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IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ON THE PROVISION OF INFORMATION SERVICES TO UNDERGRADUATE STUDENTS IN FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI LIBRARY

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Abstract

The study focused on the Impact of Information and Communication Technology on the provision of information services to undergraduate students in FUTO library. Four research objectives and four research questions were posed to guide the study. This study adopted survey research design. The study was carried out in Federal University of Technology, Owerri. The population of this study consists of three thousand, three hundred and forty-four (3,344) registered library users of Federal University of Technology, Owerri library. The sample for the study is 357. Taro Yamane's (1969) statistical formula was used to determine the sample size of 357. The instrument used for data collection is the rating scale. The data collected for this study was analyzed using mean score scale and standard deviation. The finding revealed among others that reference services, user education, abstracting and indexing services, inter-library loan, reprographic services, Current Awareness Services and consultative services are the types of information services provided in the library studied. Based on the findings, it was recommended among others that the library management should provide other information services to ensure that library users adequately satisfy their information needs.

Keywords: Information and Communication Technology; University Library, Information Services; ICT Facilities.

1.1 Introduction

Academic libraries are libraries established in institutions of higher learning such as universities, polytechnics, colleges of education, monotechnics, and research institutes. According to scholars such as Akporhonor and Anyanwu cited in Egbuchu and Osuagwu (2023), these libraries are created to support the major objectives of tertiary institutions, namely: teaching, learning, and research. They serve as essential centers for providing access to information resources needed by students, lecturers, and

researchers. As a result, academic libraries are often regarded as the intellectual hub or nerve centres of higher institutions where academic activities are sustained. The primary responsibility of academic libraries is the preservation, organization, and dissemination of knowledge and information. In universities, libraries play a significant role during accreditation exercises because the quality of library resources often determines the success of academic programmes. Mbagwu and Udo-Anayanwu (2021) opine that many universities and departments have

failed accreditation by NUC because their libraries failed to meet up with the Minimum Academic Standard for information resources. It is therefore very clear that universities cannot exist and function properly without a standard library.

Apart from the central university library, faculty and departmental libraries are also established to enhance access to specialized information resources. These libraries acquire and organize different categories of materials such as textbooks, reference materials, serials, audiovisual resources, and electronic resources to support academic activities. To ensure effective utilization of these resources, libraries provide various services to users. According to Okorie cited in Ukwueze, Osuagwu and Ani (2022), library services include circulation services, reference services, user education, bibliography compilation, current awareness services, interlibrary loan services, photocopying, printing, and selective dissemination of information. These services help users locate and access relevant information efficiently, thereby increasing user satisfaction and promoting effective learning and research.

Information services in libraries have been greatly enhanced through the application of Information and Communication Technology (ICT). ICT refers to the use of electronic devices and communication technologies such as computers, internet facilities, scanners, printers, e-mail, Online Public Access Catalogue (OPAC), and mobile technologies for processing, storing, retrieving, and disseminating information. Scholars such as McAlbert and Uzoeto (2016) described ICT as the integration of computer and communication technologies used for information management and exchange. ICT has improved the speed, accuracy, and efficiency of library operations and has introduced modern services such as e-mail

communication, online databases, and internet-based information retrieval.

The integration of ICT into academic library services has significantly improved access to information resources and increased library usage. It enables users to obtain timely and relevant information with ease, thereby enhancing teaching, learning, and research activities. However, the effective application of ICT in academic libraries is hindered by several challenges, including inadequate funding, poor power supply, lack of trained personnel, insufficient ICT facilities, and poor maintenance culture (Idiodi&Emezaivwakpor, 2022). Despite these challenges, ICT remains an indispensable tool for improving information service delivery in academic libraries.

1.2 Statement of the Problem

A well-established library is essential for any academic institution, as a focal point for teaching, research and learning. It is expected to provide standard information resources. Academic libraries provide different kinds of information materials. These information materials are provided or made available in the library to enable the users to have access to the information they need. It also provides information services to enable library users to have access to their information needs. To ensure that these information services are rendered effectively and efficiently, Information and Communication Technology (ICT) is adopted. It was observed that despite the adoption of Information and Communication Technology (ICT) in the rendering of library information services, users still hardly utilize the library collections and most times, they hardly come to the library. Hence the research tends to ask: could it be that Information and Communication Technology does not have impact on the provision of these information services or information services are not adequately

provided or that the users are not aware of the existing information services in the library, Hence, the researcher embarked on this research work to ascertain the impact of Information and Communication Technology on the provision of information services to undergraduate students in Federal University of Technology Owerri library.

