Factors Promoting the Use of ICT Hardware in University Libraries in Two Nigerian Regions

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Abstract

Rationale of Study – This paper examined the factors promoting the usage of ICT hardware in university libraries in two Nigerian regions.

Methodology – The study adopted a survey type of descriptive research design. The population of the study is 512 librarians from 41 university libraries in two Nigeria regions were used for the study. A questionnaire was used to collect data, and the data were analysed using linear regression.

Findings – The study revealed that knowledge, anxiety and librarian attitude are factors promoting the usage of ICT hardware in university libraries in two Nigerian regions.

Implications – From the study findings, it was recommended that librarians should be trained on the job to have a robust knowledge of ICT equipment usage to enable them to remain relevant in university libraries. University management and librarians should ensure that working environments are ICT friendly. This will reduce anxiety among librarians expected to render library services through ICT hardware. Finally, librarians should be encouraged to approach ICT facilities in university libraries positively.

Originality – The study has provided information on the factors that will influence or promote the use of ICT hardware in university libraries in two Nigerian regions.

Keywords

Anxiety, attitude, communication, information, knowledge, technology

1 Introduction

The astonishing development of Nanoelectronics from 1970 to 1980 helped plant the seeds of ICT. The continuous ICT revolution resulted in the convergence of high-performance computing and communications technologies thanks to developments in fibre optics, satellite communication, and computer hardware and software (Prasad & Sreedevir, 2007). The ecosystem has developed into a worldwide audience thanks to the growth of electronic computers. Cloud transmission and storage are crucial components of ICTs. This is possible, given how well the hardware and software work together. According to Talab and Tajafari (2012), the most significant potential of ICT hardware is its ability to transmit knowledge and cause a profound change in people's lives.

According to Dhanavandan, Esmail and Mani (2008), ICT hardware comprises library technology to manage data resources and improve service quality. This is a workstation made up of various wireless connections connecting various pieces of computing hardware. Therefore, the devices could be computer workstations or mobile phones from different brands scattered over different areas. Even though different writers describe ICT in several ways, the authors of this research defined ICT as informational handling tools and applications used to deliver networked information resources/services in a library setting or community. Arising from the above definition, ICT, in most cases, is not stand-alone, given that it needs to be integrated. According to Usha (2012), they can work together and form a networked world, and various ICT resources can now be combined.

The preceding descriptions make it clear that ICT hardware refers to the physical parts of computers and other related devices that support activities and data gathering, processing, preserving, and presenting. ICT hardware has characteristics for acquiring, storing, operating, organizing, and transporting data. Additionally, in real-time, there is speedy access to various information materials, independent of their geographic distribution or format. Computers, servers, thin clients, networking gear, local area network room gear, keyboards, mouse, printers, displays, and digital cameras are just a few examples of ICT equipment.

According to Wang and Woo (2007), ICT hardware comprises a computer and camcorders that process and archive data using the software. Altum, Ekelayer, and Avai (2011) supported their concept of ICT equipment in libraries by describing it as connection facilities and equipment consisting of software, Internet protocol, and

domains used to exchange digital texts locally and worldwide. In addition, Nebeolise (2013) notes that information and communication technology (ICT) is a mottled set of technological tools and resources used to connect, create, disseminate, store, communicate and manage information to promote human activities (Awotona, 2019) as cited in (Nebeolise, 2013). These technologies include; computers, Internet, printer, scanner, photocopy machine, binding machines, laminating machines, broadcasting technologies (radio, public address speaker and television), projectors and telephony, among others, and are widely used in today's education field most especially universities libraries (Nebeolise, 2013).

Additionally, ICT equipment refers to any transceiver or equipment, including radio, television, cell phones, computers, and networks (Kamaram, 2012). The system for obtaining, managing, storing, and disseminating knowledge is provided by ICT equipment. Many academic libraries in Nigeria are in the process of switching from manual library services to ICT based/automated library systems. Delval and Fuentes (2003) and Smith (2005) asserted that change could range from speciation to substantial shifts, pointing out that speciation is, by definition, growing. This changeover is planned, structured, and progressing without a hitch.

