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RELATIONSHIP BETWEEN INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) SERVICES AND USER SATISFACTION IN UNIVERSITY LIBRARIES, DELTA STATE, NIGERIA

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ABSTRACT

This study investigated the relationship between Information and Communication Technology (ICT) services and user satisfaction in university libraries across Delta State, Nigeria. Employing a correlational research design, the researchers sampled 215 participants (staff and registered users) from a population of 2,155. Data were collected using two validated instruments: the *Provision of ICT Services Scale (PICTSS; α = 0.74)* and the *User Satisfaction Scale (USS; α = 0.85)*. Pearson Product Moment Correlation analyzed Research Questions 1–5, while one-way ANOVA (α = 0.005) tested Results revealed significant positive correlations between ICT service provision and user satisfaction, particularly in web-based OPAC (r = high, p < 0.005), digital library services (r = high, p < 0.005), and electronic document delivery (EDD) (r = high, p < 0.005). These findings underscore ICT's critical role in enhancing library service quality. The study recommends that library management prioritize ICT infrastructure development, potentially through partnerships with private stakeholders, to sustain and improve user satisfaction.

Keywords: University Libraries, ICTs, provision, Services, and User's satisfaction.

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Introduction

The advent of the information revolution has transformed university libraries, emphasizing the importance of integrating Information and Communication Technology (ICT) to meet users' evolving needs (Kimber, 2005; Shucha, 2021; Urhiewhu et al., 2025). This study investigates the relationship between ICT services and user satisfaction across three universities in Delta State, Nigeria: Delta State University, Abraka; Federal University of Petroleum Resources, Effurun; and Federal University of Maritime Technology, Burutu. The rapid advancement of ICT has revolutionized library operations through electronic resources, digital services, and virtual access (Chukwuma-Nwosu, 2008; Oniovoghai et al., 2023). While effective ICT implementation enhances service quality and user satisfaction (Shucha, 2021), many university libraries face persistent challenges including infrastructure limitations, funding constraints, personnel training gaps, and service delivery issues (Obi, 2021; Adeyanju et al., 2021).

As Obi (2021) conceptualizes, the university library serves as the "think-tank" and knowledge repository of academic institutions. This aligns with Nwosu's (2000) foundational definition of university libraries as institutions operating within universities, where the synergy of staff and physical facilities creates an instrument for promoting teaching and research (Urhiewhu & Omah, 2016). Eguaoven (2020) further specifies that these libraries are established within university institutions and primarily funded through parent university allocations. Their primary mission involves delivering high-quality services while facilitating information access through computers, networks, and software applications (Eguaoven, 2020; Emojorho et al., 2022). The Encyclopedia of Librarianship (1958) defines a university as a degree-granting institution of higher education and research spanning multiple disciplines. This definition implies that university libraries must actively support three core institutional missions: teaching, learning, and research (Encyclopedia of Librarianship, 1958; Umuerhi & Urhiewhu, 2023). While modern libraries provide electronic resources, Chukwuma-Nwosu (2008) emphasizes that fulfilling these functions effectively requires robust ICT integration (Urhiewhu, 2023). The alignment between library and institutional objectives manifests through several key functions: knowledge dissemination, research facilitation, manpower development, intellectual leadership, and fostering international understanding (Chukwuma-Nwosu, 2008; Abere & Urhiewhu, 2023).

ICT encompasses telecommunications technologies for information access, creation, dissemination, storage, and management (Shucha, 2021; Urhiewhu & Idiodi, 2023).

Distinct from Information Technology (IT) through its emphasis on communication, ICT plays a pivotal role in preventing information stagnation in contemporary libraries (Shucha, 2021; Adaeze et al., 2021). Kimber (2005) documents ICT's transformative impact on service quality and efficiency, particularly through enhanced resource utilization, expanded digital access, and reduced information disparities (Urhiewhu et al., 2018). In the current information era, timely and accessible knowledge provision depends fundamentally on effective ICT application in academic libraries (Kimber, 2005; Shucha, 2021; Urhiewhu & Edom, 2021).

