

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) USAGE ON STUDENTS RECORDS MANAGEMENT EFFECTIVENESS IN THE NIGERIAN UNIVERSITIES.

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ABSTRACT

Effective management of students' records underpins decision making, protects rights of students and helps universities conduct business and services in a consistent and equitable manner. Thus, this study investigated the influence of information and communication technology (ICT) on students' records management effectiveness in Nigerian universities. A survey design was employed for the study. The population consisted of 1,123 students' records officers and 470 university administrators from randomly selected federal, state and private universities in south-south geo-political zone of Nigeria. A stratified random sampling technique was used to select the sample for the study consisting of 564 records officers and 237 administrators giving a sum of 801. A total of 531 copies of the questionnaire were validly completed and returned making it 66.3% successful. Data was collected with a self-structured questionnaire validated with overall Cronbach alpha reliability coefficient =0.81. Descriptive statistics and regression analyses were employed to analyze data processed from responses of the survey. The results revealed that at the 0.05 level of significance, the p-values of (0.9324, 0.8478 and 0.0004) indicated information and communication technology (ICT) had negative and insignificant influence on students' records management effectiveness in the federal and state universities, but had significant and positive influence on in the private universities. Since this study has established that the Nigerian Universities operate both paper and electronic records management system, the researcher recommended that government should come up with a model for the effective combination of electronic and manual records management procedure for students' records that will suit the Nigerian environment.

Keywords: Administrators, Records management Effectiveness, Records officers, Information and Communication Technology (ICT).

1. INTRODUCTION

Students' records can be organised into three broad categories. The first category refers to records documenting the contractual relationship between students and the Institution. This includes records documenting admission and

enrolment, payment of tuition fees, academic and non-academic disciplinary proceedings. The next category consists of records “documenting the student as a learner such as records documenting programmes undertaken, academic progress and performance, awards. The last category is records documenting the student as an individual and consumer of services provided by the institution. In this category are records documenting use of accommodation services, counselling services, library and IT support services, careers and employment services”[1]. These records are important because they serve as major information tools that protect students’ rights, such as the right to ownership of a degree with the right class, documented through academic cumulative records (scholastic performance). For example, organizations and institutions in Nigeria rely on universities’ authentication of certificate/transcript claims. Otherwise, employment or admission for postgraduate study can be denied or compromised as a result of incorrect or lack of authentic records or failure to retrieve records.

Students’ records, whether in paper or electronic format, are important resources for universities and should be harnessed through effective records management practices. The smooth running of any higher institution depends on effective and efficient records management. Unfortunately, many years of neglect had done great damage to records management in the educational sector. “Eguwunyenga”[2] believes that “personnel who maintain registry system with filing cabinets containing paper evidence of university business are inadequate and, in fact, ignorant of their responsibilities”.

1.1 Statement of the Problem

The effective management of students’ records in the Nigerian university system with particular emphasis on managing information generated on students from admission, matriculation, registration, examination, graduation, among others seem to be challenging. Incidences of misplaced documents, as well as incomplete students’ files and delayed release and access to vital records and documents are common occurrences in most universities

This challenge might have been occasioned by the lack of and/or inadequate information and communication technology (ICT) infrastructure on one hand and users’ competence in the management of students’ records. Hence, this study investigated the influence of information and communication technology (ICT) on the effective students’ records management in the Nigerian universities.

Based on the above problems, the following research questions were raised to guide the study.

1. What are students’ records management methods being used in the Federal, State and Private Universities?
2. What are the information and communication technology (ICT) infrastructure to be considered in the effectiveness of students’ records management in the Federal, State and Private Universities?

This study was piloted by this null research hypothesis:

H₀1: Information and communication technology (ICT) do not significantly influence students’ records management effectiveness in the Federal, State and Private Universities.

2. LITERATURE REVIEW

2.1. Information and Communication Technology (ICT) and Records Management

Effectiveness

The practice of records management has undergone significant changes in recent times. It has transitioned from a paper-based assignment concerned with the storage of an organization's diverse documents, to a profession occupied with the management of specified internal records in a multitude of media [3]. The introduction of computers into records management which widely developed in the 1550s [4] [5], has "offered speed, precision diversity, flexibility and a rich and comprehensive documentation of process. This has been quickly embraced around the world as a critical information management and communication tool" [6].