Due to the aforesaid, university libraries must modify all of their services and functions. These changes can be well-known for their ICT application. According to Prakash (2010), change is constant worldwide, with developmental changes as the main impetus for societal change. In light of the aforementioned, Smith (2005) asserted that the "university library" is going through a metamorphosis that it has never experienced. Unmistakably, this illustrates how ICT is creatively used in the library sector. Today, a new concept of the conventional library is emerging, including cutting-edge media in addition to the usual building where patrons can access books and other library items. However, because university libraries play such a significant role in the evolution of a changing environment, they must offer services adaptable to shifting user needs.

The current state of society has made it clear that the library faces significant difficulties in an information-based society, pushing it to utilize ICT for service delivery. Libraries existed before history was first written down. In research, Ekong (2005) pointed out that in some of the first-generation university libraries, and a few others, digitalization is taking place in many of their libraries and library information networks are established with connectivity through the university campus network to the Internet. The Centre for

Learning Resources (CLR) Covenant University, Ota, has been placed on the platform of complete application of ICT because funds are made available for such innovations. Library response to ICT hardware utility has resulted in the digitization of resources, as noted by Adogbeji, Akporhonor and Achugbue (2022). At present, University libraries are compelled to digitize their materials, especially their projects, dissertations and theses, by some critical factors, one of which is that almost everyone currently involved in the Knowledge Production process prefers the electronic form.

According to Tibenderana and Ogao (2008), the current network wave has caused a change in information-seeking habits that better suit the environment. A single building no longer houses the university library. The way the library profession is seen needs to change in light of users' information-seeking behaviour. University libraries are leading the way in giving users access to information and library services. Consequently, it is indispensable to adapt to ICT-oriented services to meet the needs of consumers for teaching, learning, and research. Scholars like Abubakar (2011) have highlighted the essential parts of university libraries in research and academic institutions and concluded that university libraries are the centres of information resources where all educational activities revolve.

2 Statement of the Problem

Upon ICT adoption, people, workplaces, companies, institutions, and libraries, especially in underdeveloped and developing nations, need help to utilise ICT gear to offer services. Given the growth of ICT use and adaptation in libraries to efficiently deliver services, this has placed significant pressure on librarians regarding how to treat users. Inspection has shown that librarians' knowledge, anxiety, and attitude toward using ICT are not encouraging, particularly in rising countries (Kwanya et al., 2012). The effectiveness and worth of services university libraries offer to their societies in the digital age will be impacted by a need for more knowledge in ICT equipment, especially in emerging nations. The key factors contributing to the digital divide in university libraries include a need for more understanding of ICT equipment, librarian fear, and attitudes about underutilising the available ICT equipment.

ICTs are the primary way to find access to vital and updated information today. Therefore, if university librarians have a negative perspective on the exploitation of ICT hardware, services offered may no longer satisfy the needs of library users whose expectations require the most recent technological advancements. However, university

library librarians need to study more, feel less scared and develop a new perspective regarding ICT gear to have the correct information at the right time. Consequently, this study will examine factors promoting the usage of ICT hardware in university libraries in two Nigerian regions.

The study's objective is to explore factors promoting the usage of ICT hardware in university libraries in two Nigerian regions. The specific objective was to examine the librarians' knowledge, anxiety and attitude are factors that promote ICT hardware usage in university libraries in two Nigerian regions. The study was also guided by the hypothesis that: Knowledge, anxiety and attitude of librarians do not significantly correlate with factors that promote the usage of ICT hardware in university libraries in two Nigerian regions.

