to govern the use of digital tools in education. Many institutions and ministries of education implement digital systems without clear policies that address essential issues. There is often no formal guidance on who owns the educational data collected through digital platforms, how AI based decision making should be monitored to prevent discrimination, or what cyber security measures are necessary to protect digital infrastructures from attacks. Oputa (2023) noted that in the absence of such frameworks, digitalization tends to be fragmented, uncoordinated, and vulnerable to inefficiencies and ethical violations. For digital education management to be sustainable and just, there must be collective efforts to create global standards, implement national data protection laws, and adopt institutional policies that prioritize ethical responsibility alongside innovation. Ibe (2022) also observed that while digitalization offers promising benefits in terms of efficiency, access, and sustainability, it must be critically examined in light of its broader implications. From algorithmic bias and cyber security threats to the monopolization of education technology and the dangers of digital colonialism, the future of digital education management depends

on how these challenges are addressed. If digitalization is to serve the public good, rather than reproduce social and technological inequalities, stakeholders must commit to transparency, ethical governance, and long term accountability. Sustainable digitalization is not merely about adopting new tools; it is about reimagining education systems in ways that are equitable, inclusive, and resilient for the future.

The rapid digitalization of education systems has introduced numerous efficiencies and expanded opportunities for improving access, equity, and sustainability in learning environments. However, for these transformations to achieve long term impact, digital integration must be carefully managed under a comprehensive and robust governance structure. Moving beyond initial excitement over technological innovations, it is imperative that educational stakeholders adopt a holistic and inclusive approach to digitalization—one that balances technological advancement with ethical responsibility, regulatory oversight, and environmental sustainability. In this context, the adoption of sustainable digital Education Management Systems must be approached through a well structured strategy that ensures long term viability while addressing critical challenges in areas such as data protection, artificial intelligence ethics, and corporate accountability. A sustainable approach to digital transformation in education can be effectively guided through a three phase model. This model emphasizes the importance of readiness, integration, and long term sustainability, ensuring that institutions are not only digitally transformed but are also capable of sustaining this transformation equitably and ethically.

The first phase involves digital readiness, which entails establishing a solid technological foundation through investments in infrastructure, human capacity, and cyber security systems. For any digital initiative to succeed, educational institutions must first build adequate infrastructure. This includes investments in broadband connectivity, modern servers, cloud computing capacity, and updated digital devices. These foundational elements are critical to ensuring equitable access and enabling future scalability. Alongside infrastructure, building digital literacy is essential. Educators, administrators, and students must be equipped with the skills necessary to navigate digital platforms effectively. Programs that promote both basic and advanced digital competencies will help avoid exclusion in a rapidly digitalized learning environment. Moreover, the increasing reliance on digital systems demands robust cyber security frameworks. Institutions must implement strong data protection protocols such as encryption, multi factor authentication, and regular cyber security audits to mitigate risks of breaches and safeguard sensitive academic and administrative data. The second phase of the model focuses on digital integration, which involves embedding advanced technologies into the daily operations of educational institutions. Artificial intelligence has the potential to enhance institutional efficiency by supporting automated grading, predictive analytics, and personalized student support. These capabilities can make the learning environment more responsive and adaptive. However, AI must be deployed in ways that are transparent and ethically grounded. Institutions must be vigilant about algorithmic bias and ensure that AI tools promote fairness rather than reinforce systemic inequalities. Another technological innovation with transformative potential is block chain based credentialing. This technology allows institutions to issue secure and verifiable digital certificates, diplomas, and transcripts. The tamper resistant nature of block chain increases institutional credibility and ensures the authenticity of student records. Furthermore, the integration of cloud based learning management systems facilitates remote learning, enhances access to instructional materials, and improves collaboration among educators and students. These systems enable the hosting of courses, assessments,

and real time interactions, thereby promoting flexible and scalable learning models. They also support large scale data analytics that inform decisions on curriculum design and student performance enhancement.

