



INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND RECORD MANAGEMENT EFFICIENCY IN AN ERA OF DIGITALIZATION: A CASE STUDY OF FEDERAL UNIVERSITY BIRNIN KEBBI, KEBBI STATE, NIGERIA.

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Abstract

The adoption of Information and Communication Technology (ICT) in records management (ERM) in educational institutions in Nigeria has the potential to revolutionize the way records are created, stored, and managed. This paper examined Information and Communication Technology and Efficient management of records in Federal University Birnin Kebbi. Four (4) research questions and four (4) research objectives guided the study. The target population of the study was 1037 university staff and the sample size of the study was 278 participants. A descriptive survey design was adopted for the study. Questionnaire titled "Information Communication Technology and Record Management Efficiency Questionnaire (ICTRMEQ)" was the instrument used for data collection. Data collected was analysed using tables, frequency counts, percentage, mean and standard deviation. One of the findings of the study indicated that the tools and applications used for efficient record management are documents management systems, online portal, spreadsheet software, virtual learning management systems and library automation software. One of the recommendations made by the study was that the university management should introduce ICT solutions gradually and provide training and retraining opportunities for staff to minimise implementation challenges.

Keywords: Record Management, Efficiency, Information and communication Technology and Digital Records.

Introduction

The advent of Information and Communication Technology (ICT) has revolutionized various sectors, including education. Tertiary institutions, being knowledge repositories are increasingly adopting ICT to streamline operations, including record management. Thus, Record management has attained a prominent position with the integration of ICT thereby enhancing efficiency in documentation of official reports, policies, decisions and entire day to day operations of educational institutions. This has assisted in speeding up processes such as timely storing, tracking, transfer, controlling and retrieval of information. Indeed, the increasing deployment and utilization of ICT in school records management globally has given impetus for creation of digital records which is critical to the efficient management of modern organizations. Akporhonor (2020) observed that, the increasing use of ICT especially internet in operations globally driven by reforms has given room to the generation of digital records recognized as critical to the successful operations of organizations globally. Digital records are said to facilitate the preservation and reduction of information to small units with the aid of computer technology which has been proven to be durable, portable, flexible and transferable (Akporhonor 2020).

Also, NARA (2015) opined that, the use of tools and technology in automating records management tasks could assist individuals and organizations in records management processes. This will not only reduce burden of records management on individuals but will make organizational records easier to access thus, making the entire process more efficient. Efficiency describes how available resources are used to achieve desired outcomes (Abdullahi, 2019).

According to Adeyanju (2020) over the years record management has witnessed significant transformation from analogue to digital. He remarked further that, the advent of computer brought a remarkable turning point in the management of organization's records. Akporhonor (2020) equally observed that, the shift from mechanical and analogue electronic technology to digital electronics began from the late 1950s to late



1970s with the adaptation and proliferation of computers and other digital tools for records keeping that continues till present day. Records management is the capturing and maintaining of accurate, complete, reliable and useable documentation of activities of an organization in order to meet legal, evidential, accountability and social/cultural requirements (University of Melbourne 2001 cited in Chinyemba and Ngulube, 2005).

ICT record management tools can improve communications, reduce the loss of essential information, speed up the completion of projects and increase public awareness of the organisation. Organizations that manage their records well reap immediate benefits in terms of being able to utilize all available information resources for competitive advantage (Chinyemba & Ngulube, 2005). Therefore, in institutions of learning globally, school managers rely on data captured in records to make effective decisions about immediate issues and more comprehensive school policies. Abdullahi (2019) observed that adoption of ICT by University authorities in the management of students and staff records could help Universities to manage their information, efficiently, fulfil their mandate, protect them from litigation, preserve their corporate memory, and foster accountability and good governance.