Further, the use of electronic systems in records management has also brought about space savings since most documents can be filed electronically which has reduced risk in event of loss [7]. A study carried out by [8] on managing records in Tanzania revealed that personnel who use computer to create records were assisted by the computer in managing electronic records which enhanced storage, retrieval, access, use, enhanced security, enhanced preservation, enhanced communication and report generation. The usefulness of computers in records management, notwithstanding, they have also introduced certain challenges such as change in software and hardware due to the rapid changes in technology [9], "media deterioration" and manipulation since they could be "written, rewritten, cut and pasted, send to the other end or deleted" querying the authenticity of records [6]. The International Records Management Trust [10] pointed out that the lack of skills and competencies among records and archives management personnel in the area of electronic records management suggested the inability to play an active role in designing and implementing electronic records management systems.

Nevertheless, these shortcomings do not in any way depreciate the significant role that the computer has played in electronic records management in an era when physical documentation has become grossly insufficient. Thus, no meaningful records management process can ignore the impact of information and communication technology in effective records management since it is clear that information creation, storage and retrieval has gone from pictorial representations on the walls of caves and artefacts, to the invention of writing and computers.

It is acknowledged that if ICT infrastructure like word processors, electronic databases, e-mail and management information systems can result in more efficient communications and administration of academic records [11]. Further, [12] opine that "in developing record keeping solutions, it is necessary to understand the evolution that is taking place in the use of technology." The application of Information and Communication Technology (ICT) to the management of records therefore, will go a long way in making such records accessible and usable. "Nwaomah" [13] demonstrated that the University Management Information Systems and other ICT infrastructure enhance the effective management of students' records in private university system.

However, it is observed that the primary data and information systems employed by most institutions are poor recordkeeping systems [14]. Similarly, [15] in a study of ICT and digital records management in the Ugandan public service, which may be applicable to educational records found that despite the attempts to improve ICT capabilities

and infrastructure in a critical gap exists in the approach and there are also weaknesses relating to gaps and poor linkages between the ICT department itself, since it fails to address the requirement for digital records management (DRM). This is because ICT application depends on the existence of ICT infrastructure, people's skill and knowledge.

In an empirical study on the use and challenges of electronic records management, [16] of London School of Economics, found that in spite of extensive training, most staff never got used to the system because most staff found the system user unfriendly; challenges arising from the way parts of the system were set up and complicated rules to direct staff where the system could not. Therefore, the five major components of Information Systems (IS) in relation to records management functions must be pursued together for effective usage of ICT/IS in records management. These components are provision of the IS facilities, IS integration, IS competency, IS structure, and IS support as stated by Hussien, Seamatand Abdul Karim cited in "unpublished"[17]. IS facilities refer to the provision of ICT infrastructure and resources in IS project. In the case of students' records management, this would refer to the availability of IS facilities in the management of students' records.

The provision of IS resource and infrastructures cannot independently enhance effective records management in the absence of competencies. "Ojo" "unpublished"[17] citing 1996 authors, Whyte and Bytheway states that IS competency implies the extent to which staff who are expected to employ IS in the job performance are able to do so using IS.

Information Systems (IS) integration is the degree of deployment of IS systems in data management and the seamless flow of and access to information within a system. Integration also known as workflow, allows and organization to route electronic documents to different departments and individuals depending on particular work related task [9]. Workflow provides effectiveness in saving costs in terms of financial and human resources. But it might be resisted by employees in the fear that the new computer systems might cause redundancy [9]. IS structure refers to the extent that information system are organized and distributed within an organization. IS user support demands that concerned staff would be given the necessary training and other institutional support to maximize the advantages proved by ICT and IS in records management.

Conclusively, the need for effective students' records management in universities must take into considerations the best available and most effective tools and processes in the creation, usage, storage, retrieval and even archiving of essential records to sustain the memory of an organization and also safeguard its interests and those of its stakeholders like students, in the case of educational institutions. It is essential for public and private universities to integrate records management more effectively with other information management functions so that records management becomes a strategic management function towards reaching a competitive advantage [3].