The final phase addresses the need for long term sustainability, emphasizing environmental stewardship and responsible technology use. Institutions must begin to view digitalization through the lens of environmental responsibility by adopting practices that align with circular economy principles. One strategy is to promote hardware reuse and recycling rather than continuous procurement and disposal. Institutions can initiate donation programs, refurbish outdated devices, and establish partnerships with certified e waste recycling firms to manage obsolete technology responsibly. Additionally, transitioning to cloud services should be accompanied by the selection of providers that commit to renewable energy use and carbon neutral operations. Such energy efficient cloud solutions help reduce the environmental footprint of digital education systems. Equally important is the development of sustainable procurement policies. Institutions should prioritize vendors offering environmentally friendly and energy efficient technologies. In selecting both hardware and software, decisions should be guided by considerations of long term sustainability, including energy consumption and lifecycle impact. Despite these strategic directions, a critical gap remains in existing scholarship and policy frameworks. While there is a growing body of research on the benefits and challenges of digitalization in education, very few studies have addressed how a phased and policy guided model can be implemented to ensure sustainable digital transformation in education management. There is limited empirical evidence on how educational institutions, particularly in developing contexts, can operationalize a structured, ethical, and environmentally responsible digitalization strategy. Furthermore, issues of data governance, AI ethics, and digital sovereignty continue to receive inadequate policy attention. This gap underscores the urgent need for further research into the development of adaptable governance models that align digital transformation efforts with national sustainability goals, institutional equity mandates, and global ethical standards.

Statement of the Problem

The integration of digital technologies into education management has emerged as a transformative force capable of enhancing efficiency, equity, and sustainability in educational institutions. Ideally, digitalization in education management should enable transparent data-driven decision-making, facilitate inclusive access to educational resources, improve administrative coordination, and promote environmentally responsible practices. In such a scenario, institutions would operate with secure cloud-based systems, ethical AI applications, and policies that protect data privacy while enhancing educational outcomes in line with sustainable development goals. However, the reality in many educational contexts, especially in developing countries, reveals a significant deviation from this ideal. Despite increased investments in Education Management Systems, implementation remains fragmented, with inadequate infrastructure, weak data protection policies, limited digital literacy, and growing dependence on proprietary foreign technologies. The prevalence of algorithmic bias in AI tools, the rise in cyber security threats, and the accumulation of electronic waste have further complicated the digitalization process. Additionally, the absence of clear regulatory frameworks and sustainable procurement policies continues to hinder the effective adoption and long-term viability of digital systems in education. As a result, many institutions find themselves unprepared to manage the ethical, environmental, and technological implications of digital transformation. Therefore, the problem of this study is that despite the rapid adoption of

digital technologies in education management, many institutions lack a strategic, phased, and policy-driven framework to ensure that digitalization efforts are sustainable, inclusive, secure, and aligned with long-term educational goals.

Purpose of the Study

The main purpose of the study is to explore the impact of Digitalization of Educational Management System for sustainability. Specifically, the study seeks to;

1. ascertain the Benefits of Digitalization of Educational Management System for sustainability.
2. determine the challenges of Digitalization of Educational Management System for sustainability.

Research Questions

Two research questions were formulated to guide the studies:

1. What are the benefits of Digitalization of Educational Management System for sustainability?
2. What are the challenges of Digitalization of Educational Management System for sustainability?

Hypothesis

A null hypothesis was postulated to guide the study;

Ho_1: There is no significant difference in the mean scores of male and female educational administrators on the impact of Digitalization of Educational Management System for sustainability.

Methods

The study adopted a survey research method; the population of the study consists of 2784 education administrators in a registered group. A randomly selected population sample of 600 educational administrators comprising of 300 male and 300 female respectively. Two research questions constructed by the researchers titled: Digitalization of Education Management for Sustainability Questionnaire (DEMSQ) and a null hypothesis guided the study and was tested at a 0.05 level of significance. The research instrument used for data collection is a 4 point rating scale, The instrument was validated by three specialist; two in educational management and planing and one from education measurement and evaluation. The reliability of the instrument was established at 0.78 using cronnbach alpha statistics. Mean rating was used to answer the two research questions while t-test of simple linear correlation statistic was used to test the hypothesis.

