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Leveraging High-End Technologies for Quality Library Services in Nigeria

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Abstract

The study examined leveraging high-end technologies for quality library services in Nigeria. The objectives of the study were to identify the type of high-end technologies available in Nigerian University Libraries; ascertain if Nigeria University Libraries have the requirements for high-end technologies; determine if Nigerian University Libraries use high-end technologies for service delivery, and identify the benefits of using high-end technologies for service delivery in Nigerian University Libraries. The study adopted survey design, and the population comprised of 40 professional librarians in three university libraries in Kwara State. A self-designed questionnaire was used for data collection, while data were analyzed using descriptive statistics of frequency counts and percentage. Findings of the study revealed the available high-end technologies to include RFID, IoT, Cloud Computing, Institutional Repository, WebOPAC and WEB 2.0/3.0, the study also revealed that the aforementioned high-end technologies are used for service delivery. The study recommended that university library management should provide adequate funding, thereby formulating policies addressing the installation and integration of high-end technologies in libraries; university libraries should formulate policies and procedures which will state the requirements and conditions of high-end technologies; constant user education should be provided on how to effectively and efficiently make use of high-end technologies for quality library service, librarians should as well be trained and retrained on how to make good use of these technologies to improve existing library services; and that academic management should invest more in the

library so that new technological facilities would be procured, in order to have a positive impact on how information services are delivered to the public.

Keywords: High-End Technology, Library, Library Services, Leveraging.

Introduction

Libraries are tasked with a variety of activities, including obtaining, organizing, archiving, retrieving, and presenting information to users. The basic goal of libraries has always been this, from the dawn of time to the modern Internet age. However, with the turn of the twenty-first century, there was a massive paradigm shift in the delivery of library and information services all over the world. The importance of Information Technology (IT) in all aspects of human growth is obvious, and its impact on libraries and information services cannot be overstated (Chloe, 2018).

The distribution of library and information services is being shifted in today's world from manual operations to new ways through the use of technological equipment. The internet, a collection of technologies, is used to provide services to patrons through proper channels for access to information using new technology and communication tools. According to Esew and Ikyembe (2013), the internet has the power to complement, support, and increase educational achievements for the benefit of everybody.

The explosion of information has ushered in a revolution in library and information science. Information Technology (IT) has altered every area of library work, including information gathering, processing, storage, and distribution (Partap and Priyanka, 2019). It has also influenced people's ways of thinking and communication. The use of ICT has given birth to a slew of new technologies, and the application of these new technologies to libraries and information centers has transformed the way information is procured and delivered.

High-end technologies are already influencing how libraries collect, store, and process data, but in the future decades, they will certainly revolutionize all parts of the intelligence cycle, from collecting to dissemination (Katz,2020).

Problem Statement

It has been noted that the application of new, modern, and emergent technologies to academic library activities and services in Nigerian tertiary institutions appears to be insufficient, owing to a variety of factors, including human factors, fear, and the country's current state of infrastructure development (Bichi, 2021). Many library professionals believe that there are minimal benefits to be gained from the use of technological applications, resulting in a preference for manual library operations. Those who are aware of the benefits are afraid of losing their jobs, although technological application to library routines such as administration, acquisitions, cataloguing and classification, circulation, information retrieval, and serials control would help them perform their jobs more effectively and efficiently. As a result, this study looks into the availability of high-end technologies in Nigerian university libraries and how they may be leveraged to improve library services.

Objectives of the Study

The objectives of the study were to:

- a. identify the type of high-end technologies available in Nigerian University Library;
- b. ascertain if Nigeria University Libraries have the requirements for high-end technologies;
- c. determine if Nigerian University Libraries use high-end technologies for service delivery, and;
- d. identify the benefits of using high-end technologies for service delivery in Nigerian University Libraries.

Review of Related Literature.

According to Rathna and Divyananda (2018), high-end technologies are technological advancements that promise new answers to the world's most pressing problems, with key qualities such as improving people's lives. innovative ways of doing business; encourage indigenous practices; radical novelty; rapid growth; coherence; significant influence; and uncertainty and ambiguity. They further described high-end technology as those technologies still in the early stages of development, which have not yet established themselves in their various field of application, but have the potential to help solve problems and open up new avenues for improvement in their fields of application.

High-end technologies according to Neogi and Partap (2019), includes Radio Frequency Identification (RFID), Cloud Computing, Artificial Intelligence, Robotic, Web 2.0/3.0, Internet of Things (IoT), Drone, Virtual and Augmented Reality, Big Data, Blockchain Technology, etc.

