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RESEARCH ARTICLE

Indispensability of Educational Management Systems (EMS) in influencing the key determinants of university effectiveness in Gwagwalada Area Council – Abuja, Nigeria.

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ABSTRACT

This study assessed the indispensability of Educational Management Systems (EMS) as determinants of university effectiveness in Gwagwalada Area Council -Abuja, Nigeria. The study employed a survey research design. The target population of this study was 559 university -year one students from Faculty of Education, university of Abuja, Federal Capital Territory, Nigeria. The researcher made used of proportionate sampling technique to sample 112 year one students using 20% from the target population of the study. The instrument used for data collection was a questionnaire tagged "Educational Management Systems (EMS) as Determinants of University Effectiveness (EMSDUE)". The reliability of the instrument was tested using the test-retest method and obtain the coefficient index of 0.79. Quantitative data gathered through questionnaires were analyzed using one way analysis of variance (ANOVA) statistical tool. The findings from the study revealed that there was significant influence of the contribution of ICT integration in academic administration on university effectiveness in the study area; efficiency of student information management system has significance influence on university effectiveness in the study area. Based on the findings of the study, it was recommended among others that Universities should invest in improving the responsiveness of ICT platforms; Universities should therefore organize continuous training workshops and orientation sessions focused on digital literacy, use of student portals, academic planning tools, and communication platforms.

Keywords: Educational management systems; indispensability; university effectiveness

INTRODUCTION

Educational Management System (EMS) is an online web-based tool that monitors the quality of educational goals and targets made available to students. It is a centralized system that supports processing of student information, enrollment, attendance record, examination, faculty record and fee transaction (Asio et al., 2022). EMS streamlines operations by automating efficiencies and establishing consistency in data, while bringing the intricacies of managing students, parents, and staff to one platform. Some platforms even offer cloud-based availability, allowing users to access the system from any location.

Educational Management System has evolved considerably from manual documentation to computer based system for both functions, administration and academic. Initially, the process of students' enrollment, attendance and performances in schools were managed manually using paper-based applications. With the arrival of internet and cloud computing, EMS

was later evolved into integrated solutions with control over students' information, purse string holding, analytics from learning process, learning analytics and tools for communication. Today, EMS is an indispensable tool in policy design, resource management and academic scheduling which enhances efficient running and good academic performance (Asio et al., 2022).

The role of the educational management system in building up a university effectiveness cannot be undermined. It enhances administrative productivity, support data-based decisions and improve student performance. EMS helps to organize the general information of a school therefore streamlining the core administrative functions such as admissions, schedules making and grading thus saving time and minimize errors (Ngoma & Salim, 2021). Institutional data collection and analysis enhance strategic planning by enabling administrators to identify areas for improvement and make decisions based on facts (UNESCO, 2018). Additionally, using Learning Management Systems (LMS) increases student engagement and performance through personalised learning experiences and immediate feedback (Alâbr. et al., 2019). Moreover, EMS have become essential to fulfilling accreditation requirements and achieving compliance with federal standards that are necessary for funding and credibility of the institutions.

It is best to say that the relationship between university effectiveness and educational management systems is high as EMS provide improved, quicker, transparent management for higher education system. Successful universities rely on strong EMS to organize academic records, simplify backend processes, promote e-learning and enhance the -communication between related parties. According to Alshammari et al. (2024), EMS contribute to improving the performance of institutions by granting them real-time access to academic data that helps in planning, evaluating, and taking responsibility in actions. In the current context of quality assurance and educational transformation, as universities are held accountable for outcomes and to demonstrate efficiency in terms of their learning outcomes, resources deployed and the extent to which they contribute towards achievement of institutional goals, EMS serve as indispensable tools that directly impact the effectiveness of the institution overall and successful progression of students. Ategwu (2025) concurred with Alamshammari et al. (2024), that the leadership in management nood a security and stability to integrate technology enhancement of MIS attracts the improvement of university system. The contribution of MIS to the university system is very enormous but as a result of laxity in management, ICT infrastructure are not maintenance and this has made university effectives been returned at late, Ategwu et al., (2022).

In spite of their benefits, the implementation of educational management systems at universities is not without its own set of challenges which has a tendency to limit their effectiveness. One of the key issues is that staff and students users' training about technology is restricted due to underdeveloped skills; as a result, they may not know enough about how computers operate. Poor infrastructure, in the shape of slow or dodgy internet connections and outdated computers, can also drag down systems. Finally there are big concerns about privacy and security, especially when certain (potentially sensitive) data on students or institutions start being digitally collected en masse. Komba and Mwandosya (2023) also note that some Nigerian universities have intermittent EMS because they are underfunded and since they are resistive to change and do not have local technical support. These issues underscore the need for more resources in capacity development, system adjustment, and ongoing monitoring to ensure that EMS better facilitate provision of learning.