Results

Research Question One: What are the benefits of Digitalization of Educational Management System for sustainability?

Table 1: Mean ratings of male and female educational administrators on benefits of Digitalization of Educational Management System for sustainability?

S/N	Item Statement	SA (4)	A (3)	D (2)	SD (1)	X	SD	Decision
1.	Enhanced Efficiency and Automation	320	240	30	10	4.4	0.78	Agree
2.	Centralized Data Management	360	220	10	10	4.9	0.85	Agree

3. Improved Communication and Collaboration	320	240	30	10	4.4	0.78	Agree
4. Personalized Learning Experiences	300	230	40	30	4.8	0.85	Agree
5. Seamless Integration with E-Learning Platforms	310	260	20	10	4.1	0.76	Agree
6. Real-Time Performance Tracking	300	220	50	30	4.6	0.83	Agree
7. Cost Reduction	340	200	40	20	4.9	0.86	Agree
8. Scalability and Resource Optimization	330	250	10	10	4.8	0.85	Agree
9. Financial Transparency	330	250	10	10	4.8	0.85	Agree
10.Energy Efficiency in Institutions	330	250	10	10	4.8	0.85	Agree
Grand mean and SD					4.7	0.82	

Table 2: shows a very high mean rating by the respondents to the items listed. This means that both male and female educational administrators agreed to the items listed which include Enhanced Efficiency and Automation, Centralized Data Management, Improved Communication and Collaboration, Personalized Learning Experiences, Seamless Integration with E-Learning Platforms, Real-Time Performance Tracking, Cost Reduction, Scalability and Resource Optimization, Financial Transparency and Energy Efficiency in Institutions as the benefits of Digitalization of Educational Management System for sustainability. The grand mean of 4.7 and SD of 0.82 was obtained for all the ten items, Thus, indicating that the respondents generally agree with all the items as contributing to the benefits of Digitalization of Educational Management System for sustainability.

Research Question Two: What are the challenges of Digitalization of Educational Management System for sustainability?

Table 2: Mean ratings of male and female educational administrators on the challenges of Digitalization of Educational Management System for sustainability.

S/N	Item Statement	SA (4)	A (3)	D (2)	SD (1)	X	SD	Decision
1.	Digital Divide	300	220	50	30	4.6	0.82	Agree
2.	Cybersecurity Risks	340	200	30	30	4.8	0.84	Agree
3.	Resistance to Change	310	250	20	20	4.2	0.80	Agree
4.	Infrastructure Costs	300	220	40	40	4.7	0.81	Agree
	Grand Total					4.6	0.82	

Table 2: shows a very high mean rating by the respondents to the items listed. This means that both male and female educational administrators agreed to the items listed above as the challenges of Digitalization of Educational Management System for sustainability. The grand mean of 4.6 and SD of 0.82 was obtained for all the four items which include Digital Divide, Cyber security Risks, Resistance to Change and Infrastructure Costs. Thus indicating that the respondents generally agree with all the items.

Hypotheses

Ho_1: There is no significant difference in the mean scores of male and female educational administrators on the impact of Digitalization of Educational Management System for sustainability.

Table 3: t-test of difference between the mean scores of male and female educational administrators on the impact of Digitalization of Educational Management System for sustainability.

Respondents	N	x	SD	df	t-cal	t-Crit	Decision
Male lecturers	300	4.6	0.82				
				166	0.85	+1.96	Not Significant
Female lecturers	300	4.7	0.81				

Table 3 shows that the calculated t-value at 0.05 of significance and 166 degree of freedom is 0.85 while the critical or table value is + 1.96. Since the calculated value of t is less than critical t-value, the null hypothesis is therefore, not rejected. This means that no significant difference exists between the mean ratings of male and female educational administrators on the impact of Digitalization of Educational Management System for sustainability.