The flood of technology-based support services has enhanced service delivery in academic libraries in a faster and more accurate manner, demonstrating the utility of projected high-end technologies for libraries (Omosor, 2014). Web-enabling services and or technology, such as library management systems (LMS) for automating libraries, radio frequency identification (RFID) for access control, conservation, and security of print resources, and Web-OPAC (online public access catalogue) as opposed to manual OPAC, have provided a better working atmosphere and environment for libraries in tertiary institutions and their patrons (Jindal and Khan, 2019).

The transition from reference desk assistance to web-based remote access to information resources is a paradigm shift. Digital storytelling, RFID (Princh Blogspot, 2020), Library Bookmark Application, Big Data, and the Internet of Things (IoT) (Nag and Nikam, 2016; Gupta and Singh, 2018; Kaladhar and Rao, 2018) have all lately been introduced into libraries. The use of Blockchain technologies for metadata and library networking has improved and enhanced information services significantly (Hoy, 2017).

Frey (2014), investigated the essential demands of high-end technology in libraries. The study provided a useful summary of the current state of the art in using high-end technologies in libraries, as it was confirmed that technology has deeply embedded itself in the management of information in the library, especially the university library, and therefore libraries must have adequate manpower, constant electricity, stable internet connectivity, proper budgeting and funding, and well service-driven facilities if these technologies must handle library routine, operation, and services.

According to Vysakh (2020) and Frey (2014), high-end technologies are used for service delivery in the library. Numerous technologies have emerged recently, and some of these technological facilities are used in the library. Artificially Intelligent Robots have penetrated almost all the fields of life including libraries which can do things even humans are incapable of with higher efficiency. Robots can be used for a variety of operations within the library which include, filing, sorting, and replacing the books on the shelf, taking inventory, welcoming and directing guests and users to

different locations in the library, and answering frequently asked questions among others (Vysakh, 2020).

Libraries currently use a variety of technologies to support the services they provide, due to the advent of information and communication technologies. Every day, new technology advancements have an impact on how information services are delivered to the public. As a result, libraries get the benefits of these high-end technologies in all parts of their operations, from information selection to distribution (Bichi, 2021). Despite the multiple issues confronting Nigerian academic libraries, there are opportunities to find and deploy new and high-end technologies to provide library services while remaining relevant to society. One of the major elements that will save libraries is the availability of Open-Source Emerging Technologies (OSET). Bichi (2021) agreed that managing automated library systems and other technologies related to information management in developing countries is difficult due to a lack of resources that allow them to access technological tools as efficiently as those found in developed countries. The authors concluded that, if properly addressed, open-source software could be a solution to these issues.

The following are benefits of high-end technology for libraries, as highlighted by Neogi and Partap (2019);

- i. High-end technologies boost libraries' capability to provide better and faster services.
- ii. It has an impact on librarians' and the library's creativity, problem-solving skills, and self-image.
- iii. It helps to process innovations and bring value to existing products and services.
- iv. It strengthened library knowledge and opportunities for the future.
- v. Quick service is simple to deliver.
- vi. It saves time.

Methodology

The study adopted a pure quantitative method. Survey research design was adopted for the study. The design was considered suitable as recommended by Ram (2018), for studies that uses questionnaires to explore opinions of a given population or its existing phenomena. Questionnaire was used in collecting data from respondents. Three university libraries were purposively selected from Kwara State. One federal university library, one state university library and one private

university library. A total of 39 respondents participated in this survey. Descriptive statistics which include simple frequency and percentage were used for the analysis of the data using the Statistical Package for Social Science (SPSS v.23).

Results

Table 1: Demographic Information of the respondents

Demographic Information		F	%
Gender of Respondents	Male	21	53.8%
	Female	18	46.2%
	Total	39	100.0%
Institution of Respondents	UNILORIN	22	56.4%
	KWASU	9	23.1%
	AL-HIKMAH	8	20.5%
	Total	39	100.0%
Educational Qualification of Respondent	BSC/BLS	8	20.5%
	MSC/MLS	26	66.7%
	PhD	5	12.8%
	Total	39	100.0%
Work Experience of Respondents	Below 5 years	4	10.3%
	6-10 years	17	43.6%
	11-15 years	7	17.9%
	16- 20 years	4	10.3%
	21 years and above	7	17.9%
	Total	39	100.0%
Cadre in Librarianship	University Librarian	1	2.6%
	Deputy University Librarian	3	7.7%
	Principal Librarian	3	7.7%

Senior Librarian	9	23.1%
Librarian I	9	23.1%
Librarian II	10	25.6%
Assistant Librarian	4	10.3%
Total	39	100.0%

The demographic information of respondents is shown in the table. It was revealed that majority of the respondents were male 21(53.8%). The table also revealed that majority of the respondents were staff of the University of Ilorin, Library with 22(56.4%), 26(66.7%) representing the majority of the respondents are MSC/MLS holders. The findings also reveal that majority of the respondents have work experience ranging from 6 to 10 years, while 10(25.6%) representing majority of the respondents are Librarian II.