3 Literature Review

Information and Communication Technology (ICT) has brought much development in human life. One significant, impressive and effective revolution is the enhancement in the speed and span of information production, sharing and recycling (Nebeolise, 2013). ICT has changed the basic concepts of proprietorship into sharing and preservation into access. According to Nebeolise (2013), library science is among the fields this revolution greatly influenced. Library science has been transformed into a library and information science (LIS). Libraries have been transformed into information centres. Modern technologies have replaced proper tools and techniques. Information and communication technology have become an integral part of modern libraries. Databases are replacing vast amounts of inventories (Nebeolise, 2013). Olayemi, Umar, Yemi-Peters, Sokari & Haliru (2017) posit that information and communication technology has become widely accepted globally. This is because its application to the day-to-day activities of individuals, institutions and organizations makes tasks and work more accessible and efficient. This, therefore, means that academic libraries are no exception to this global change because academic libraries are part of the university's teaching, learning and research, so whatever affects universities has an impact on academic libraries. The primary influence of ICT hardware on teaching, learning, and research in the 21st Century is excellent ICT hardware used, including supercomputers, the Web, SMS, networks, and other ICT services (Achugbue, 2014). Accordingly, it has been observed that over time, service delivery is now changing due to the advent of Information and Communication Technology and Nigerian universities and their

libraries, in their roles as knowledge creators and gatekeepers of knowledge, are rapidly witnessing the application of various information and communication technology (Ojedokun & Victoria, 2015).

Consequently, the advent of ICT has tainted the offerings and procedures of university libraries. The rapid advancement of IT equipment and the introduction of integrated data services, according to Etim (2006), Okon (2005), and Abubakar (2011), affected university libraries' operations and services. By way of global trends, the purchase of electronic resources has surpassed the procedure of physical books. Consequently, the conventional manual library systems must be updated and attractive (Tella, 2009). According to Prakash (2010), the main issue is resistance to transformation, which is caused by tech expertise, fear, and library staff members' attitudes about using ICT. Prakash described the situation as revolutionized from a well-known to an entirely new state full of ambiguity. This ambiguity can also be eliminated if librarians accept change and agree to pull together the new skills required to work in digital libraries. Pugh (2007) said that hiring library staff with experience in managing ICT-based libraries is necessary since a combination and unpredictability of services define the type of shift in information services.

In the information age, ICT gear is increasingly necessary for handling, storing, and distributing information in modern libraries. These are electronic libraries outfitted with cutting-edge business equipment. More and more sectors rely on advanced technologies for worker training (Aziz, 2004). This explains why more librarians will use ICT tools for information retrieval, analysis, and transmission. Therefore, in the labour market, the librarian with the necessary knowledge/skills to use ICT equipment will have an advantage over the one without. Knowledge of the application and exploit ICT equipment is particularly crucial for librarians without formal training because it will be valuable in the competitive employment market.

Given the variety of educational alternatives available, librarians must embrace ICT usage at work to develop their careers and maintain relevance in a world driven by ICT. This can be ascribed to the growing utilization of ICT in education and library contexts. In their analyses of the problem, Ogletree and Williams (1990) and Nicholas (1992) remarked that the rapid use of microcomputers in commercial and academic settings had raised ICT fear and attitudes against their usage in conveying library services. The ICT studies include assessments, end-user viewpoints, user behaviour, comparisons, online

activity, librarian expertise, ICT acceptability, correlational research, and computer and ICT fluency (Tella, 2009; Ademodi, 2009; Jegede, 2009; Tibendorana & Ogao, 2009; Tibenderana, 2010). There is a dearth of information on studies looking at librarians' knowledge about, anxiety about, and attitude toward applying ICT equipment in university libraries. This knowledge gap served as the impetus for this inquiry.

