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Relationship between the Application of ICT and Record Keeping Management in Federal Universities in Northern Nigeria

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Abstract. This study explores the relationship between the application of Information and Communication Technology (ICT) and record-keeping management in Federal Universities of Northern Nigeria. The research employs a correlational research design, utilizing correlational analysis to measure the statistical relationship between ICT application and record-keeping management. The study encompasses all Federal Universities in Northern Nigeria, with a sample size of 2,114 selected through a proportional sampling method across three geopolitical zones. Demographic characteristics of the respondents, including age, years of experience, qualification, and gender, are presented, providing insights into the diverse composition of the sample. The study employs a four-point Likert Rating Scale and Pearson's Product Moment Correlation coefficient for data analysis. Results indicate a significant positive correlation between the application of ICT and general record-keeping management, leading to the rejection of the null hypothesis. The discussion highlights the profound relationship between ICT and record-keeping management, showcasing the benefits of digital archiving, data security, accessibility, and advanced data analysis. The findings contribute to the understanding of how ICT tools and applications are transforming records management practices in higher education. The study concludes with a discussion on the importance of integrating ICT for preserving institutional heritage, ensuring data security, and fostering compliance with data protection regulations. Recommendations include Federal Universities should prioritize investment in advanced ICT infrastructure to ensure that their systems can effectively support record-keeping management. Up-to-date hardware and software are essential for the seamless operation of Human Resource Information Systems (HRIS) and other ICT tools.

Keywords: Application of ICT Integration; Record Keeping Management; Human Resource Information Systems (HRIS)

1. Introduction

Record keeping is a critical component of personnel management in Federal Universities. Accurate and up-to-date employee records are essential for effective HR decision-making, compliance with legal and regulatory requirements, and efficient personnel administration (Asiyai, 2015). The application of Information and Communication Technology (ICT) has significantly transformed record keeping management in Federal Universities. This section provides an overview of the relationship between ICT and record keeping management in Federal Universities.

One of the most significant ways that ICT has transformed record keeping management in Federal Universities is through automation. The use of Human Resource Information Systems (HRIS) has streamlined the process of maintaining employee records, payroll, and other HR functions (Omeluzor, 2014). HRIS enables the centralization of HR data, reducing manual errors and duplication of effort. This automation also allows for faster retrieval of information, reducing response times to HR requests (Asiyai, 2015). According to a study by Omoniyi and Olaniyan (2020), the implementation of an HRIS system in a Federal University led to a 95% reduction in manual data entry, resulting in significant time and cost savings.

ICT has also improved data security in record keeping management in Federal Universities. Electronic records are less prone to loss or damage compared to

physical records (Asiyai, 2015). Additionally, electronic records can be easily backed up and restored in case of system failures or disasters (Omeluzor, 2014). This ensures that critical HR data is not lost or compromised. The use of biometric systems for attendance and access control also enhances data security by eliminating the need for physical ID cards that can be lost or stolen (Adetimirin, 2012).

ICT has also made HR data more accessible to authorized personnel. Electronic records can be easily shared among different departments and campuses through networked systems (Asiyai, 2015). This facilitates collaboration among HR professionals and improves decision-making based on accurate and up-to-date data. Additionally, electronic records can be easily searched using keywords or other search criteria, making it easier to locate specific information (Omeluzor, 2014). This reduces the time and effort required to locate relevant information.

ICT has also enabled more sophisticated data analysis techniques in record keeping management in Federal Universities. Dashboards and analytics tools allow for the generation of valuable insights into HR trends and patterns (Abubakar et al., 2017). These insights can inform strategic HR decision-making by providing a more holistic view of HR data. For example, dashboards can be used to track employee turnover rates by department or location, enabling HR professionals to identify areas with high turnover rates and take corrective action (Asiyai, 2015).

1.1 Hypothesis

Ho_1: There is no significant relationship between the application of ICT and record keeping management in Federal Universities of Northern Nigeria.

2. Research Methodology

The researcher used a correlational research design for this investigation Messerli (2012). A non-experimental research method known as correlational analysis measures two variables decision making and evaluates the statistical relationship (also known as the correlation) between them with little to no effort to control unrelated variables. According to Cresswell (2012), a correlation test uses statistics to identify whether there is a propensity for two (or more) variables or two sets of data to change in a predictable way.

All Federal Universities in Northern Nigeria make up the population for this study. The population is ten thousand five hundred and seventy seven (10,577) staff. The Research Advisors (2006) table for estimating sample size from a particular population were used to extract twenty percent (20%) from the whole population for this study, which includes selected employees from Federal Universities in Northern Nigeria. And the sample size is two thousand one hundred and fourteen (2,114) staff.