1.3 Purpose of the Study

The main purpose of this study is to ascertain the impact of Information and Communication Technology on the provision of information services to undergraduate students in Federal University of Technology, Owerri library. Specifically, the study sought to:

1. identify the types of information services provided in the library studied.
2. identify the types of ICT facilities used in the provision of information services in the library studied.
3. ascertain the extent of the use of ICT in the provision of Information services in the library studied.
4. to determine students' level of awareness on the availability of ICT based information services in the library studied.

1.4 Research Questions

Based on the purpose of this study, the following research questions were posed.

1. What are the types of information services provided in the library studied?
2. What are the types of ICT facilities used in the provision of information services in the library studied?
3. To what extent are ICT used in the provision of Information services in the library studied?
4. What is the students' level of awareness on the availability of ICT based information services in the library studied?

2.1 Literature Review

2.2 Information and Communication Technology

Information and Communication Technology (ICT) refers to the various electronic technologies and tools used for collecting, processing, storing, retrieving, transmitting, and disseminating information. It involves the integration of computers, telecommunications, and other digital technologies that facilitate communication and information sharing across the globe. ICT has become an essential component of modern society because it supports access to information, improves communication, and enhances productivity in different sectors, including education and libraries. According to the United Nations Development Programme (2016), ICT serves as an important tool for promoting development, improving service delivery and increasing access to information and global opportunities.

ICT encompasses a wide range of technologies such as computers, internet facilities, scanners, printers, digital cameras, mobile phones, e-mail systems, databases, and telecommunication networks. Ohiwerei (2015) explained that ICT includes technologies that support information handling and enable communication between individuals and electronic systems. Similarly, Adebayo and Adesope (2017) described ICT as the scientific and technological tools used in information processing and computer-related communication activities. These technologies make it possible to produce, organize, store, exchange, and present information electronically.

In the library environment, ICT plays a major role in improving information management and service delivery. Libraries apply ICT in the acquisition, organization, storage, retrieval, and dissemination of information resources. The use of ICT in libraries has transformed traditional library

operations by making information services faster, easier, and more efficient (McAlbert and Uzoeto (2016). ICT is now widely used in cataloguing, circulation services, serial control, reference services, and database management. Through ICT, libraries can provide access to electronic information resources such as e-books, e-journals, online databases, institutional repositories, and digital archives.

The application of ICT in libraries has also improved access to information resources beyond the physical library environment. Users can now retrieve information remotely through the internet and library networks. According to Ohiwerei (2016), this development has increased the availability of information and enhanced users' ability to access current and relevant materials at any time. ICT has therefore contributed significantly to the modernization of library services and has helped libraries cope with the rapid growth of information in the digital age.

Several ICT facilities are commonly used in academic libraries to improve service delivery. These include computer systems, internet services, Online Public Access Catalogue (OPAC), scanners, printers, photocopying machines, e-mail facilities, and mobile communication devices. Edidiong and Eyene (2014) noted that these facilities help ensure that information services are timely, accurate, and efficient. Through ICT, library users can easily search library catalogues, locate information resources, and communicate with library staff without difficulty.

Furthermore, ICT has enhanced the efficiency of librarians in performing professional duties. It supports faster processing of library materials, accurate organization of information resources, and effective dissemination of information to users. ICT also enables libraries to establish connections with other libraries and

information centres for resource sharing and cooperation. This has strengthened library networks and improved access to global information resources. ICT also enhances the utilization of library information services.

2.3 Library Information Services

Library information services are the various activities and assistance provided by libraries to help users access, retrieve, and utilize information resources effectively. These services are designed to satisfy the information needs of users and ensure maximum utilization of library resources. Okorie (2016) explained that library information services involve the different ways library users are assisted to make effective use of the library and its resources. The major objective of information services is to provide users with the information they require while also creating awareness of available information resources and how to access them.

Information services are important because they connect users with relevant information for teaching, learning, and research purposes. They are closely related to reference services since librarians often guide users in locating and utilizing information materials. Information services may involve direct interaction between librarians and users, as well as indirect support services that help users independently access information resources. Katz in Okorie (2016) classified library information services into direct and indirect services. Direct services involve personal communication between librarians and users, such as answering reference questions, while indirect services include activities such as cataloguing, indexing, abstracting, and preparation of bibliographies that facilitate access to information resources.

One of the most important library information services is reference service. This service involves assisting users in locating and

obtaining answers to their information needs. Through reference services, librarians provide guidance, answer queries, and help users identify appropriate information sources. Reference services are essential because users often require professional assistance to access accurate and relevant information materials (Egbuchu and Osuagwu, 2023).