In order to determine the utilization and efficiency of ICT tools in school records management Seidu and Ogunbiyi (2023) examined the utilization of Information and Communication Technologies (ICT) for managing students' academic records in selected secondary schools in Kogi state, Nigeria. The findings revealed that ICT facilities available for managing students' records in the school include computers, printers, handsets, photocopiers, and diskettes, among others. The study also found that insufficient knowledge and skills on how to operate ICT equipment, ignorance of the advantages of ICT devices, principals' reluctance to use ICT gadgets, inadequate physical facilities/equipment, sporadic disruption of electricity supply and inadequate funds to provide ICT devices were challenges in using ICT to manage students' academic records in the secondary schools under the study. Similarly, the study conducted by Mwangi, and Mwema (2019) revealed that Kenyan Universities have adopted ICT and use the following ICT tools: Learning Management Systems (LMS), Student Information Systems (SIS), Enterprise Resource Planning (ERP) systems, Digital libraries and Online registration systems.

Use of ICT tools also exposes institutions of learning and other organisations to communities outside of their normal client base, locally, regionally, nationally and internationally (Akporthonor, 2020). Hence, many organizations more especially in developed countries in Europe and America have embraced ICT and have increasingly moved online to access, process, store and retrieve information electronically with the help of information and communication Technology tools. Information and communication technology is defined as a set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information (United Nations Development Programme 2001 cited in Usman, 2019). Information Communication Technology tools such as data management systems can be used to store information electronically; this process is known as E-records or digital records management. Digital records are recorded information, documents or data that provide evidence of policies, transactions and activities carried out in school organizations (Onyekachi & Onuekwa, 2021).

Most school digital record systems consist of eight activities, namely: create, store, update, retrieve, use, appraise and retain, archive, and dispose (UNESCO, 2018). Thus, in both public and private sector globally, Digital records are becoming the basis for employment, enrolment, performance appraisal, promotion, confirming pension, registration of births and death, verifying citizenship, certifying voting rights, enabling collection of taxes and supporting management and litigation. According to International Records Management Trust (2009), the benefits associated with the use of ICT in managing records include widespread access, flexibility, efficiency and effectiveness while the economic benefits include; general business opportunities; and auditing capabilities for regulatory compliance. A study conducted by Usman (2019) also revealed that ICT has a significant impact on school records management, student's academic performance, teacher's job performance and instructional supervision. Thus, the purpose of record management in schools is to ensure that accurate and reliable records are kept about students' enrolment, achievement and growth, school activities and administrative matters for efficiency and effectiveness in attainment of educational objectives.

Therefore, as part of compliance measures, many electronic records management software programs include mechanisms to maintain audit trails, encouraging more accountability in records management (Akporthonor, 2020). Similarly, the International Standards Organization (ISO 15489 2016) also stressed that,

the implementation of ICT can assist digital records management, while it's improper design can cause problems rather than supporting its **management. Therefore, efficient digital records operations can ease the management of the school processes and support stakeholders particularly policy makers, school managers, teachers and parents, in evaluating policies, programmes and decision making. School records also provide useful data and input for planning and establishment of new programs, activities or policies (Sunmola,2008). It can also help provide insights on student enrolment and progress, staff and school facilities status. Thus, those school records can be referred to in order to find out information on the total number of students enrolled, teachers recruited or even the justification for upgrading of school facilities. This is because ICT when properly utilized can facilitate the ability of school management in creating, using, managing, classifying, storing, and archiving record and information. Thus, enabling efficient management of all school records including student records, academic achievement reports, staff records, financial records, assets, school buildings and facilities in accordance with policy, procedures, Act, and enforced laws (Umi&Zawiyah 2009).

Highlighting the critical role of ICT in efficient record management Onyekachi & Onuekwa, (2021) opined that implementing innovative technology within an organization enables managers to gather, collect, and deliver information, as well as communicate with employees more easily. E-records also ensure that students' results and certificates are transmitted online and in real time (Langemd, 2002). a study carried out by Onyekachi, and Onuekwa (2021) revealed a significant relationship mong use of digital records and school administration in management of students' enrolments, processing students' results and certificates, staff records in educational tertiary institutions in Rivers State.