Its significance in the UK context is that any share of Educational Management Systems have a potential to enhance the efficiency of higher education institutions as a result of facilitating the way in which they could manage their administrative procedures and data-informed decision- making alongside academic quality. EMS can also help in handling involved processes, including admissions, student records, tracking of assessments and resource distribution (Asio et al., 2022). With UK higher education institutions being under greater pressure to evidence quality, value for money and student satisfaction (particularly in the post-TEF era), EMS is a data infrastructure required at institutional level for planning and assuring the quality of their provision (JISC, 2020). In addition, EMS link to digital learning platforms to support blended and distance learning, which became more important during and after the COVID-19 crisis. This complexity of integration is necessary to "individualise student support and enhance retention and academic success" (UCISA, 2021). EMS for educational institutions can also provide an assurance that regulatory obligations to regulators such as the Office for Students (OfS) are

met, which is critical in ensuring institutional accountability, funding and strategic accreditations.

In Indonesia, the contribution of EMS (Educational Management System) on improving university effectiveness to increase administrative efficiency, decision support system and academic quality cannot be overlooked. Several higher education institutions in Indonesia share issues related to an enormous number of students and the dispersed area, as well as they have a responsibility to fulfill national education standards from Ministry of Education and Culture (Kemendikbud, 2020). EMS enable universities to organize their student information, automate processes such as admission and grading, and provide up-to-date information for institutional planning and policy management. Furthermore, with the increasing of digital transformation in education implemented by Indonesia, EMS integration on e-learning platform can assist learning process using combined face-to-face and distance models which was important especially after COVID-19 pandemic (Yuliana & Sudirman, 2021). EMS also assist universities to meet accreditation of bodies such as the BAN-PT, in order to guaranty quality and competitiveness both locally and globally. In the end, EMS provide a basis through which Indonesian universities are able to address their operations more efficaciously in order to achieve better student learning outcomes and to meet with the government's education policies.

In Nigeria, Educational Management System has become an important tool for enhancing the efficiency of universities through streamlining administrative procedures, facilitating evidence-based decisions and providing quality assurance. Nigerian universities are confronted with issues such as large and heterogeneous student enrolment, resource scarcity and the requirement to attain national accreditation given by National Universities Commission (NUC). Summary EMS assist institutions in the effective processing of student admissions, academic record keeping, employee management as well as financial services with a reduction in errors and delays (Asio et al. Furthermore, these systems contribute to institutional planning and policy development by supplying up-to-date information that are necessary for tackling problems such as student attrition and curriculum redundancy (Olakulehin & Aluko, 2016). The incorporation of EMS into e-leaning platforms was equally esteemed against the backdrop of Covid-19 pandemic-induced disruptions by which online learning and distance education were promoted (Adeleke & Adeyemi, 2020). In fine, the EMS serve as important vehicles for Nigerian universities in their efforts at (i) operational efficiency improvement; and (ii) receiving regulatory compliance or approval and advancing student academic performance within a new/dynamic educational environment.

In Kenya, Educational Management Systems are crucial towards making universities more effective by increasing administrative efficiency, facilitating informed decision-making and enhancing quality of education. Kenyan universities are faced with difficulties such as, rise in student admission, the inadequacy of resources, and compliance to national regulations by the Commission for University Education (CUE). EMS assist the universities to effectively manage critical processes that include registration of students, academic records, staff allocation and financial management by minimizing administrative errors and delays (Asio et al., 2022). Additionally, they furnish stakeholders with current and timely data for forecasting planning, performance management as well as formulation of policies which are key in addressing challenges such student retainability and curriculum development (Njagi & Kobia, 2018). The integration of EMS services to the e-learning platforms are also increasingly being emphasized due to upsets caused by the COVID-19 pandemic as well as ensuring blended learning and remote access of education (Kiptum & Kiprono, 2020). In summary, EMS are key instruments that allow the Kenyan universities to be efficient operationally, to comply with accreditation needs and produce good academic student outputs in a dynamic education environment.