Another important service is user education. Libraries organize user education programmes to equip users with the necessary skills and knowledge for effective use of library resources and services. Ukwueze and Osuagwu (2023) noted that user education may include library orientation programmes, classroom instruction, and one-on-one guidance. Through this service, users become familiar with library rules, available resources, and methods of retrieving information independently. User education therefore enhances users' ability to utilize library resources efficiently.

Selective Dissemination of Information (SDI) is also a vital information service provided in libraries. This service involves supplying users with current and relevant information based on their specific interests and research needs. Egbuchu and Osuagwu (2023) stated that SDI helps lecturers, researchers, and students stay informed about new developments in their fields of study. Closely related to SDI are current awareness services, which keep users informed about newly acquired materials and recent publications available in the library.

Libraries also provide abstracting and indexing services to enhance access to information resources. Abstracting services involve summarizing the contents of books, journals, and other publications, while indexing services provide systematic guides to the location of information materials (Okorie, 2016). These services help users

locate relevant information quickly and efficiently, especially in large collections of academic materials.

Inter-library loan and document delivery services are equally important in academic libraries. Through inter-library loan services, a library can obtain materials that are not available in its own collection from another library on behalf of its users. This service broadens users' access to information resources beyond the holdings of a single library and promotes resource sharing among libraries (Okorie, 2016).

Modern library information services have been greatly improved through the application of Information and Communication Technology (ICT). ICT has made library services more flexible, user-friendly, and accessible. Libraries now provide electronic services such as online catalogues, digital libraries, online databases, e-books, and internet-based reference services. Adeogun and Adewuyi (2014) emphasized the need for libraries to adopt more user-centered and hybrid information services that combine traditional and electronic methods of service delivery. The integration of ICT into library information services has therefore improved access to information, increased efficiency, and enhanced user satisfaction in academic libraries.

2.4 Types of ICT Facilities Used for the Provision of Information Services

Information and Communication Technology (ICT) facilities are important tools used in libraries to improve information storage, retrieval, processing, and dissemination. These facilities exist in different forms and are provided in libraries to ensure efficient and effective delivery of information services to users. ICT facilities enable libraries to move from traditional manual operations to modern digital systems

that provide faster and easier access to information resources.

Common ICT facilities used in academic libraries include computers, internet facilities, e-mail services, scanners, printers, photocopying machines, fax machines, CD-ROM databases, microform readers, telephones, and local area networks. Agbo and Akidi (2023) identified these facilities as critical components for improving the efficiency and effectiveness of library service delivery. Among them is the Online Public Access Catalogue (OPAC), which enables users to electronically search, identify, and locate library resources quickly and conveniently.

The availability and utilization of ICT facilities help libraries to improve the organization and accessibility of information resources. According to Ohiwerei (2015), ICT supports efficient handling, storage, and dissemination of information in libraries. These technologies facilitate faster processing of library materials and provide users with quick access to relevant information. ICT facilities also reduce the time spent searching for information and improve the overall efficiency of library operations. Through internet connectivity and digital resources, library users can access e-books, e-journals, online databases, and other electronic information resources from different locations.

Furthermore, ICT facilities have transformed library services from traditional local collections to globally accessible digital information systems. Adebayo and Adesope (2017) observed that ICT has improved communication, information sharing, and service delivery in academic institutions. Modern libraries now provide information services through advanced networking technologies that allow users to access information remotely. The adoption of ICT

facilities in academic libraries has therefore improved service delivery, promoted resource sharing, and enhanced users' satisfaction in teaching, learning, and research activities.

2.5 Extent of the Use of ICT in the Provision of Information Services

The use of Information and Communication Technology (ICT) in academic libraries has increased significantly in recent years. ICT is now widely utilized in the provision of information services to improve access to information resources and enhance service delivery. Academic libraries are increasingly adopting ICT facilities to ensure that users can easily access information resources in both physical and electronic formats whenever needed. The growing use of ICT has therefore transformed library operations from traditional manual systems to modern digital services.

The extent of ICT use in the provision of information services depends on factors such as the availability of ICT facilities, users' awareness, internet accessibility, and the ICT skills possessed by librarians and library users. Ohiwerei (2015) observed that ICT enhances the handling, storage, retrieval, and dissemination of information in libraries. The effective use of ICT facilities such as computers, internet services, Online Public Access Catalogue (OPAC), and electronic databases has improved the speed and efficiency of library services.

ICT has also increased users' access to current and relevant information resources. Through internet connectivity and electronic information systems, students, lecturers, and researchers can access e-books, e-journals, online databases, and other digital resources from different locations. McAlbert and Uzoeto (2016) noted that the introduction of ICT in libraries has greatly facilitated the use of library information resources and services. This development has encouraged many users

to rely more on electronic information resources than printed materials.