The technique for sampling the study's sampled states will be chosen using the Dip-Hand sampling method of Adegboye (2001), and respondents will be chosen from each department in the selected states using the proportionate sampling method. The following method was employed:
North Central (6 states), North East (6 states), and North West (7 states) are the three geopolitical zones that make up Northern Nigeria's 19 states. There will be three students assigned to different sampled states. Each student represented a different zone, and the names of each state were written on pieces of paper and placed in a container for the zone-representing student to choose from.

Students from the North West chose three times, while those from the North Central and North East each chose twice. Due to the additional variances in one state, three states from the North West region, two from the North East region, and two from the North Central region will be chosen. Seven federal institutions from each of the chosen states will serve as a representative sample of those states.

The seven federal institutions in each state will be sampled using a proportional sampling method, and respondents were chosen from the four colleges and departments.

The departments and faculties that will be used for the study will be chosen using a Dip-Hand sampling approach. A process known as accidental sampling will be utilised to distribute or allocate copies of the questionnaire to responders.

The questionnaire on application of ICT in Record keeping Management (QAICTRKM) created by the researcher, will be the instrument utilized for the study. The instrument was divided into three parts. The instrument's initial section asks for background information on the respondent status. ICT applications will be covered in the instrument's second section, and management practices and ICT will be covered in its third component. Section C of the instrument will be divided into seven sections titled personnel Management using ICT.
A four-point Likert Rating Scale with the options strongly agree, agree, disagree, and strongly disagree

was used to structure the surveys. These will each receive a 4, 3, 2, 1 grade. The pilot study's self-developed questionnaire also covered the use of ICT and effective planning, with reliability coefficient of 0.87. Descriptive statistics of frequency counts and percentages will be used. At a significance level of 0.05, Pearson's Product Moment Correlation coefficient (PPMCC) will be employed to evaluate each of the formulated null hypotheses. Using SPSS version 29, a statistical tool for social science.

3. Results

Table 1 demographic characteristics of the respondents

AGE		**Frequency**	**Percent**
Valid	20-30	496	23.6
	31-40	350	16.6
	41-50	379	18.0
	51-60	527	25.0
	61 above	352	16.7
YEARS OF EXPERIENCE			
Valid	1-10	525	25.0
	11-20	371	17.6
	21-30	505	24.0
	31 above	703	33.4
QUALIFICATION			
Valid	BSC/BED/BA	175	8.3
	MSc/MA	700	33.3
	PhD	1229	58.4
Sex			
Valid	Male	1578	75.0
	Female	526	25.0

Table 4.1 indicted the demographic characteristics presented in the age distribution shows a wide range, from young adults in their 20s to older adults over 60 years old. The most frequently observed age group was 51-60 years (25%). About a quarter were also relatively young, aged 20-30 years (23.6%). The sample appears normally distributed across middle age groups, with 16.6% aged 31-40, 18% aged 41-50, and 16.7% aged 61 and above. This broad distribution will allow for comparisons across different age cohorts to determine if age relates to key outcome variables. For example, previous research found healthcare engagement increases with age, so analysis can evaluate if this relationship holds true in the current data. The good representation across age ranges increases generalizability. However, the sample does not reflect national population demographics, which skews younger.

The sample is skewed towards more experienced respondents, with 33.4% having 31+ years of experience. Still, good representation exists across the less experienced groups: 25% have 1-10 years, 17.6% have 11-20 years, and 24% have 21-30 years of experience. The higher proportion of veteran respondents is logical if sampling targeted subject experts. The wide spread allows for analysis of differences based on years of professional experience, which may link to domain knowledge and opinions. For instance, attitudes towards healthcare reforms could vary between newcomers and veterans. The limitation is the sample's experience distribution does not match the general population.

The respondents are highly educated overall, with 58.4% holding doctorate degrees and 33.3% having masters qualifications. Only 8.3% have bachelor's degrees and no other categories are represented. This degree distribution aligns with a specialized expert sample but limits generalizability to the broader public. However, the education levels enable examining views by degree type. For example, previous studies found higher education associates with more progressive attitudes. The current data can test if this relationship endures across masters and PhD respondents. Still, inclusion of more participants with less formal education could have provided better perspective.

The sample has a disproportionate gender ratio, with 75% male and just 25% female respondents. This 3:1 imbalance could result from sampling methods or reflect male dominance in certain professions or

positions surveyed. However, the skewed distribution may introduce gender bias in the results. The minority representation of women limits subgroup analysis and comparisons. A more balanced gender ratio would better represent the general population. Additional steps to include more women respondents could have enhanced the integrity and generalizability of the findings.

Ho4: There is no significant relationship between the application of ICT and general record keeping management in Federal Universities of Northern Nigeria.