2.2 Theoretical Framework

According to the International Records Management Trust[18] the care of records and archives, particularly within the context of public sector is governed by four important principles or theories:

1. that records must be kept together according to the agency responsible for their creation or accumulation, in the original order established at the time of their creation;
2. that records follow a life cycle;
3. that the care of records should follow a continuum; and
4. that records can be organized according to hierarchical levels in order to reflect the nature of their creation[8].

These principles and concepts are known as:

(i) the principle of *respect des fonds*

(ii) the life-cycle concept

(iii) the continuum concept

(iv) the principle of levels of arrangement and description.

“Chachage and Ngulube”[19] stressed that of all the above principles “the records life cycle and records continuum models are the dominant theories in the archival and records management field”. These two theories are explained below:

2.2.1 The life Cycle Concept

The life cycle concept has been regarded as a theory which provides a framework for the operation of paper-based records management program [20]. This model of records life cycle holds that “records are not static, but have a life similar to that of biological organisms: they are born (records creation or receipt), live through youth (records use and maintenance) and old age (records transferred to archival repository) then die (records destruction). “Shepherd and Yeo”[7] state that this idea was developed in North America by Theodora Schellenberg in 1934 who wrote about the “life span” of records. The life span of records includes their current use and final destiny. This shows a progression of actions taken at different times in the life of a record: typically, its creation, maintenance, storage, use and disposal.

Records, like humans or any given phenomenon, has its beginning and its end. This is why some experts [21] view records management as the process of managing it from its creation to disposition. Records managers need to know and understand the life cycle of a record in order to enhance their ability and capacity to effectively manage students’ records. The diagram below depicts distinct phases in the life-cycle of any given record.

Source: [22]