Furthermore, the use of ICT in libraries has improved teaching, learning, and research activities in academic institutions. ICT provides opportunities for users to create, process, retrieve, and disseminate information effectively. It also supports independent learning and promotes quick access to global information resources. As a result, the extent of ICT use in the provision of information services continues to increase as libraries adopt modern technologies to meet the information needs of users more efficiently.

3.1 Methodology

This study adopted survey research design. The study was carried out in Federal University of Technology Owerri. Population of this study consists of three thousand, three hundred and forty-four (3,344) registered library users. The sample for the study is 357.

Taro Yamane's statistical formula was used to determine the sample size of 357. The instrument used for data collection is the four point rating scale. The instrument used for data collection was structured on a four-point rating scale. Respondents were required to indicate their level of agreement with each item using the following response categories: Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points, and Strongly Disagree (SD) = 1 point. The numerical values assigned to the response options were used for data analysis. The data collected for this study were analyzed using mean score.

4.1 Results and Data Analysis

Three hundred and fifty-seven (357) copies of the research instruments were distributed to the respondents and only three hundred and fifty were duly filled and returned, showing 98% return rate.

Research Question 1: What are the types of information services provided in the library?

Table 1: Types of Information Services Provided in the Library

		(N=350)							
S/N	Item Statement	Freq.	SA (4)	A (3)	D (2)	SD (1)	Total Score	Mean	Decision
1	Reference services	Freq. Score	100 400	200 600	49 98	1 1	1099	3.1	Positive
2	User education	Freq. Score	120 480	80 240	100 200	50 50	970	2.8	Positive
3	Selective Dissemination of Information	Freq. Score	50 200	50 150	95 190	15 5	695	2.0	Negative
4	Abstracting and Indexing services	Freq. Score	121 484	80 240	100 200	49 49	973	2.8	Positive
5	Inter-Library loan	Freq. Score	300 1200	50 150	0 0	0 0	1350	3.9	Positive
6	Reprographic services	Freq. Score	200 800	50 150	95 190	5 5	1145	3.2	Positive
7	Current Awareness Services	Freq. Score	100 400	200 600	49 98	1 1	1099	3.1	Positive
8	Consultative services	Freq. Score	110 440	205 615	10 20	5 5	1080	3.1	Positive

The analysis in Table 1 revealed that reference services, user education, abstracting and indexing services and inter-library loan, reprographic services, Current Awareness Services and consultative services are the types of information services provided in the library studied. This is evident in their response rates which are above the 2.5 averages.

Research Question 2: What are the types of ICT facilities used in the provision of information services in the library?

Table 2: Types of ICT Facilities Used in the Provision of Information Services (N=350)

S/N	Item Statement	Freq.	SA (4)	A (3)	D (2)	SD (1)	Total Score	Mean	Decision
1	Computers/Laptops	Freq.	120	80	100	50	970	2.8	Positive
		Score	480	240	200	50			
2	Photocopying machine	Freq.	100	200	49	1	1099	3.1	Positive
		Score	400	600	98	1			
3	OPAC	Freq.	121	80	100	49	973	2.8	Positive
		Score	484	240	200	49			
4	Modems	Freq.	300	50	0	0	1350	3.9	Positive
		Score	1200	150	0	0			
5	Projectors	Freq.	50	50	95	155	695	2.0	Negative
		Score	200	150	190	155			
6	Robotics	Freq.	20	100	75	155	685	2.0	Negative
		Score	80	300	150	155			
7	Internet	Freq.	200	50	95	5	1145	3.2	Positive
		Score	800	150	190	5			
8	Wireless Application Protocol	Freq.	100	200	49	1	1099	3.1	Positive
		Score	400	600	98	1			

The analysis in Table 2 revealed that computers/laptops, photocopying machine, OPAC, modems, internet and Wireless Application Protocol are the types of ICT facilities used in the provision of information services in the library studied. This is evident in their response rates which are above the 2.5 average.

Research Question 3: To what extent are ICT used in the provision of Information services in the library?