4 Theoretical Framework

This research is anchored on the Diffusion of Innovation Theory. According to this Theory, libraries can use ICT innovations to alter the industry's culture and increase the likelihood that users and managers will accept them. Innovation diffusion is the process that makes an invention acceptable to people or members of a community (Rogers, 1995; Rogers, 2003; Cauros, 2003). Through several linked hypotheses, the Theory investigates how new technologies are adopted and used. Even though the sociological foundations of thought, other academic disciplines like business, marketing, public health, education, and ICT have contributed significantly to its foundation and history. This concept originated in rural sociology and has been applied to several industries, including business, marketing, public health, education, and ICT. Because of this, a critical factor in how new knowledge spreads is how others feel about it (Rogers, 1995). The phrases invention and technology are used in Rogers' explanation of the spread of innovation theory, according to Malcolm and Godwyl (2008), making it ideal for studying ICT in modern libraries. Rogers provides a helpful summary in his early work on the Theory of dissemination of innovation. He notes that the potential importance of elements like personality factors like attitude toward change may positively or negatively impact how quickly new technology is adopted. Rogers (1995) proposed five elements that affect how successfully a specific idea gets accepted. These include the traits of possible inventions, the sort of inventions (choice), communication channels, and the change agents impacted by the change. By considering the fundamental factors that affect innovation adoption rates in addition to potential inhibitors, a researcher can profit from Rogers' strategy. Given that these variables are elastic, as suggested by Cauros (2003) and Rogers (2003), the current study adopts the Theory of innovation diffusion to study the factors promoting the usage of ICT hardware in university libraries in two Nigerian regions. The study saw the deployment of ICT equipment in university libraries as an illustration of innovation adoption that represents a transition from a conventional manual library system to a modern library system that employs ICT hardware to deliver library services.

The objective is to peek at the key elements that affect how librarians deploy ICT equipment in university libraries. Consequently, the elements from the body of published research that are thought to impact consumer behaviour significantly are chosen. These elements were then linked to actual ICT hardware usage and individual perspectives on ICT-hardware usage. These components may make it easier to understand how knowledge, anxiety and attitude promote ICT facility usage in university libraries. However, this analysis focused on the explanatory properties of these parameters.

Numerous different fields have conducted investigations because of the expansion of innovation theory. For instance, Malcolm and Godwyl (2008) used the idea to peep into how ICT was utilised in a subset of schools in Ghana. The concept helped provide a framework for looking at organizational adoption and diffusion. According to Robertson, Gatignon, Kwon, and Zmud (1987), the acceptability of ICT's acceptability is inclined by five related criteria. These elements include technological, task, environmental, and organizational user community characteristics. Attewell (1992) used DOI to study researched organizational learning and the dissemination of technology in e-commerce applications with the innovation diffusion theory and asserted that knowledge gaps limit the adoption of novel technologies. However, the diffusion of innovation hypothesis was primarily supported in the circumstance of individual technology adoption and deployment for some technology to become less expensive over time. Adopting novel technologies and thinking about their application are positively connected with having a positive attitude toward innovative features, claim Davis, Bogazzi, and Warsaw (1989) and Huff and Munro (1989). Different information channels and sources have differing effects on adopters at various points of the adoption decision-making process (Brancheau & Wetherbe, 1990).

Raho, Belohlar, and Fevder (1987) examined how contemporary technology is integrated into an organization using the innovation diffusion theory and identified a link between education and computing use. Leonard - Bartons and Deschamps (1988) investigated structural systems analysis (SSA) using the Theory of dissemination of innovation. They identified attitude as among the distinguishing characteristics. Due to the youth of ICT and related technologies, studies about ICT diffusion and handling of libraries have depended on the qualifications required of library and information science workers (Mohamed, 2004). Achugbue (2014) used the diffusion of innovation theory in a study titled "e-business about instruction: The case of Delta State University" to investigate the uptake of ICT in educational institutions.

Diffusion innovation theory offers a proper perspective on ICT research, technology evaluation, and deployment. The perceived-attributes Theory, which Rogers (2003) identified, states that if an innovation's perceived benefits are positive, it can be quickly adopted. An assortment of features lends weight to this hypothesis. The adoption and acceptability landscape, over and above the rate at which this process advances, are impacted by the evaluated innovation-related factors (Twinomujuni, 2011). Dissemination is made more accessible by the modernizing traits of comparative advantage, compatibility complexity, observability, and trialability. According to Rogers (2003), relative advantage is the degree to which an innovation is regarded as superior to the outdated concept it replaces.