Educational Management Systems (EMS) are gaining ground in Nigeria as a tool for improving the efficiency of administrative and managerial activities of the university, transparency in decision-making process, and quality assurance. Nigerian Universities faced with issues such as rising student populations, limited resources and the regulations from TCU. EMS help to organize student admissions, records of students' academic work, faculty information and financial management in an efficient way; reducing errors and enhancing operational process (Asio et al., 2022). Additionally, such systems collect timely, valid information necessary for strategic planning, tracking students' academic performance and enforcing policies in line with national education objectives (Mushi & Bakari, 2019). The merging of EMS with digital learning

environments has become increasingly attractive, particularly as a result of the COVID-19 pandemic, affording blended and remote learning to maintain continuity in education (Mtebe & Raisamo, 2014). To this end, EMS play as essential 'backbone infrastructure' in Nigerian universities to achieve efficiency in operations, fostering accreditation and student outcomes for a changing educational environment.

Statement of the Problem

Tertiary institutions in Nigeria are confronted with increased needs to become more efficient as a result of the growing population of students, lack of adequate resources and evolving expectations in education. Due to the fact that most of the key factors affecting university effectiveness in this region have not been empirically proven intro require improvement by EMS, although EMS could help to improve administrative process efficiency, decision critical thinking and general institutional performance above expectancies enough.

There are still many types of units that still use manual or inhomogeneous management system, it is difficult to access real-time data, and hinder the effectiveness of policies and quality control. Such a situation begs some questions about the real influence of EMS on academic standards, student staff turnover, efficiency and resource management particularly in Nigerian universities. If the role that EMS play in university effectiveness is not well understood, policy makers and those responsible for universities may struggle to justify investment or to plan how best to optimize them for a return on sustainable education improvement. In this light, therefore, the present study seeks to address the critical role of Educational Management Systems in determining the determinants of university effectiveness and efficiency in Gwagwalada Area Council - Abuja Nigeria.

Purpose of the Study

The main purpose of this study is to assess the indispensability of Educational Management Systems (EMS) as determinants of university effectiveness in Gwagwalada Area Council - Abuja of Nigeria.

Specific Objectives

1. To identify the contribution of ICT integration in academic administration in influencing the key determinants of university effectiveness in Gwagwalada Area Council - Abuja of Nigeria.
2. To determine the influence of efficiency of student information management in influencing the key determinants of university effectiveness in Gwagwalada Area Council - Abuja of Nigeria

Hypothesis of the Study

The following hypotheses were formulated to guide the study:

1. There is no significance influence of the contribution of ICT integration in academic administration on university effectiveness in Gwagwalada Area Council - Abuja of Nigeria.
2. Efficiency of student information management has no significance influence on university effectiveness in Gwagwalada Area Council - Abuja of Nigeria

LITERATURE REVIEW

The Contribution of ICT Integration in Academic Administration on University Effectiveness

In a study by Zhang et al. (2024) on academic staff's ICT integration, a validated framework was developed and validated. The framework consisted of a range of institutional policy, culture, infrastructure, training, teaching, and learning. In a quantitative cross-sectional survey of 318 university staff, Zhang et al. found that structured ICT policies, strong digital infrastructure, and continuous professional development respectively increased institutional coordination, decision-making, and resource management, factors critical to university effectiveness.

In America, Alhawiti (2023) examined the influence of ICT integration on administrative performance in higher education institutions using a mixed-method approach, which combined surveys of administrative staff with document analysis. The research was undertaken at multiple American universities, focused on the role of ICT in administration including admission, records and internal information dissemination. The findings indicated that integration ICT was centralized and accelerated the decision-making process, by reducing its transparent combined with streamlining of PSA roles. The report also recognized that leadership commitment and staff ICT skills are two enablers for successful deployment. Thus, higher education administrators should commit to digital investments that enhance efficiency and cultivate a culture of digital literacy and accountability to realize the fullest potential for effectiveness of ICT.

Ajah and Chigozie-Okwum (2019) studied ICT application in improving the administrative effectiveness of universities, with a focus on linking leadership to knowledge management in an organization. Based on online institutional reports,

forums attended and feedback shared by administrators, the findings showed that more transparency was in place and crackdowns against academic corruption had increased as well as major bottlenecks alleviated. The researchers suggest that ICT deployment can have significant effect on leadership of an organisation, as well enhance influence, which is crucial to the effectiveness of the university. However the study also revealed immediate problems such as limited ICT Rooms, low staff ICT literacy and incoherent policy implementation. Ajah and Chigozie-Okwum Thus, Ajah and Chigozie-Okwum advised Nigerian universities not merely to adopt digital structures but domesticate the use of ICT to model improved training and policy strategies that will reduce the influence of institutional effectiveness through rational decision making.