Statement of the Problem

One of the major problems that prompted the study was the issue of record and information management in tertiary institutions of learning. The researcher observed that school management more often struggle with storing information and retrieval as reliable data. Students' enrolment figures in some cases are suspected to be very uncertain,at times staff files and details seems not be completely captured and presented during routine supervision and accreditation. Also, Students who may require transfer or certification seem to encounter delay as a result of the manual process involved in processing and transferring their information to their new schools. Equally observed is lots of complaints about students' missing scripts, long waiting for the release of results, and delay in dissemination of information to staff, students and the general public. People are also of the opinion that integration of ICT in record management can enhance efficiency in the management of the institutions records. Thus, this study seeks to investigate Information and Communication Technology and efficiency of record management in era of digitalization in Federal University Birnin Kebbi, Kebbi State.

Research Questions

The following questions were raised to guide the study:

1. To what extent has ICT been integrated into record management practices of Federal University Birnin Kebbi, Kebbi State?
2. What are the Specific ICT tools and applications used in record management in Federal University Birnin Kebbi, Kebbi State?
3. What are the perceived challenges of using ICT for record management in Federal University Birnin Kebbi, Kebbi State?
4. How does ICT integration impact the efficiency of record management processes in Federal University Birnin Kebbi, Kebbi State?

Objectives of the Study

The main objective of the study is to determine effect of ICT integration in promoting efficiency of school record management in Federal University Birnin Kebbi. The specific objectives of the study are:

1. To determine extent of ICT adoption in record management practices in Federal University Birnin Kebbi.



2. To identify Specific ICT tools and applications used in record management in Federal University Birnin Kebbi.
3. To identify the challenges encountered in ICT integration in Federal University Birnin Kebbi.
4. To determine the impact of ICT on record management efficiency in Federal University Birnin Kebbi.

Methodology

A descriptive research design was adopted for the study. The population of the study is 1036 participants consisted of Academic staff, ICT staff, bursary staff, registry staff, staff from Directorate of exam and records, staff of academic planning units, faculty officers and library staff of federal University Birnin Kebbi.. Research Advisor (2006) was used to select the required sample size for the study and it recommended 278 participants as sample size of the study. Stratified random sampling technique was used to select the sample size of the study while proportionate sampling technique was used to determine the number of participants required from academic staff and each of the other categories of staff mentioned from various units and departments (registry, academic planning, bursary, exam & records, ICT , library, faculty officers)..Afterwards, a simple random sampling technique was used to select the required sample size for the study. A structured questionnaire titled “Information Communication Technology and Record Management Efficiency in Federal University Questionnaire (ICTARMEQ)” was used to collect data for the study. The instrument was validated by expert in Educational Planning and Administration from the Department of Educational Foundations, Usmanu Danfodiyo University, Sokoto. The reliability of the instrument was ascertained through pilot test using a test re-test method. Participants for the pilot test were drawn from other junior secondary schools that were not part of the sample of the study. Split half method was applied using Cronbach alpha and a reliability index of 0.72was obtained. Data collected was analysed using frequency counts, percentage, mean scores and standard deviation.

Results

Results from the analysis are presented by answering the research questions one after the other as follows:

Research Question1: To what extent has ICT been integrated into record management practices in Federal University Birnin Kebbi?

The result of the analysis on extent of ICT adoption in record management practices in Federal University Birnin Kebbi as perceived by 278 participants who were administered the research instrument on a four-point Likert scale is presented below in Table 1.

Table 1: Summary of Mean and SD for Responses on extent of ICT adoption in record management practices in Federal University Birnin Kebbi.