In contrast to laggards and the late majority, who placed less value on status, modernizers, trendsetters, and the control segment are more motivated to adopt advances by their social standing. The relative advantage of technologies includes their price and their place in society (Twinomujumi, 2011). Rogers (2003) distinguished between preventive and incremental improvements when classifying innovation.

Protective innovation, as was already said, is a novel concept that individuals adopt to reduce the risk of undesirable events. Slow adaptation is a symptom of protective novelty, suggesting a high uncertainty level. However, when libraries must fulfill new demands brought on by the adoption of ICT, little improvements made promptly have positive results. If librarians know the benefits of ICT for their services, they will use it. Rogers (2003) argued that innovation compatibility should also be in line with modern standards and morals in adding to the requirement to adapt to ICT competencies. According to Akankwasa, every invention impacts people's attitudes, beliefs, values, and points of view. Insufficient ICT abilities have had a hugely detrimental impact on people's usage of ICT (Sahin, 2006). (2008). Decision-making will be reduced, and innovation adoption will increase if it aligns with a person's preferences (Twinomujuni, 2011).

According to Rogers' 2003 definition, Intricacy is the degree to which an invention is a little challenging to comprehend and use. From his vantage point, complexity is inversely connected to the espousal rate. However, technological innovation might compel libraries to alter how they deliver their services to include it in their options menu. This is because there is a chance that an innovation's excessive complexity will significantly hinder adoption. This implies that ICT may successfully supply library services when it is

user-friendly. According to Rogers (2003), an innovation's innovativeness is measured by how easily it can be tested or observed in a small-scale environment before being adopted.

Conversely, a helpful innovation will result in observability (Rogers, 2003). According to Cauros (2003), adoption is about more than just these ostensibly admirable qualities. To adapt to the new-fangled ideal conceptions, these features should be advantageous in developing inquiries and adopting theories for further inquiry.

According to the aforementioned, the action is absorption by which a person obtains innovative ideas. The five steps that reflect these are knowledge (awareness), enticement, resolution, execution, and endorsement. The individual seeks information and skills that eventually influence the adoption process, particularly during the adoption course (Rogers, 2003). According to the Technology-Adoption-Theory (TAT) and studies on technology use, age, gender, and education level are the three key factors that are commonly utilized to profile people (Meso, Jeansen & Mbarika, 2002; Piccoli, Ammed, & Ives, 2001; Davis, 2000). (Ono, 2000). The way people use technology is affected by this. Other factors include knowledge, attitude, and anxiety, according to BakkaBulindi (2005), Niwe (2000), and Agaba (2003).

The study found that knowledge impacts a person's ability to employ ICT devices (Pelgrum & Plomp, 2000). The underlying premise of this idea is that knowledge directly influences how ICT equipment is used (Baker, 1986; Rogers, 2003; Muinde, 2009). Anxiety: The model predicts that anxiety will influence how ICT equipment is exploited, and Lee (1986), Ray & Minch (1990), and Delveccio have all supported this prediction (1995). According to the TAT, attitude is a factor that affects how someone learns or uses novel technology.

Rogers' thesis was adopted by Twinomujuni (2011), who cited Kim (1999), who said that new technology might cause uncertainty or confusion throughout the acceptance process, making innovation incompatible, challenging, and overwhelming. To support the constructs, perceived qualities, and novel features, this study checks knowledge, anxiety, and attitude as potential factors promoting the utilization of ICT equipment in university libraries in two Nigerian regions.