Research Question 1: What are the type of high-end technologies available in Nigerian University Libraries?

Table 2: Responses on availability of high-end technologies

S/No	Available Technologies	AVAILABLE		NOT AVAILABLE		MEAN	STD. DEV.
		F	%	F	%		
1	Internet of Things (IoT)	39	100.0%	0	0.0%	2.0000	.00000
2	Cloud Computing	38	97.4%	1	2.6%	1.9744	.16013
3	Artificial Intelligence (AI)	2	5.1%	37	94.9%	1.0513	.22346
4	Institutional Repository (IR)	39	100.0%	0	0.0%	2.0000	.00000
5	Augmented and Virtual Reality	1	2.6%	38	97.4%	1.0256	.16013
6	RFID	35	89.7%	4	10.3%	1.8974	.30735
7	Robotic	3	7.7%	36	92.3%	1.0769	.26995
8	WebOPAC	37	94.9%	2	5.1%	1.9487	.22346
9	WEB 2.0/3.0	29	74.4%	10	25.6%	1.7436	.44236
10	Big Data	19	48.7%	20	51.3%	1.4872	.50637
11	Drone	1	2.6%	38	97.4%	1.0256	.16013
12	Blockchain	1	2.6%	38	97.4%	1.0256	.16013

Table 2 shows the availability of high-end technologies in the libraries under study, the findings revealed that majority of the available high-end technologies are Internet of Things (IoT) and Institutional Repository with 39(100%), Cloud Computing with 38(97.4%), Radio Frequency Identification (RFID) with 35(89.7%), WebOPAC with 37(94.9%) and WEB 2.0/3.0 with 29(74.4%).

The findings of the study have revealed the available high-end technologies in the libraries under study to include the Internet of Things, Institutional Repository, Cloud Computing, RFID, WebOPAC, and WEB 2.0/3.0. The results agree with the perception that technology such as library management systems for automating libraries, Radio Frequencies Identification (RFID) for access control, conservation and security of print resources, and WebOPAC as opposed to manual OPAC have provided a better working atmosphere and environment for libraries and tertiary institutions and their patrons as proposed by Jindal and Khan, (2019).

Research Question 2: Does Nigerian University Libraries have the requirements for high-end technologies?

Table 3: Responses to the availability of the requirements of high-end technologies.

S/No	Requirements	AVAILABLE		NOT AVAILABLE		MEAN	STD. DEV
		F	%	F	%		
1	Constant Electricity	22	56.4%	17	43.6%	1.5641	.50236
2	Skilled IT Personnel	29	74.4%	10	25.6%	1.7436	.44236
3	Internet Connectivity	37	94.9%	2	5.1%	1.9487	.22346
4	Reliable Bandwidth	21	53.8%	18	46.2%	1.5385	.50504
5	Adequate Funding and Budgeting	15	38.5%	24	61.5%	1.3846	.49286
6	Proper Maintenance Culture	29	74.4%	10	25.6%	1.7436	.44236
7	Adequate Security	33	84.6%	6	15.4%	1.8462	.36552
8	Digital Library Committee	18	46.2%	21	53.8%	1.4615	.50504
9	Digitization	37	94.9%	2	5.1%	1.9487	.22346
10	Service Driven Facility	34	87.2%	5	12.8%	1.8718	.33869
11	Software Related Skill	27	69.2%	12	30.8%	1.6923	.46757

Table 3 shows the available requirements for high-end technologies in the libraries under study, the findings revealed that 22(56.4%) of the respondents indicated that constant electricity is available, 29(74.4%) of the respondents indicated that skilled IT personnel are available, 37(94.9%) of the respondents indicated that internet connectivity and digitization is available, 21(53.8%) of the respondents indicated that there is availability of reliable bandwidth, 29(74.4%) of the respondents indicated that there is the availability of proper maintenance culture, 33(84.6%) of the respondents indicated that there is available adequate security, 34(87.3%) respondents indicated that there is available service-driven facility and 27(69.2%) with available software related skill.

The findings of the study, therefore, correlate with that of Frey (2014), that state the essential demands of high-end technology in libraries which includes adequate manpower, constant electricity, stable internet connectivity, proper budgeting and funding, and well service-driven facilities if these technologies must handle library routine, operation, and services.

Research Question 3: Does Nigerian University Libraries use high-end technologies for service delivery?

Table 4: Responses on the used high-end technologies for service delivery.