**Table 3: Extent to which ICT is Used in the Provision of Information Services
(N=350)**

S/ N	Item Statement	Freq.	VHE (4)	HE (3)	LE (2)	VLE (1)	Total Score	Mean	Decision
1	Computers are used in the provision of information services	Freq. Score	100 400	200 600	49 98	1 1	1099	3.1	Positive
2	Photocopying machine is used in the provision of information services	Freq. Score	120 480	80 240	100 200	50 50	970	2.8	Positive
3	OPAC is used in the provision of information services	Freq. Score	110 440	205 615	10 20	5 5	1080	3.1	Positive
4	Modems are used in the provision of information services	Freq. Score	121 484	80 240	100 200	49 49	973	2.8	Positive
5	Projectors are used in the provision of information services	Freq. Score	50 200	50 150	95 190	155 155	695	2.0	Negative
6	Robotics are used in the provision of information services	Freq. Score	3 12	87 261	200 400	60 60	733	2.1	Negative
7	Internet is used in the provision of information services	Freq. Score	180 720	70 210	95 190	5 5	1145	3.2	Positive
8	Wireless Application Protocol is used in the provision of information services	Freq. Score	110 440	190 570	44 88	6 6	1104	3.2	Positive

The analysis in Table 3 revealed that computers, photocopying machine, OPAC, modems, internet and Wireless Application Protocol are used in the provision of information services at a high extent in the library studied. This is evident in their response rates which are above the 2.5 average.

Research Question 4: What is the students' level of awareness on the availability of ICT based information services in the library?

Table 4: Students' Level of Awareness on the Availability of ICT based Information Services (N=350)

S/ N	Item Statement	Freq.	SA (4)	A (3)	D (2)	SD (1)	Total Score	Me an	Decision
1	Students are aware of the availability of reference services	Freq. Score	120 480	80 240	100 200	50 50	970	2.8	Positive
2	Students are aware of the availability of user education	Freq. Score	110 440	205 615	10 20	5 5	1080	3.1	Positive
3	Students are aware of the availability of Selective Dissemination of Info	Freq. Score	20 80	100 300	75 150	15 5	685	2.0	Negative
4	Students are aware of the availability of abstracting and Indexing services	Freq. Score	300 1200	50 150	0 0	0 0	1350	3.9	Positive
5	Students are aware of the availability of inter-library loan	Freq. Score	100 400	200 600	49 98	1 1	1099	3.1	Positive
6	Students are aware of the availability of reprographic services	Freq. Score	20 80	100 300	75 150	15 5	685	2.0	Negative
7	Students are aware of the availability of Current Awareness Services	Freq. Score	50 200	50 150	95 190	15 5	695	2.0	Negative
8	Students are aware of the availability of consultative services	Freq. Score	60 240	40 120	95 190	15 5	705	2.0	Negative

The analysis in Table 4 revealed that students are aware of the availability of reference services, user education, abstracting and indexing services and inter-library loan in the library studied at a high level. This is evident in their response rates which are above the 2.5 average.

5.1 Summary of Findings

Having analyzed and presented all the data collected for the study from the respondents, the researcher made the following findings:

1. Reference services, user education, abstracting and indexing services, inter-library loan, reprographic services, Current Awareness Services and consultative services are the types of information services provided in the library studied.

2. Computers/laptops, photocopying machine, OPAC, modems, internet and Wireless Application Protocol are the types of ICT facilities used in the provision of information services in the library studied.
3. Computers, photocopying machines, OPAC, modems, internet and Wireless Application Protocol are used in the provision of Information services at a high extent in the library studied.
4. Students are aware of the availability of reference services, user education, abstracting and indexing services and inter-library loan in the library studied at a high level.

Conclusion

This study examined the impact of Information

and Communication Technology (ICT) on the provision of information services to undergraduate students in Federal University of Technology Owerri (FUTO) library. The study established that ICT has brought significant improvement to library operations and information service delivery in the university library. The application of ICT facilities such as computers, internet services, Online Public Access Catalogue (OPAC), electronic databases, scanners, and digital communication tools has enhanced easy access to information resources and improved the quality of services provided to undergraduate students. The study further revealed that ICT has made information retrieval faster, easier, and more effective, thereby increasing students' utilization of library resources. Through ICT-based services, undergraduates can access e-books, e-journals, online databases, and other electronic information resources that support their academic work, research activities, and personal development. ICT has also improved communication between library staff and users and has promoted independent learning among students.

The study therefore concluded that Information and Communication Technology has made a positive and significant contribution to the provision of information services to undergraduates in the Federal University of Technology Owerri. The integration of ICT into library services has enhanced users' satisfaction, improved access to information resources, and strengthened the role of the university library in supporting teaching, learning, and research activities.

Recommendations

Based on the findings of the study, the researcher made the following recommendations:

1. The library management should ensure adequate improvement on the information

services provided to keep satisfying the information needs of the library users.

2. The library management should also acquire more ICT facilities to ensure effective services delivery in the library.
3. The library should improve their use of ICT in the provision of information services so as to ensure constant utilization of information resources by the users.
4. Library management should adopt marketing strategies to ensure that students are fully aware of their services.

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