S/N	N	Mean	Std. Dev	Decision
1. ICT tools has replaced manual systems for record management	278	2.81	0.87	Accepted
2. The university has centralized record management systems that are easily accessible to authorized personnel	278	3.00	0.82	Accepted
3. The University has adopted cloud-based solutions and document management systems for record management	278	2.93	0.94	Accepted
4. ICT is adequately integrated with fully digitalized record management infrastructure	278	2.96	0.85	Accepted
5. The university do not rely heavily on paper-based records for various functions	278	2.72	0.79	Accepted
Average	278	2.88	0.85	



Table 1 above is a summary of descriptive statistics of mean and standard deviation conducted to assess participants' perception extent of ICT adoption in record management practices in Federal University Birnin Kebbi. The data analysis revealed an average response mean score of 2.88 (N=278, Mean=2.88, SD=0.85) indicating that most of the suggested responses on extent of ICT adoption in record management practices in Federal University Birnin Kebbi as indicated in the instrument were accepted as extent of ICT adoption in record management practices in Federal University Birnin Kebbi. The analysis revealed that the University integrated ICT with digital records management systems as indicated by the participants of the study. The results from the findings are presented from the highest to the lowest in order of hierarchy as follows: the University has centralized record management systems that are easily accessible to authorized personnel (Mean=3.00, SD=0.82), ICT is adequately integrated with fully digitalized record management infrastructure (Mean=2.96, SD=0.85), the University has adopted cloud-based solutions and document management systems for record management (Mean=2.93, SD=0.94), ICT has completely replaced manual systems for record management (Mean=2.81, SD=0.87), University do not rely heavily on paper-based records for various functions (Mean=2.72, SD=0.79).

Research Question 2: What are the Specific ICT tools and applications used for efficient record management in Federal University Birnin Kebbi, Kebbi State?

The table below represents the finding of the study in relation to question one.

Table 2: Summary of Mean and SD for Responses on Specific ICT tools and applications used for efficient record management in Federal University Birnin Kebbi

S/N	N	Mean	Std. Dev	Decision
1. online portal is used for students Registration and admission process	278	3.00	0.82	Accepted
2. spreadsheet software are used for managing academic records	278	2.96	0.83	Accepted
4. virtual learning management systems are used for online learning and course delivery	278	2.58	0.95	Accepted
5. library automation software is used for library management and resource discovery in the university library	278	2.55	0.80	Accepted
6. document management systems (DMS) are used for storing and retrieving administrative documents	278	3.07	0.93	Accepted
Average	278	3.41	0.86	

Table 2 above is a summary of descriptive statistics of mean and standard deviation conducted to assess Specific ICT tools and applications used in record management in Federal University Birnin Kebbi, Kebbi State. The data analysis revealed an average response mean score of 3.41 (N=278, Mean=3.41, SD=0.86) indicating that all the suggested ICT tools and applications identified in the instrument were accepted to be the Specific ICT tools and applications used in record management in Federal University Birnin Kebbi. The analysis further confirmed that ICT tools and applications are used in record management processes as identified by the participants in the study and the results from the findings are presented from the highest to the lowest in order of hierarchy as follows document management systems (DMS) are used for storing and retrieving administrative documents (Mean=3.07, SD=0.93), online portal is used for students Registration and admission process (Mean=3.00, SD=0.82), spreadsheet software are used for managing academic records (Mean=2.96, SD=0.83), virtual learning management systems are used for online learning and course delivery (Mean=2.58, SD=0.69), library automation software is used for library management and resource discovery in the university library (Mean=2.55, SD=0.80).



Research Question 3: What are the perceived challenges of using ICT for record management in Federal University Birnin Kebbi, Kebbi State?

The result of the analysis on the perceived challenges of using ICT for record management in Federal University Birnin Kebbi, Kebbi State as perceived by 278 participants who were administered the research instrument on a four-point Likert scale is presented below in Table 3.