Discussion

The first research question seeks to ascertain the Benefits of Digitalization of Educational Management System for sustainability. The findings reveal that digitalization significantly enhances institutional sustainability. With the findings in research question 1, a very high mean rating by the respondents to the items listed indicating that both male and female educational administrators agreed that; Enhanced Efficiency and Automation, Centralized Data Management, Improved Communication and Collaboration, Personalized Learning Experiences, Seamless Integration with E-Learning Platforms, Real-Time Performance Tracking, Cost Reduction, Scalability and Resource Optimization, Financial Transparency and Energy Efficiency in Institutions are the benefits of Digitalization of Educational Management System for sustainability. The grand mean of 4.7 and SD of 0.82 was obtained for all the ten items, Thus, indicating that the respondents generally agree with all the items as contributing to the benefits of Digitalization of Educational Management System for sustainability. This is in agreement with the assertion of Obizue, Nwachukwu, and Ezeji (2024), that digitalization of Education Management Systems (EMS) has transformed the way educational institutions operate, improving efficiency, sustainability, and accessibility. The second research question seeks to determine the challenges of Digitalization of Educational Management System for sustainability and discovered; Digital Divide, Cyber security Risks, Resistance to Change and Infrastructure Costs as the challenges. This was shown in the table 2 with a very high mean rating by the respondents to the items listed. This means that both male and female educational administrators agreed to the items listed above as the challenges of Digitalization of Educational Management System for sustainability. The grand mean of 4.6 and SD of 0.82 was obtained for all the four items, thus indicating that the respondents generally agree with all the items. This finding is in line with the opinion of Oputa (2023), that digitalization also brings significant risks and unintended consequences. These challenges of include digital divide, cyber security risks, resistance to change and infrastructure costs stem from the very technologies that drive efficiency, revealing a paradox where digital solutions may simultaneously create new vulnerabilities and exacerbate existing inequalities.

Conclusion

Digitalization represents more than just a tool for operational efficiency; it is a fundamental transformation in how education is delivered and managed. However, the adoption of digital tools must be approached with a clear strategy that prioritizes

sustainability, equity, and ethical governance. The future of education management systems depends not only on the widespread adoption of digital technologies but on how we integrate these technologies in ways that are inclusive, responsible, and forward-thinking. By adopting sustainable practices and addressing the ethical and regulatory challenges of digitalization, educational institutions can foster an equitable, resilient, and environmentally responsible educational landscape for the future. Ultimately, the success of digitalization in education hinges on our ability to balance technological innovation with social responsibility creating an education system that is sustainable, inclusive, and ethically sound for generations to come. The digitalization of EMS offers significant advantages for educational institutions, students, teachers, and administrative staff. It enhances operational efficiency, reduces costs, promotes sustainability, and improves accessibility. While challenges such as the digital divide and cyber security risks remain, the benefits of digital EMS far outweigh the drawbacks, making it a crucial component of modern education systems.

Recommendations

Based on the findings, the following recommendations were made:

1. Stronger data protection regulations should be developed and strictly enforced across all levels of the education system to secure digital records, protect personal information of students and staff, and uphold trust in digital education management systems. This will help prevent unauthorized access, data breaches, and misuse of digital records, thereby supporting a sustainable and secure digital infrastructure.
2. Ethical AI governance in education should be prioritized to guide the responsible use of artificial intelligence in digital education management systems. Institutions should adopt transparent, fair, and accountable AI frameworks that ensure decision-making processes such as student assessment, administrative monitoring, or resource allocation are free from bias and aligned with inclusive educational values.
3. Public-private partnerships with regulatory oversight should be fostered to strengthen the digital capacity of education management systems. These partnerships should support investment in infrastructure, training, and software development, while regulatory bodies ensure that such collaborations maintain equity, accountability, and alignment with national education sustainability goals.

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