5 Methodology

The study employed a survey type of descriptive research design. Descriptive surveys usually are used to describe characteristics of the population of the study, estimate

proportions in the population and make specific predictions, associations or casual relationships (Connaway & Powell, 2010). This research design typology enables the researcher to collect data from different respondents, mainly used in quantitative studies. Quantitative research allows for testing objective theories by examining the relationship among variables (Creswell, 2008). These variables, in turn, can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures (Creswell, 2008). This research design is considered appropriate for the study because it allows it to ascertain valued insight into a significant aspect of contextual issues in the study (Creswell, 2013; Omorodion & Achugbue, 2021). The population for this study comprises librarians from 41 university libraries in 12 states of two Nigeria regions (South-south and South-west). The sample size for this study is 512 librarians in university libraries in two Nigeria regions, selected using the census sampling technique. The census sampling technique was adopted in the study. Because it allows for the study of an entire population, mainly when the population is small and there is enough time to conduct the research. Census sampling refers to sampling techniques in which every unit in the group or population is covered (Angeta, 2003; Kish, 2011). A self-questionnaire was the instrument used for the collection of data. The questionnaire was subjected to both face and content validity to ensure that only items related to the research in the instrument were included. The data collected were analysed using simple linear regression.

6 Data Analysis and Presentation

This section presents an analysis of data and a discussion based on the objective of the study and the hypothesis raised to guide the study. A total of 512 respondents from two Nigeria regions (South-south and South-west) participated in the study. Simple linear regression was used to analyse data, and the result is presented below:

Summary output

Regression Statistics	
Multiple R	.670
R Square	.449
Adjusted R Square	.442
Standard Error	.65625
Observations	512

ANOVA

	df	SS	MS	F	Significance F	Coefficients	Standard Error	t-Stat	Beta
Regression	3	84.872	28.291	65.690	.000	.568	.054	10.581	.548
Residual	242	104.222	.431			.226	.078	2.899	.151
Total	245	189.093				.211	.074	2.835	.141

To predict their use in university libraries, librarians' attitudes, understanding of ICT, and level of ICT phobia were evaluated using simple linear regression. The fitted regression model for the autonomous elements is .568 +.078 +.074 (knowledge of ICT, level of ICT anxiety and attitude of librarians). The total regression was statistically significant, as shown by R2 =.449, F (3,242) = 65.690, and p.000. The results demonstrated that ICT knowledge, ICT anxiety level, and librarian attitude were highly predictive of the factors that promote the usage of ICT hardware in university libraries in two Nigeria regions (=.548, .151, .141, p.000).

7 Discussion of Findings

The study shows that knowledge, anxiety and librarian attitude are factors promoting the usage of ICT hardware in university libraries in two Nigerian regions. This is so because modern library practice is driven by ICT. According to Emiri (2015), this may be connected to the level of digital literacy and awareness in deploying ICT hardware in university libraries. Consequently, staff resistance to innovation threatens the utilization of ICT hardware in university libraries. However, the present situation on ICT deployment has placed a significant burden on university librarians to embrace ICT hardware. Furthermore, to predict the use of ICT hardware in university Libraries, librarians' attitudes and understanding of the ICT hardware level of ICT phobia were evaluated using linear regression. The results showed that ICT knowledge, ICT anxiety and librarian attitude were highly predictive of the factors promoting ICT hardware usage in universities in two Nigeria regions.

8 Conclusion

Based on the study's variables, it was established that knowledge, anxiety, and attitude promote librarians' usage of ICT hardware in university libraries in two Nigerian regions. This is due to the results, which significantly predicted that ICT knowledge, ICT anxiety, and librarian's attitude were highly predictive of the factors promoting ICT hardware

usage. Consequently, it is now compelling for librarians to expand their knowledge and proficiency with ICT equipment if they are to provide timely, high-quality services to library customers in this ICT-driven era.

9 Recommendations

Based on the findings from the study, the following recommendation is made.

i) Librarians should be trained on the job to have a robust knowledge of ICT equipment usage to enable them to remain relevant in university libraries.

ii) University management and librarians should ensure that working environments are ICT friendly. This will reduce among librarians expected to render library services through ICT hardware.

iii) Finally, librarians should be encouraged to approach ICT facilities in university libraries positively.

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