The research of Karanja, Ndirangu and Sang's (2016) in Kenya on effect of ICT integration on academic management in public universities was an investigation into the influence digital tools had on efficiency within the institutions. The descriptive survey study focused on students, lecturers and senior staff members serving in the University of Nairobi, Moi University and Kenyatta University. The results revealed that ICT incorporation contributed significantly to academic administration and institutional operational activities–two key indices of university efficiency.

The Efficiency of Student Information Management on University Effectiveness

In a similar scope, Abaidoo and Arkorful (2020) in their research on ICT adoption and efficacy of its application at the level of tertiary educational institutions in Ghana found that technology has significantly enhanced teaching and learning as well as administrative implementation. Significant research done by Loglo (2023) revealed strong leadership that was driven to the digitalization of Ghanaian public universities despite infrastructural limitations and policy disconnects, as a move to improve service provision and institutional responsivity. Hence, if universities in Ghana will be responsive and effective over time they need not only invest in the infrastructure of ICT but rather create an appropriate digital strategies and developing leadership capacities to drive change. In this study we detail how an ICT tool can be used to align, between the tools and institutional leadership and policy frameworks for improving teaching, learning efficacy processes in Ghanaian higher education efficiency and productivity.

In Nigeria, studies conducted by Sukums et al. (2023) Assessing ICT Services using Information Technology Infrastructure Library ITIL Model at Muhimbili University of Health and Allied Sciences, Nigeria. Using mixed method (survey and interviews) approach to inquiry the study examined effectiveness of ICT-based systems on organizational effectiveness based on academic and non-academic staff's perception of selected universities in Nigeria. It led to faster decision-making, better interdepartmental communication and improved service delivery because of efficient student information management (registration process, records keeping and exam results processing). These improvements related to the key aspects of university performance, that is: leadership responsiveness, academic planning and student satisfaction. But the study also highlighted hurdles, including unreliable internet, staff who lack ICT skills and a shortage of funds. Such restrictions significantly diminish the gains of using student information systems in Nigerian universities. So, the study provided evidence that heightened ICT infrastructure and staff capacity are very important for the effectiveness of higher education institutions.

METHODOLOGY

This study adopted descriptive survey research design. The study's population consisted of 559 university year one students studying at the Faculty of Education, University of Abuja, Federal Capital Territory, Nigeria. The research made use of proportionate sampling technique to select 112- year students at 20% from the population of the study. Data were collected using an instrument titled "Educational Management Systems (EMS) as Determinants of University Effectiveness (EMSDUE)" questionnaire. Validity of the instrument were ascertained by research expert from Saint Augustine university of Nigeria. The researcher performed a test-retest after two weeks and checked the reliability of the instrument which yielded 0.79 coefficient level. Quantitative results based on questionnaires were analyzed by one way analysis of variance (ANOVA).

RESULTS

Hypothesis One

The first null hypothesis stated that there is no significant influence of the contribution of ICT integration in academic administration on university effectiveness in Gwagwalada Area Council - Abuja of Nigeria. This hypothesis was tested using One Way

Analysis of Variance (ANOVA) research design. The data were computed and statistically compared using one way analysis of variance. The analysis on Table 1 shows that the calculated F-ratio of 9.06 was greater than the critical F-value of 2.70 at 0.05 level of significance at 3 and 109 degrees of freedom. This implied that the result was significant. This revealed that there was significant influence of the contribution of ICT integration in academic administration on university effectiveness in the study area.

Table 1. Mean, standard deviation and summary of One-way analysis of variance of the influence of the contribution of ICT integration in academic administration on university effectiveness (N = 112)

Influence of the contribution of ICT integration	N	$\bar{X}$	SD	Std. Error	
Low	27	20.04	2.50	.062	
Average	45	22.68	2.61	.057	
High	40	23.91	2.77	.070	
Total	112	22.21	2.63	.063	
Source of variation	Sum of squares	Degree of freedom	Means squares	F-ratio	Sig.
Between group	2918.602	3	2918.602	9.06*	0.001
Within group	6532.260	109	16.62		
Total	6836.410	112			

*Significant at 0.05: df (3, 109), critical F = 2.70

Hypothesis two

The null hypothesis states that efficiency of student information management system has no significance influence on university effectiveness in the Gwagwalada Area Council - Abuja of Nigeria. This hypothesis was tested using One Way Analysis of Variance (ANOVA). The data were computed and statistically compared using one-way analysis of variance. The analysis on Table 2 showed that the calculated F-value of 4.220 was found to be greater than the p-value (p = 0.001) at 0.05 level of significance at 3 and 109 degrees of freedom. This means that the result was significant, indicating that efficiency of student information management system has significance influence on university effectiveness in the study area.