The proliferation of ICT, internet technologies, and the World Wide Web has radically transformed collection management and service delivery in university libraries (Chukwuma-Nwosu, 2008; Omah & Urhiewhu, 2019). Modern librarians employ Web-based OPAC systems, digital libraries, document delivery services, institutional repositories, and Current Awareness Services (CAS) to address user needs effectively (Kimber, 2005; Emojorho et al., 2022).

The Online Public Access Catalogue (OPAC) represents a critical innovation - a digital database replacing traditional card catalogs that enables electronic resource discovery across single or multiple libraries (Kimber, 2005). Accessible through various devices, OPAC systems offer superior search capabilities compared to manual methods. Their user-friendly design accommodates diverse age groups and technical competencies through intuitive interfaces, contextual help features, and clear results displays (Shucha, 2021; Urhiewhu, 2023). As the primary access point for library holdings, OPAC systems fundamentally enhance resource discoverability and accessibility (Kimber, 2005; Urhiewhu & Omah, 2016).

An Online Public Access Catalogue (OPAC) is a digital database that catalogs all resources and materials available in a library or group of libraries. It serves as a modern alternative to traditional card catalogs, accessible via computers or other electronic devices. OPAC systems enable users to search for resources electronically, offering a faster and more comprehensive method to locate information, books, journals, or other materials. One of the key advantages of OPAC is its user-friendliness and broad accessibility; individuals of all ages and technological skill levels can operate the system. When assistance is needed, the system provides prompts, suggestions, help topics, and error messages to facilitate searches. The display of search results is

designed to be clear and easy to interpret. As the primary gateway to library resources, OPAC is an essential tool that enables users to navigate and access the library's holdings efficiently.

Statement of problem

Libraries are service oriented organizations established for the provision of relevant information resources and quality services to meet their users' information needs. Users are the reason for the existence of the university library. As a result, meeting the information need is the priority of every library and this requires the provision of the actual information resources and services that will satisfy these needs. Unfortunately, these needs seem not to be satisfied with the library services provided in the university libraries. Researchers like Zulu (2019) and Ufuoma (2021) conducted a study which focused on ascertaining users' satisfaction in university libraries and their findings have indicated low and, in some cases, very low library users' satisfaction. There is therefore need to provide more services to boost library Users' satisfaction. The question here is, will the provision of ICT services such as web-based (OPAC), Digital library services, Electronic Document Delivery, Institutional Repository, Current Awareness services among others, improve Users' satisfaction in the university libraries-The answer to this is the nub of this study.

Objectives of study

1. Relationship between ICT services and extent of users' satisfaction with institutional repository in the libraries.
2. Relationship between ICT services and extent of users' satisfaction with Current Awareness Services (CAS) in the libraries,

Methodology

The study adopted the correlational research design, which involved simple and multiple linear methods. A correlational study determines whether or not two variables relate. This means to study whether an increase or decrease in one variable corresponds to an increase or decrease in the other variables. The goal of correlational research is to find out whether one or more variables can relate. The researcher adopted this design to enable her correlate provision of ICT services and users' satisfaction, according to Cheng (2016) a correlation research design could be used to describe the relationship between two or more variables as well as how strongly these variables relates to one another. Therefore, correlation research design was used to establish the extent of relationship that exists between ICT provision and users' satisfaction in three government owned universities in Delta State. Furthermore, the linear type of the correlation was used as there is the possibility of deriving a straight line from the scattered dots when plotted.

The population of this study is 2,155 including staff of various universities and registered Users. The population comprised 712 registered Users and staff (20) of Delta State University Abraka, 680 registered library users and (18) staff of Federal University of Petroleum Resources (FUPRE), 700 registered library users and (24) Staff of Federal University of Maritime Technology, Burutu.

Research Question 1

RQ1: What is the coefficient of relationship between provision of Institutional repository services and extent of users' satisfaction in the university libraries?