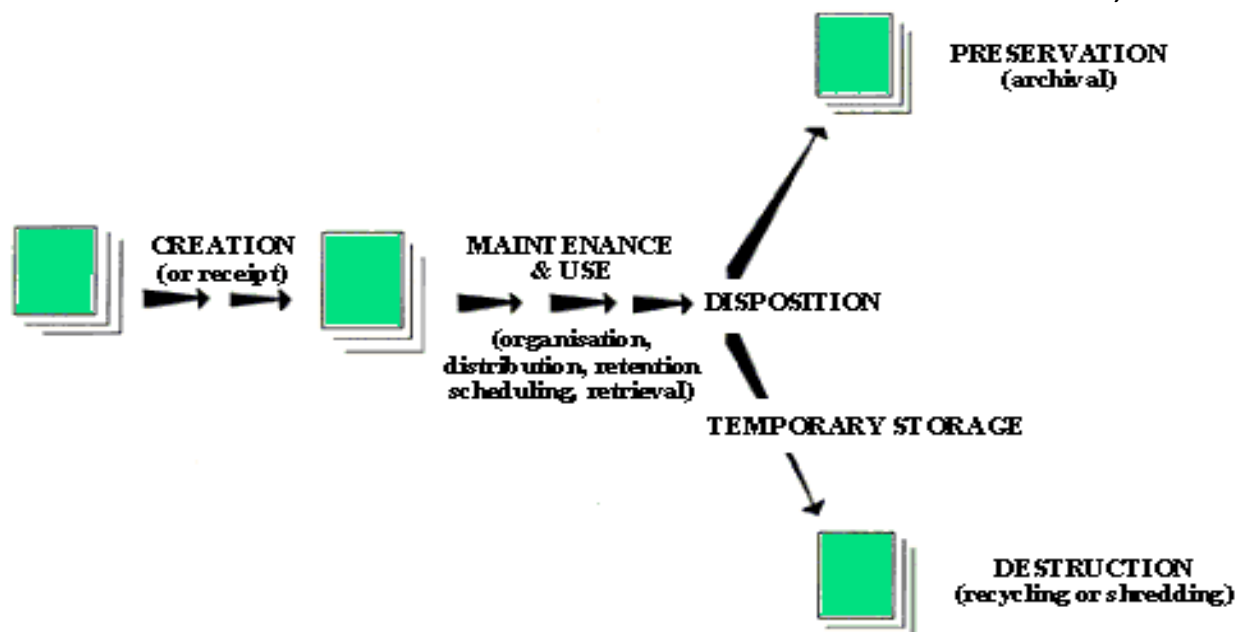


Figure 1: Phases in a Records Life Cycle

In recent years the lifecycle concept, according to [7], has been subject to much adverse criticism. First, critics have noted that some records do not ‘die’, but are retained indefinitely because of their continuing value. Secondly, the division between stages of the lifecycle in the ‘three ages’ model is seen as artificial: for example, records thought to be non-current may have a renewed period of currency if the activity that gave birth to them is revived. The lifecycle models do not allow for the repetition of stages, or for stages to be omitted, although in practice this frequently happens. It has also been argued [23] that the lifecycle concept perpetuates an artificial distinction between records kept for business purposes and records kept for cultural reasons, and thus between the professional perspectives of archivists and records managers.

Moreover, critics of the lifecycle concept also suggest that it is too focused on records as physical entities and on operational tasks, especially those associated with the custody of paper records. Electronic records rely on logical rather than physical structure, and the tasks associated with the physical storage of paper are largely irrelevant to their management.

2.2.2 The Continuum Concept

The rapid introduction and usage of Information and Communication Technology (ICT) in records management in the 1980s introduced a new dimension in the practices of records management. This generated a debate on the relevancy of the life-cycle model. The result was the invention of a new model, called the continuum theory [6]. The continuum approach sets no strict boundaries between archives and records management responsibilities. It argues that current records can also become archived right from creation, rather than waiting for final disposal to determine this. The continuum concept is clearly outlined in table 1.

Table 1: The Continuum Concept

Process	Records management process	Archives management actions
1. Identification and acquisition	Creation or receipt	Selection and acquisition
2. Intellectual control	Classification within a logical system	Arrangement and description
3. Access	Maintenance and use	Reference and use
4. Physical control	Disposal by destruction or transfer as archives	Preservation

Source: *International Records Management Trust (IRMT) (1999) cited in [6].*

The record continuum model developed by LanMachean in the 1990s provides a framework for the operation of electronic records management programme. Among scholars it has been stated that “the electronic environment makes it impossible to use theories and methodologies that were used in the paper-based world”[24], asserting a change from object to process and from static to dynamic. In contrast to the well-established life cycle view of managing records and archives which states that records can only live once at each stage in their life which clearly defines responsibilities for the management of records at each stage. The record continuum model, asserts that records and archives are always in the state of being created, that is, records management is described as an interactive process that continues throughout the life of the records [23][24]. One important driver behind the development of the model was the pro-active requirements that are present in the electronic records environment [25].The model presents a structure of an active record keeping that go beyond time and space to capture and manage records for as long as they are required to satisfy business, legal, social, and cultural needs. Proponents of the continuum paradigm, such as [26] and [27] according to [6] have advanced debates in favour of this model as a better approach to modern record keeping.

2.3 Relevance of the Theories to the Study

The records lifecycle and continuum theories are important to explain the effective management of students’ records from their creation, through their maintenance and use to final disposal. These two concepts- records lifecycle and continuum are used to conceptualize the problem investigated. This is because students’ records in Nigerian universities are being managed in paper and electronic format. Thus, the relevance of the theories are in the aspect of records management practise which view effective records management process as that which begins from accuracy in records capture/creation, records classification for easy retrieval, reliable records storage, enforcing records access/maintaining audit trails on access and security restrictions, carrying out records disposal by identifying and monitoring the retention periods of records, transferring to semi-current or archival repository for storage and securely destroying records.

2.4. Conceptual Model

The research framework as illustrated in figure 2 below is a conceptualization of the predictors of students' records management effectiveness. The effective management of students' records is assumed to be determined or influenced by information and communication technology. This study conceptual framework is developed based on literature.