Table 2. Mean, standard deviation and summary of one-way analysis of variance of the influence of efficiency of student information management system on university effectiveness (N = 112)

Influence of efficiency of student information management system	N	$\bar{X}$	SD	Std. Error	
Low	29	16.81	2.06	.058	
Average	46	21.47	2.45	.082	
High	37	14.18	2.02	.063	
Total	112	17.49	2.18	.68	
Source of variation	Sum of squares	Degrees of freedom	Means square	F-ratio	Sig.
Between group	150.010	3	150.015	4.220	0.001
Within group	4574.350	109	11.281		
Total	4532.330	112			

*Significant at 0.05; df (3, 109), critical F = 2.70

DISCUSSION

The first hypothesis was tested, it stated that the relative contribution of ICT incorporation in education management does not significantly predict university effectiveness in Gwagwalada Area Council - Abuja of Nigeria. As shown in Table 1, the computed f- ratio value of 9.06 is greater than the critical f- ratio value of 2.70 as obtained from the study result. This implies that, a positive moderate effect of integration contribution of ICT in academic administration on university effectiveness existed in the study area. Hence the null hypothesis is rejected and alternate hypothesis was accepted. This result of hypothesis one is also

consistent with Zhang et al. (2024) and they did a research on academic staff's integration of ICTs and came up with a framework model based on their data analysis with sound regulatory dimensions. It also emerged from the study that organized ICT policies, developed digital facilities as well as continued professional training did to reinforce the crucial institutional coordination and decision-making and resource control aspects believed to be key in enhancing university effectiveness.

The result is also consistent with an earlier view in Kenya by Karanja, Ndirangu and Sang (2016) who investigated how ICT integration has impacted academic management in public universities by examining the extent to which digital tools can enhance university effectiveness. The findings revealed that there were sharp changes in academic record management, communication and decision making organs being the major indicators of varsity performance.

The efficiency of student information management system is a significant predictor of university effectiveness in Gwagwalada Area Council - Abuja, Nigeria. This implies that effectiveness of student information management system has high effect on the effectiveness of university in the study location. The result is in line with the report of Abaidoo and Arkorful (2020) who also found out that digital tools significantly improved teaching and learning as well as administrative co-ordination. Further findings from our study is consistent with those of a research carried out by Sukums et al. on adoption and effective integration of ICTs in higher institutions.

This finding is in agreement with the previous findings of research done by Sukums et al (2023) that evaluate the ICT service within Muhimbili University of Health and Allied Sciences, Nigeria with Information Technology Infrastructure Library Framework. It was discovered that effective student information management, especially in the areas of registration, records storage and examination processing resulted in improved service delivery, prompt decision making, as well as communication among various departments.

CONCLUSION AND RECOMMENDATIONS

Overall, the study reveals that ICT tools play a vital role in enhancing university effectiveness in Gwagwalada Area Council - Abuja, particularly in streamlining academic administration and managing student information. While most students acknowledged the benefits of ICT in improving registration, communication, and transparency, concerns remain regarding system delays and inconsistent leadership engagement. Student information management, on the other hand, was viewed more favorably, with strong support for its role in maintaining accuracy, improving accessibility, and supporting long-term academic planning. These findings emphasize the importance of sustained investment in ICT infrastructure and leadership-driven implementation strategies to ensure consistent, effective service delivery across all university departments. Still, the study concluded that there was significant influence of the contribution of ICT integration in academic administration on university effectiveness in the study area; efficiency of student information management system has significance influence on university effectiveness in the study area.

Recommendations

Based on the findings of the study, it was recommended that:

- Institutions should standardize ICT deployment across all faculties and departments. This includes providing reliable internet access, functional computers or portals, and adequate system maintenance.
- Universities should invest in improving the responsiveness of ICT platforms. This involves upgrading software, reducing downtime, and ensuring real-time data synchronization.
- Universities should fully integrate ICT systems into strategic planning processes. This includes using data analytics to forecast enrollment trends, assess student performance, and plan resource allocation.
- Universities should therefore organize continuous training workshops and orientation sessions focused on digital literacy, use of student portals, academic planning tools, and communication platforms.

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