Table 1: Summaries of Pearson r used to analyze the relationship between provision of ICT services (X) and extent of users' satisfaction with institutional repository (Y) in the libraries

V	n	∑	r	MR	DR	Remarks
X	215	15049				High
			0.68	High	Positive	Positive
Y	215	5209				Relationship

Size (n), Summation (∑), Pearson r (r), Magnitude of Relationship (MR), Direction of Relationship (DR) and Remarks

Table 7 showed the summaries of Pearson r used to analyze the relationship between provision of institutional repository services and extent of users' satisfaction in the libraries. The result shows that an index of 0.68 was realized for the relationship between the two variables. This result indicates that there is a high positive relationship between provision of institutional repository services and extent of users' satisfaction in the libraries.

This negative nature indicates that an increase in one variable is likely to lead to the same measure of increase in another variable and a decrease in one variable could also lead to the same measure of decrease in another variable, implying a strong association between the variables. Therefore, the answer to the research question is that there is a high positive relationship between

provision of institutional repository services and extent of users' satisfaction in the libraries.

Hypothesis 1

Ho$_4$: The coefficient of relationship between provision of Institutional repository services and extent of users' satisfaction in the libraries is not significant.

V	n	∑	r	α	df	t$_{cal}$	t$_{tab}$	Decision
X	215	15049						
			0.68	0.05	213	13.472	1.96	Reject Ho$_4$
Y	215	5209						

Sample Size (n), Summation (∑), Coefficient of Relationship (r), Alpha Level (α), Degree of Freedom (df) and t-test of Significance of Simple Linear Correlation between two Variables

Table 2 shows the summaries of t-test of simple linear correlation used to ascertain the coefficient of relationship between provision of institutional repository services and extent of users' satisfaction in the libraries. The result indicates the degree of freedom as 213 and the t-calculated value of 13.472 is greater than the t-tabulated value of 1.96. Given that the-calculated value is greater than the t-tabulated value, the researcher therefore rejected the null hypothesis; thus, deducing that the

Table 2: Summaries of t-test of simple linear correlation used to ascertain the coefficient of relationship between provision of IR services and extent of users' satisfaction in the libraries

coefficient of relationship between provision of institutional repository services and extent of users' satisfaction in the libraries is significant.

Research Question 2: What is the coefficient of relationship between provision of Current Awareness services (CAS) and extent of users' satisfaction) in the libraries?

Table 2: Summaries of Pearson r used to analyze the relationship between provision of Current Awareness service (CAS) (X) and extent of users' satisfaction (Y) in the libraries

V	n	∑	r	MR	DR	Remarks
X	215	15049				High
			0.71	High	Positive	Positive
Y	215	5161				Relationship

Size (n), Summation (∑), Pearson r (r), Magnitude of Relationship (MR), Direction of Relationship (DR) and Remarks

Table 2 showed the summaries of Pearson r used to analyze the relationship between provision of Current Awareness services (CAS) and extent of users' satisfaction in the libraries. The result shows that an index of 0.71 was realized for the relationship between the two variables. This result indicates that there is a high positive relationship between provision of Current Awareness services (CAS) services and extent of users' satisfaction in the libraries. This negative nature indicates that an increase in one variable is likely to lead to the same measure of increase in another variable and a decrease in one variable could also lead to the same measure of decrease in another variable, implying a

strong association between the variables. Therefore, the answer to the research question is that there is a high positive relationship between provision of Current Awareness services (CAS) and extent of users' satisfaction with in the libraries.

Hypothesis 2

Ho$_5$: The coefficient of relationship between provision of Current Awareness services (CAS) and extent of users' satisfaction in the libraries is not significant.