Independent Variable **Dependent Variable**

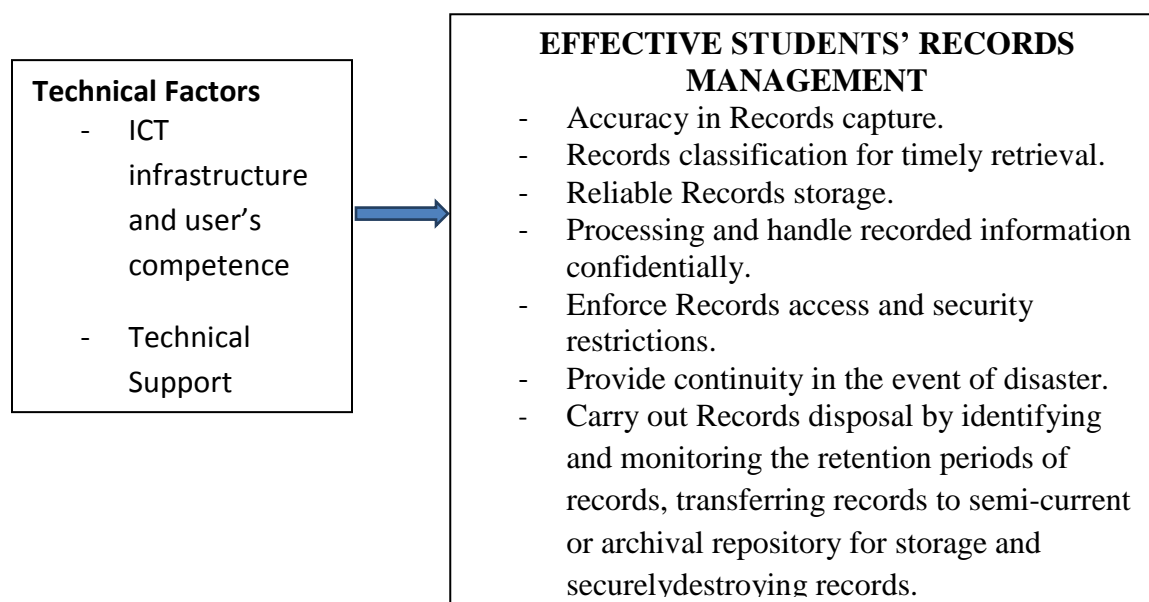


Figure 2. Conceptual framework

3.0 METHODOLOGY

This study adopted a survey research design of correlational type to investigate the influence of ICT on students' records management effectiveness in South-South Nigerian universities.

The target population for this study were all personnel handling students' records at the universities registries, academic departments/units/divisions and the universities administrators-Heads of academic departments/units, Deans of faculties, Bursars/their Deputies, Registrars/ their Deputies, Director, Human Resources, Director, ICT department-in South-South Nigeria. These were chosen as the population for this study for two major reasons. First, the records officers in the universities registries, academic departments/units/divisions are responsible for handling students' records. Second, the administrators play major roles in providing ICT infrastructure and technical support, and in making decisions concerning user's competence that will either support or negate the effective management of students' records.

A stratified random sampling procedure was used to select the universities that participated in the study. From the fifteen universities at the time of this study (five Federal, five State, and five Private) owned Universities, nine

participating universities(three each from the Federal, State, and Private)were selected for the study representing (60%) of the fifteen universities. From the population of 1,123 officers managing students records and 470 university administrators of the nine universities selected, 564 (50%)of the students records officers and 237 (50%)of the administrators were randomly selected, making a total sample size of 801 for the study.

An investigator-structured questionnaire titled, “*Students’ Records Management Effectiveness Questionnaire*” (SRMEQ) with the Likert four point scale in order of Strongly Agree (SA) =4, Agree (A) =3, Disagree (D) =2 and Strongly Disagree (SD) =1 was used to collect data from the respondents. Section A of the questionnaire focused on respondents’ demographic data, designation, educational qualification, name of university, department, unit/section, years of work experience.Section B contained 12 questions which elicited information on respondents’ perceived effective students’ records managementwhile Section C contained 9 questions on ICT infrastructure, technical support and user’s competence surrounding students’ records management effectiveness. Section D was for records officers only to indicate the method used in the management of students’ records.

Experts in the field of Information and Records Management as well as Education Administration and Planning validated the instrument. To determine the reliability, the instrument was subjected to the Cronbach's Alpha test with overall Cronbach’s alpha reliability coefficient obtained at 0.81. After this, necessary amendments were made in order to ensure that the contents of the instrument measure all that was needed in order to achieve the objectives of the study. The data collected were analysed using mean scores to find the answer to the research questions, correlation and multiple regression analysis to test the hypotheses.