S/No	Used Technologies	USED		NOT USED		MEAN	STD. DEV
		F	%	F	%		
1	Internet of Things	35	89.7%	4	10.3%	1.8974	.30735
2	Cloud Computing	37	94.9%	2	5.1%	1.9487	.22346
3	Artificial Intelligence	5	12.8%	34	87.2%	1.1282	.33869
4	Institutional Repository	33	84.6%	6	15.4%	1.8462	.36552
5	Augmented and Virtual Reality	1	2.6%	38	97.4%	1.0256	.16013
6	RFID	29	74.4%	10	25.6%	1.7436	.44236
7	Robotic	2	5.2%	37	94.8%	1.0513	.22346
8	WebOPAC	37	94.9%	2	5.1%	1.9487	.22346
9	Web 2.0/3.0	28	71.8%	11	28.2%	1.7179	.45588
10	Big Data	9	23.1%	30	76.9%	1.2308	.42683
11	Drone	1	2.6%	38	97.4%	1.0256	.16013
12	Blockchain	1	2.6%	38	97.4%	1.0256	.16013

Table 4 revealed the high-end technologies used for service delivery in the libraries under study, the findings reveal that majority of the respondents with 37(94.9%) indicated that Cloud Computing and WebOPAC are used for service delivery, 35(89.7%) of the respondents indicated that Internet of Things is used for service delivery, 33(84.6%) of the respondents indicated that Institutional Repository is used for service delivery, 29(74.4%) of the respondents indicated that RFID is used for service delivery and 28(71.8%) of the respondents indicated that Web2.0/3.0 are used for service delivery.

The findings reveal high-end technologies used for service delivery, it was discovered that the used high-end technologies for service delivery in the study area are Internet of Things, Cloud Computing, WebOPAC, Institutional Repositories, and Web 2.0/3.0, while Artificial Intelligence, Big Data, Robotic and Augmented and Virtual Reality. The result of the findings disagrees with that of Vysakh (2020) who revealed that Artificial Intelligence Robots has penetrated almost all the fields of life including libraries which can do things even human is incapable of with higher efficiency.

Research Question 4: What are the benefits of using high-end technologies for service delivery in Nigerian university libraries?

Table 5: Responses on benefits of using high-end technologies for service delivery in libraries

S/No	Benefits	AGREE		DISAGREE		MEAN	STD. DEV
		F	%	F	%		
	Increases the capacity of libraries						
1	to provide better and quick service	39	100.0%	0	0.0%	2.0000	.00000
2	It is the need of the hour	38	97.4%	1	2.6%	1.9744	.16013
3	It impacts creativity	39	100.0%	0	0.0%	2.0000	.00000
4	It impacts problem-solving skills	39	100.0%	0	0.0%	2.0000	.00000
5	It is time-saving	39	100.0%	0	0.0%	2.0000	.00000
6	Easy to provide quick services	39	100.0%	0	0.0%	2.0000	.00000

7	It increases knowledge and opportunities for the future of libraries	39	100.0%	0	0.0%	2.0000	.00000
8	It adds value to existing services	39	100.0%	0	0.0%	2.0000	.00000

The table above indicates the benefits of using high-end technologies for service delivery in libraries, majority of the respondents with 39(100%) agree that high-end technologies increase the capacity of libraries to provide better and quick service, impact creativity, it impacts problem-solving skills, it saves time, it is easy to provide quick services, it increases knowledge and opportunities for the future of libraries as well as it adds value to existing services, 38(97.4%) of the respondents agree that high-end technologies are the need of the hour.

The result of the findings is supported by that of Neogi and Partap (2019), which state the benefits of high-end technologies in libraries as they boost libraries' capability to provide better and faster services, it has an impact on librarians' and the library's creativity, problem-solving skills, and self-image, it helps to process innovations and bring value to existing products and services, it strengthened library knowledge and opportunities for the future, quick services is simple to deliver, and it saves time

Conclusion

The goal of the study was to see what high-end technology is available in Nigerian university libraries, with particular reference to university libraries in Kwara State, and how it may be used to improve existing library services. The findings reveal that RFID, IoT, Cloud Computing, WebOPAC, Institutional Repository and WEB 2.0/3.0 are the available high-end technologies, in the selected area of study, while boosting libraries capabilities, saves time, impact creativity and problem-solving skills among others are the benefits of using high-end technologies in the library.

Recommendations

Based on the findings, the following recommendations were made;

- i. Academic management should provide adequate funding, thereby formulating policies addressing the installation and integration of high-end technologies in academic libraries.
- ii. Academic libraries should formulate policies and procedures which will state the requirements and conditions of high-end technologies.

- iii. Constant user education should be provided on how to effectively and efficiently make use of high-end technologies for quality library service, librarians should as well be trained and retrained on how to make good use of these technologies to improve existing library services.
- iv. Academic management should invest more in the library so that new technological facilities would be procured, in order to have a positive impact on how information services are delivered to the public.

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