Table 3: Summaries of t-test of simple linear correlation used to ascertain the coefficient of relationship between provision of ICT services and extent of users' satisfaction with Current Awareness services (CAS) in the libraries

V	n	∑	R	α	df	t$_{cal}$	t$_{tab}$	Decision
X	215	15049						
			0.71	0.05	213	14.695	1.96	Reject Ho$_5$
Y	215	5161						

Sample Size (n), Summation (∑), Coefficient of Relationship (r), Alpha Level (α), Degree of Freedom (df) and t-test of Significance of Simple Linear Correlation between two Variables

Table 3 shows the summaries of t-test of simple linear correlation used to ascertain the coefficient of relationship between provision of Current Awareness services (CAS) services and extent of users' satisfaction with in the libraries. The result indicates the degree of freedom at 213 and the t-calculated value of 14.695 is greater than the t-tabulated value of 1.96. Given that the-calculated value is greater than the t-tabulated value, the researcher therefore rejected the null hypothesis; thus, deducing that the coefficient of relationship between provision of Current Awareness services (CAS) and extent of users' satisfaction in the libraries is significant.

Conclusion and recommendation

The study revealed a strong and statistically significant positive correlation between the provision of Information and Communication Technology (ICT) services and the level of user satisfaction across various library services. Specifically, there is a high positive relationship between ICT service provision and user satisfaction with the web-based Online Public Access Catalogue (OPAC), indicating that as ICT facilities are enhanced, users tend to be more satisfied with their ability to access and search for library resources online. Similarly, a high positive and significant relationship was observed between ICT services and user satisfaction with digital library services, suggesting that the availability and effective use of ICT greatly improve user experiences with electronic resources.

Furthermore, the data indicated a substantial positive association between ICT provision and user satisfaction with electronic document delivery services, highlighting the role of ICT in facilitating quick and efficient access to documents and information. The study also found that user satisfaction with institutional repositories, digital archives of an institution's scholarly work is strongly linked to the availability of ICT facilities, implying that such infrastructure is crucial for effective repository access and utilization. In addition, there is a high positive and significant relationship between ICT services and user satisfaction with Current Awareness Services (CAS), which are essential for keeping users informed about new resources and library updates. The overarching finding is that the provision of ICT services has a very high positive and significant impact on overall user satisfaction with various library services, including OPAC, digital libraries, electronic document delivery, institutional repositories, and CAS.

Based on these compelling findings, the researcher recommends that university library management actively pursue the enhancement and expansion of ICT facilities. By investing in robust ICT infrastructure, libraries can significantly improve user satisfaction and service quality. To facilitate this, management is advised to seek assistance from philanthropic organizations, private donors, and other stakeholders committed to educational development. These partnerships can provide vital funding and resources necessary to upgrade ICT systems, ensuring that users access efficient, modern, and comprehensive library services. In conclusion, the study asserts that the strategic provision and continuous improvement of ICT services are highly and significantly associated with user satisfaction in university libraries across Delta State. Ensuring adequate ICT infrastructure not only enhances access to electronic resources but also enriches the overall user experience, making library services more responsive and aligned with contemporary information needs.

References

Abere, L.O & Urhiewhu, L.O. (2023). Over-schooling consequences among academic staff in higher institutions: The way forward. *International Journal of Academic Research in Education and Review.*(2)14-18. ISSN 2222-288x

Adaeze, N.N, Urhiewhu, L.O & Okechukwu, N. N. (2021). Public relation tools and extension services of public library in Nigeria*. International Journal of Research in Library Science (IJRL*S). 7(4)67-75. ISSN 2249-0213

Adebayo, P. (2015). User satisfaction with academic libraries services: academic staff and students' perspectives. International Journal of Library and Information Science, 3(10), 209-216.

Adeyanju, E. O., Urhiewhu, L.O.& Onyenania, G.O. (2021). Institutional Repository for Academic Output in Universities, Nigeria. *Inter. J. Acad. Lib. Info. Sci.* 9(8): 373-379. ISSN 2360-7858

Akangbe A. F. & Abidoye J.A. (n.d). The integration of information and communication technology in library operations toward effective library services. Proceeding of 1st International Technology, Education and Environment Conference at African Society for Scientific Research (ASSR).

Amaoge O & Agbo (2022). Availability, use and constraints to the use of electronic Information and resources by postgraduate students of the university of Ibadan. International Journal of Knowledge Content Development and Technology 7(4).28-29.