Table 3: Summary of Mean and SD for Responses on the perceived challenges of using ICT for record management in Federal University Birnin Kebbi

	N	Mean	Std. Dev	Decision
S/N				
1. Lack of adequate funding for ICT Infrastructure has hindered effective Integration of ICT	278	2.92	0.89	Accepted
2. Protection of sensitive students and staff data due to server security threat	278	2.64	0.84	Accepted
3. Frequent power outages negatively impact E-record management	278	2.84	0.95	Accepted
4. Delay as a result of internet connectivity	278	2.98	0.96	Accepted
5. Lack of adequate ICT knowledge and skills can hinder effective utilization of the tools for efficient management of records..	278	2.96	0.89	Accepted
Average	278	2.86	0.90	

Table 3 above is a summary of descriptive statistics of mean and standard deviation conducted to assess participant's perception on the perceived challenges of using ICT for record management in Federal University Birnin Kebbi, Kebbi State. The data analysis revealed an average response mean score of 2.86 (N=278, Mean=2.86, SD=0.90) indicating that all the suggested responses on the perceived challenges of using ICT for efficient record management in Federal University Birnin Kebbi indicated in the instrument were accepted as the perceived challenges of using ICT for efficient records management in Federal University Birnin Kebbi. The analysis further revealed that record management is seriously challenged by several issues as indicated by the participants in the study and the results from the findings are presented from the highest to the lowest in order of hierarchy as follows:

Delay as a result of internet connectivity (Mean=2.98, SD=0.96), Lack of adequate knowledge and skills can hinder efficient utilization of the tools for efficient management of records (Mean=2.96, SD=0.89), Lack of adequate funding for ICT Infrastructure has hindered effective Integration of ICT (Mean=2.92, SD=0.89), Frequent power outages negatively impact efficiency of E-record management (Mean=2.84, SD=0.95), Protection of sensitive students and staff data due to server security threat (Mean=2.64, SD=0.96).

Research Question 4: How does ICT integration impact the efficiency of record management processes in Federal University Birnin Kebbi?

The result of the analysis on Impact of ICT integration on efficiency of record management processes in Federal University Birnin Kebbi as perceived by 278 participants who were administered the research instrument on a four point likert scale is presented below in Table 4.

Table 4: Summary of Mean and SD for Responses on Impact of ICT integration on the record management efficiency in Federal University Birnin Kebbi

	N	Mean	Std. Dev	Decision
S/N				
1. ICT integration has improved accessibility				



to records	278	2.96	0.95	Accepted
2. ICT integration has reduced the risk of data being lost or damaged	278	2.92	0.86	Accepted
3. ICT has led to significant reduction on use of paper-record management		based	records	in University
	278	2.78	0.92	Accepted
4. ICT integration has improved accuracy and reliability	Accepted of	university records	278	3.16 0.96
5. ICT has made record storing and retrieval less enhancing efficiency in	Accepted	stressful and quicker thereby		
	278	2.96	0.96	
Average	278	2.95	0.93	Accepted

record management

Source: Fieldwork, 2024

Table 4 above is a summary of descriptive statistics of mean and standard deviation conducted to assess participants' perception of impact of ICT on record management efficiency in Federal University Birnin Kebbi, Nigeria. The data analysis revealed an average response mean score of 2.95 (N=278, Mean=2.95, SD=0.93) indicating that all the suggested responses on impact of ICT on record management efficiency in Federal University Birnin Kebbi indicated in the instrument were accepted as impact of ICT on the efficiency of record management in Federal University Birnin Kebbi. The data analysis revealed an average response mean score of 2.92 (N=507, Mean=2.92, SD=0.94) indicating that all the suggested Impact of ICT on record management efficiency in Federal University Birnin Kebbi identified in the instrument were accepted to be the on impact of ICT on record management efficiency in Federal University Birnin Kebbi. The analysis further revealed that ICT intergradation has significantly enhance the record management efficiency in Federal University Birnin Kebbi as indicated by the participants in the study and the results from the findings are presented from the highest to the lowest in order of hierarchy as follows ICT integration has improved accuracy and reliability of university records (Mean=3.96, SD=0.96), ICT has made record storing and retrieval less stressful and quicker thereby enhancing efficiency in record management (Mean=2.98, SD=0.96). ICT integration has improved accessibility to records (Mean=2.96, SD=0.95), ICT integration has reduced the risk of data being lost or damaged (Mean=2.92, SD=0.86), ICT has led to significant reduction on use of paperbased records in University record management (Mean=2.78, SD=0.92).