FINDINGS AND DISCUSSIONS

Out of 801 copies of the questionnaire distributed to both records’ officers and administrators of federal, state and private universities, 531 representing (66.3%) were duly completed and returned, 11 (1.4%) copies were returned but not properly filled and were, therefore, removedwhile 259 copies representing (32.3%) of the survey instrument were not returned. Thus, the result presented was based on the 531 copies of the questionnaire that were duly completed.

Table 2: Distribution of respondents by School type and work designation

Work Designation	School Type			TOTAL
	FEDERAL	STATE	PRIVATE	
Records officers	153 (64.3%)	128 (70.7%)	84 (75%)	365 (68.7%)
Administrators	85 (35.7%)	53 (29.3%)	28 (25%)	166 (31.3%)
Total	238 (100%)	181(100%)	112 (100%)	531(100%)

This distribution is reflective of the fact that one administrator could head or be a supervisor over more than one staff.

Research Question One: What are the students' records management methods being used in Federal, State and Private Universities?

Table 3: Methods of students' records management used by universities

Records Management Method	FEDERAL UNIVERSITIES		STATE UNIVERSITIES		PRIVATE UNIVERSITIES	
	Records Officers		Records officers		Records officers	
	Frequency	%	Frequency	%	Frequency	%
Manual	55	36.0	38	29.7	9	10.7
Electronic	8	5.2	18	14.1	20	23.8
Manual and Electronic	90	58.8	72	56.2	55	65.5
Total	153	100	128	100	84	100

Table 3 shows the records officers responses to the type of method used for students' records management in the universities. This reveals that all the universities (federal, state and private) operate both manual and electronic system of students' records management.

Research Question Two: What are the information and communication technology (ICT) infrastructure to be considered in the effectiveness of students' records management in the Federal, State and Private Universities?

Table 4 below reveals records' officers and administrators' perspectives on the information and communication technology (ICT) infrastructure to be considered in the effective management of students' records. Majority of the respondents in state universities as shown on table 4 with mean scores above 2.50 acceptance level agreed that information and communication technology (ICT) infrastructure are to be considered in the effective management of students' records. However, for federal universities with mean scores ranging from 1.97 to 2.7 as shown on table 4, more of the respondents disagreed to the consideration of the information and communication technology (ICT) infrastructure in contributing to students' records management effectiveness. Revealing that to a large extent information and communication technology (ICT) infrastructure are considered in the effectiveness of students' records management in the private universities as table 4 shows that the overall mean scores of the entire 9 items are 3.24 and 3.19. This is an indication of very high acceptance by the respondents. Thus, information and communication technology (ICT) infrastructures are all to be considered in the effectiveness of students' records management in the private universities than in the federal and state universities.

SN	Survey Statement	FEDERAL UNIVERSITIES				STATE UNIVERSITIES				PRIVATE UNIVERSITIES			
		Records Officers		Administrators		Records Officers		Administrators		Records Officers		Administrators	
		Mean	Std.D	Mean	Std.D	Mean	Std.D	Mean	Std.D	Mean	Std.D	Mean	Std.D
1	Provision of computers for all workers who manage students' records	1.97	0.81	2.45	0.87	3.16	1.04	2.47	0.91	3.15	0.81	3.41	0.64
2	Adequate ICT infrastructure that support students records management (including Local and Wide Area Networks (WLAN)).	2.38	0.79	2.6	0.82	2.38	0.79	2.62	0.86	3.27	0.70	3.26	0.66
3	Electronic records management policy	2.55	0.88	2.61	0.76	2.55	0.88	2.91	0.66	3.25	0.67	3.19	0.68
4	Use of Management Information System software	2.64	0.79	2.4	0.71	2.98	0.76	2.9	0.66	3.32	0.64	3.15	0.53
5	Required skill to use the records management package	2.52	0.79	2.65	0.68	2.73	0.76	2.65	0.68	3.38	0.62	3.19	0.62
6	The software installed is adequately serving its intended function	2.53	0.81	2.7	0.73	2.67	0.75	2.7	0.68	3.23	0.65	3.07	0.62
7	Enough expertise to operate the system	2.19	0.79	2.6	0.7	2.19	0.79	2.6	0.66	3.12	0.63	3.29	0.61
8	Compliance to the use of the information management system	2.55	0.93	2.32	0.88	2.86	0.75	2.2	0.77	3.35	0.67	3.37	0.63
9	Easy use the installed software	1.93	0.74	2.29	0.86	2.28	0.76	2.9	0.65	3.06	0.68	2.74	0.81
	Overall Mean Score	2.36		2.51		2.64		2.66		3.24		3.19	