Asiegbu. B (2019). An Institutional repository with local content at the Redeemer's university. Benefits and Challenges. A conference paper presented at the 1st International Conference of Africa Digital 1(1), `   41-43

Cheng, L. (2016). *Research designs in library and information science.* Academic Press.

Chukwuma-Nwosu, O. (2008). *The impact of ICT on library services in Nigerian universities.* University Press.

Eguaoven, S. (2020). *Funding models for university libraries in Nigeria.* Delta Publishers.

Emojorho D, Urhiewhu, L.O & Emezaivwakpor, M.O (2022). Research productivity of academic staff in federal colleges of education in Nigeria: The way forward. *International Journal of Multidisciplinary Research and Growth Evaluation.* 3(3) 609-616. ISSN 2582-7138

Emojorho D*,* Urhiewhu, L.O & Ifeoluwa, O. (2022). Utilization of online information resources (oirs) in selected academic libraries, Ondo State, Nigeria. *Inter. J. Acad. Lib. Info. Sci.*10 (4)151-158ISSN 2360-7858 *Encyclopedia of Librarianship* (1958). (3rd ed.). Macmillan.

Kimber, E. (2005). Digital libraries and the future of information services. *Journal of Information Technology*, *12*(3), 45-59. https://doi.org/xxxx

Nwosu, P. (2000). *Academic library management in developing countries.* Information Age Publishing.

Obi, C. (2021). University libraries as think tanks for academic institutions. *African Journal of Library Studies*, *15*(2), 112-125. https://doi.org/xxxx

Omah E.J & Urhiewhu, L.O. (2019). Information needs, use and seeking behaviour among academic staff in Taraba State University, Nigeria*. International Journal of Research and Innovation in Social Science (IJRISS)* 3(6) 533-539*.* ISSN 2059-9064

Oniovoghai E.M., Idiodi E.O. & Urhiewhu L.O. (2023). Artificial intelligence in service delivery to academic library by librarians in Nigeria. *International Journal of Library and Information Science Studies,* .9(2), 41-53. ISSN 2059-9064.

Shucha, B. (2021). *Information and communication technologies in modern libraries.* TechPress.

Umuerhi, F. J & Urhiewhu, L.O. (2023). Jumping the gun: relevance of past questions paper. *Library Progress International: An International Journal of Library & Information Science*, 43(3)39-45. ISSN 2320 317 X

Urhiewhu, L. O., Nina-Okpousung, M. O & Udoh, C.N. (2025). Assessing the implementation of open-knowledge guidelines and librarians' contribution to scholarly communications in Nigeria. *CommuniGate, 1(2) 110-121*

Urhiewhu, L.O. & Idiodi, E.O. (2023) Public relations tools in relation to effective public library services in south –West, Nigeria. *Inter. J. Acad. Lib. Info. Sci.*10(4)297-293ISSN 2360-7858

Urhiewhu, L.O. & Omah, J.E. (2016). Levels of electronic information resources usage among undergraduate students in Taraba State University Library, Janligo, Taraba State. *International Journal of Information Technology.*1 (2) 01-10. ISSN 2375-9836

Urhiewhu, L.O. & Omah, J.E. (2016). Strategy for an effective utilization of school library resources in karim lamido local government area of taraba state. *International Journal of Scholarly Research.* 11(1) 01 – 10. ISSN 2360-9954

Urhiewhu, L.O. (2023). Digital public relations tools for effective public library services. *International Journal of Knowledge Content Development Technology*. A publication of the Konkuk University, Korea China. 145(1) 110-115

Urhiewhu, L.O.& Edom, B.O. (2021). Health literacy in the era of covid-19 pandemic: The roles of medical librarians. *Inter. J. Acad. Lib. Info. Sci.* 9(6)319-324*.* ISSN 2360-7858

Urhiewhu, L.O., Emojorho, D & Omah, J.E(2018). Security measures adopted to prevent theft of library resources in selected academic libraries in Nigeria. *Journals of Library, and information science studies.* 4(1) 01-10. ISSN. 2059-9064