Table 2: Pearson Product Moment Coefficient of relationship between application of ICT and general record keeping management in Federal Universities of Northern Nigeria

Variable	Mean	Std. Dev	N	Df	R	Prob	Decision
application of ICT	3.01512	0.701851	2104	2102	0.771*	0.0001	Rejected
record keeping management	3.42382	0.630855	2104				

Df=2102, r=0.771, Prob =0.0001

Table 2 show that there is no significant relationship between the application of Information and Communication Technology (ICT) and general record keeping management in Federal Universities of Northern Nigeria. To test this hypothesis, a Pearson Product Moment Coefficient of correlation was calculated using the same data set as before. The results presented in Table 4.10 show that there is a significant positive correlation (r = 0.771*) between the application of ICT and general record keeping management in Federal Universities of Northern Nigeria. This means that as the level of ICT application increases, the level of general record keeping management also increases. The positive r value shows higher use of ICT is associated with better record keeping management. The very low p-value (0.0001) means this correlation is extremely statistically significant and not random. Therefore, rejection of the null hypothesis Ho4, as there is a significant positive relationship between ICT application and record keeping management.

4. Discussion of findings

There is significant relationship between the application of ICT and record keeping management in Federal Universities of Northern Nigeria. Federal Universities in Northern Nigeria often possess historical records of academic and administrative significance. ICT aids in the preservation of these records through digital archiving and conservation measures (Ibrahim & Shehu, 2020). This ensures that important institutional heritage is protected and accessible for research and reference purposes. The integration of ICT enhances data security and ensures compliance with data protection regulations. Record keeping systems can incorporate encryption, access controls, and regular data backups to prevent data loss and breaches (Adigun & Adeniran, 2017). Compliance with data protection laws is crucial, especially in a higher education environment.

Records management is a crucial function in organizations for systematic storage and retrieval of information. ICT tools and applications are transforming records management practices in higher education globally. Electronic Document Management Systems for capturing, storing and tracking documents (Ani & Esin, 2005). Database management systems for structured storage of data like students, staff, and financial records (Baro, Edewor & Sunday, 2014). Institutional repositories and digital libraries for archiving intellectual outputs like theses, journals (Omeluzor, 2014). Email and social media content archiving tools to preserve communications records (Asiyai, 2015). Cloud-based storage systems like Google Drive for offsite records backup (Ani, 2013). Data mining tools for analyzing patterns in data (Ajayi & Ekundayo, 2009). Records management practices in universities include: Records classification, indexing and metadata creation (Mohammed, 2006). Active records maintenance and inactive records archiving (Adetimirin, 2012). Records tracking and timely retrieval for reference (Ani & Esin, 2005). Data security, access control and backup (Asiyai, 2015). Legal responsibilities like data privacy and freedom of information (Ani, 2013). Records disposal as per organizational policies (Baro, Edewor & Sunday, 2014). Relationship between ICT and Records Management ICT enhances records management in federal universities in Northern Nigeria through: Automating classification, indexing, search and retrieval of records improving efficiency (Omeluzor, 2014). Enabling quick, accurate retrieval of student, staff and administrative records (Ajayi & Ekundayo, 2009). Facilitating systematic storage and maintenance of records in various formats (Ani & Esin, 2005). Ensuring data security and authorized access to records via authentication (Mohammed, 2006). Providing strategic backup and data recovery mechanisms (Asiyai, 2015). Supporting data analysis for insights and informed decision-making (Ani, 2013).

5. Conclusion

In conclusion, this study provides relationship between the application of Information and Communication Technology (ICT) and record-keeping management in Federal Universities of Northern Nigeria. The study's findings support the hypothesis that there is indeed a significant and positive relationship between the application of ICT and general record-keeping management.

6. Recommendations

Based on the findings of the study on the relationship between the application of ICT and record-keeping management in Federal Universities of Northern Nigeria, the following recommendations are provided:
(i) Federal Universities should prioritize investment in advanced ICT infrastructure to ensure that their systems can effectively support record-keeping management. Up-to-date hardware and software are essential for the seamless operation of Human Resource Information Systems (HRIS) and other ICT tools.
(ii) Universities should implement regular and comprehensive training programs for staff to enhance their proficiency in using ICT tools. This includes training on HRIS, data security protocols, and other relevant technologies. Continuous training will ensure that staff members are well-equipped to maximize the benefits of ICT in record-keeping.
(iii) Considering the positive impact on data security highlighted in the study, Federal Universities should consider the widespread integration of biometric systems for attendance and access control. This not only enhances security but also streamlines HR processes by eliminating the need for physical ID cards.
(iv) Universities should establish and maintain regular data backup procedures to prevent data loss in case of system failures or disasters. Additionally, a comprehensive disaster recovery plan should be developed to ensure quick and efficient restoration of records in the event of unforeseen circumstances.
(v) The study emphasizes the improved accessibility of HR data among different departments through networked systems. Universities should encourage and facilitate collaboration among departments to ensure that relevant and up-to-date information is shared efficiently, contributing to better decision-making processes.
(vi) Federal Universities should explore the adoption of cloud-based storage solutions, such as Google Drive or other secure platforms, for offsite records backup. Cloud storage offers additional layers of security and accessibility, ensuring data availability even in the face of local infrastructure issues.

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