Table 4: Mean Comparison between Records Officers and Administrators Responses on ICT Infrastructure/Usage on Students' Record Management Effectiveness in Federal, State and Private Universities

Std. D = Standard Deviation

Mean Legend:

3.00 – 4.00 = Very High {Acceptance Level}

2.50 – 2.99 = High

2.00 – 2.49 = Low

1.00 – 1.99 = Very Low {Rejection Level}

Research Hypothesis 1: information and communication technology (ICT) do not significantly influence the effectiveness of students' records management in the federal, state and private universities.

Table 5: Coefficients/effects, t-Statistic and Prob(t-Statistic)

FEDERAL UNIVERSITIES				
Coefficient (α_i)	Effect	t-Statistic	Prob.	Greater or Less than 0.05
α_3	-0.0054	-0.0848	0.9324	Greater
STATE UNIVERSITIES				
Coefficient (β_i)	Effect	t-Statistic	Prob.	Greater or Less than 0.05
β_3	-0.0179	-0.1923	0.8478	Greater
PRIVATE UNIVERSITIES				
Coefficient (θ_i)	Effect	t-Statistic	Prob.	Greater or Less than 0.05
θ_3	0.3159	3.6734	0.0004	Less

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Analysis Results.

As reported in Table 5, the respective p-values associated with the t-statistics of the coefficients of information and communication technology (ICT) is greater than the 0.05 level of significance for the effects of information and communication technology (ICT) on students' records management effectiveness in the federal and state universities; $\text{prob}(\alpha_3 = 0.9324 > 0.05)$ and $\text{prob}(\beta_3 = 0.8478 > 0.05)$, but less than the specified level of significance, $\text{prob}(\theta_3 = 0.0004 < 0.05)$, for the private universities. These indicate that while information and communication technology (ICT) had negative and insignificant influence on students' records management effectiveness in the federal and state universities, it has significant and positive influence on the effectiveness of students' records management in the private universities. Thus, research hypothesis H_{01} is accepted for the federal and state universities, but rejected for the private universities.

This implies that while existing information and communication technology (ICT) infrastructures in the private universities are adequate to sustain and enhanced students' records management effectiveness; same may not be said for the federal and state universities. Therefore, providing more information and communication technology (ICT) infrastructures in private universities would result to quality output in the management of students' records. This is in consonant with the finding of [8] on managing records, which revealed that personnel who use computer to create records were assisted by the computer in managing electronic records which enhanced storage, retrieval, access, use, enhanced security, enhanced preservation, enhanced communication and report generation. This is further supported by scholars such as [25] and [26] who argued in favour of electronic records management using continuum model as the better approach to modern records keeping. The negative impacts of information and communication technology (ICT) usage in the federal and state universities indicated that paper-based records management was dominant in such universities despite the fact that the world is vast in ICT. This supposition is in line with [6] who reported that paper records continue to grow, even in the electronic environment.

CONCLUSION

The findings of this study has provided empirical basis to conclude that information and communication technology (ICT) usage in the Nigerian university system insignificantly and negatively influenced the effectiveness of students' records management in the federal and state universities whereas; they positively and significantly influenced students' records management effectiveness in the private universities. Also, the study reveals that all the universities (federal, state and private) operate both manual and electronic methods of students' records management. Therefore, this study offers the following recommendations:

The management of students' records whether electronic or manual cannot effectively be taken through its lifecycle without records management policies guarding it. University administrators should formulate or modify policies that will guide the effective management of students' records in their universities. Vice-Chancellors should through the Quality Assurance Departments of their universities ensure compliance with the universities stated policies on effective students' records management. Finally, since this study has established that the Nigerian Universities operates both paper and electronic records management system, the Nigeria government should come up with a model for the effective combination of electronic and manual records management procedure for students' records that will suit our environment.

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