Discussion of Findings

First finding revealed that the university has integrated ICT in records management by adopting centralized record management systems that are easily accessible to authorized personnel, has fully digitalized record management infrastructure, adopted cloud-based solutions and document management systems for record management, CT has replaced manual systems of record management with digital management systems and the University does not rely heavily on paper-based records for various functions. Findings from this study is in disagreement with the findings of Nweke and Wosu (2022) whose study showed that there is very minimal electronic records system in public secondary schools in Rivers State.

Second finding of this study indicated that the tools and applications used for efficient record management in Federal University Birnin Kebbi are document management systems (DMS) online portal, spread sheet software, virtual learning management systems and library automation software. This finding supports the work of Mwangi and Mwema (2019) which revealed that Kenyan universities used the following ICT tools: Learning Management Systems (LMS), Student Information Systems (SIS), Enterprise Resource Planning (ERP) systems, Digital libraries and Online registration systems while study of Seidu and Ugunbiyi (2023) also confirmed that ICT facilities available for managing students' records in secondary schools in River state include computers, printers, handsets, photocopiers, and diskettes, among others. CT tools and applications when properly utilized can enhance record management efficiency.



Third Finding of this study revealed that record management is seriously challenged by several issues such as delay as a result of internet connectivity, Lack of adequate ICT knowledge and skills Lack of adequate funding for ICT Infrastructure, Frequent power outages, and protection of sensitive students and staff data due to server security threats. This Study is in agreement with the findings of Seidu and Ogunbiyi (2023) whose findings indicated that the challenges of ICT utilization in record management are: insufficient knowledge and skills on how to operate ICT equipment, ignorance of the advantages of ICT devices, , inadequate physical facilities/equipment, sporadic disruption of electricity supply and inadequate funds to provide ICT devices. Those challenges in using ICT can pose a serious threat to efficient management of digital record.

Fourth finding from the study revealed that ICT intergradation has significantly enhance the record management efficiency in Federal University Birnin Kebbi as indicated by the participants in the study. The findings from the study shows that ICT integration has improved accuracy and reliability of university records, ICT has made record storing and retrieval less stressful and quicker, improved accessibility to records, reduced the risk of data being lost or damaged and ICT integration has also led to significant reduction on use of paperbased records in the University record management. This means that ICT has the potential to fully revolutionize record management efficiency in Universities making storing and access to accurate and reliable information easier and quicker thereby enhancing effective service delivery. This study is in agreement with the findings of Boateng and Agyemang (2017) whose results revealed that ICT adoption improved record management efficiency, accuracy, and accessibility. It is also in line with the statement of Abdullahi (2019) also who opined that adoption of ICT by University authorities in the management of students and staff records could help universities to manage their information, efficiently fulfil their mandate, protect them from litigation, preserve their corporate memory, and foster accountability and good governance. It also supports the study of Usman

(2019) which also revealed that ICT has a significant impact on school records management, student's academic performance, teacher's job performance and instructional supervision.

Recommendations

1. Management should continue to Investment in ICT infrastructure and establish standard record management policies and procedures for efficient record management practices.
2. Management should introduce ICT solutions gradually and provide training and retraining opportunities for staff to minimise implementation challenges.
3. Management should collaborate with ICT experts and Vendors to assist tailor solutions that can address challenges of ICT identified for successful implementation.
4. 4. The management should continuously assess the effectiveness of ICT systems and make necessary adjustments to enhance efficiency of the entire process.

Conclusion

Adequate investment in ICT has potential to revolutionize record management in Nigerian Universities thereby promoting efficiency in accessing, using, storing, transferring and retrieval of accurate and reliable data. This can be achieved through strategic planning and adequate investment in human resources, security and infrastructure. Thus, by leveraging ICT and implementing standard records management policies and procedures Universities can optimize their operations, improve service delivery, protect valuable information and focus on their core mission of teaching, research and community service.

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