

Smart Technology, Human Behaviour and Organisational Performance in University Libraries

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ABSTRACT: *Smart technology is a product of continuous advancement in technology. The new generation of technologies under the name smart technologies are more interconnected and personal. However, smart technologies are adopted by the libraries. This research was carried out at Lagos State University and Lagos State University of Education. Libraries play a crucial role in achieving academic goals, and this role becomes critical in the adoption and integration of smart technologies. A descriptive survey research design was adopted for the study. The population for the study is 50 library staff. Standard deviation, mean, frequency counts and percentages were used to analyse data. Internet 3.61%, Smart Phones 2.68% and Cell Phones 2.61% were the smart technologies available in the libraries. The result on the effectiveness of intelligent technology adoption shows that access to unlimited information 3.48% was effectively used. The effect of smart technology shows that it saves time 3.33). Poor funding of ICT infrastructures 3.3) was the challenge of smart technology in the libraries. In conclusion, technologies have brought unprecedented change and transformation to library resources and services. This study recommends that libraries organise regular ICT training for effective service delivery.*

Keywords: Smart Technology, Human Behaviour, Organisation Performance, Nigeria University Libraries

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1. Introduction

The modern world is covered by technology, and everyone avows its wellness. The revolution of technology has been experienced in a global scenario and has become a global village where the utilisation of computers and communications are

widely available. Mobile phones, internet, satellite networks, and others provide the latest trends in communication and are applicable in processing, storing and distributing a wide array of reliable information (UNDP, 2001). Undeniably, the emergence of smart technology is the product of continuous advancement in technology that is growing for centuries in response to the dynamic changes brought about by a highly competitive business environment (Allen & Morton, 2004).

Smart technologies play a crucial role in bringing technology into human's hands. Many features and facilities characterise these technologies, with a bunch of opportunities for humans to enjoy the world as a global village. Ease of use, internet connection, high speed, and a huge number of utility applications make them exceptionally attractive to people. With all these flairs, people are becoming highly dependent on them without any concern about their downside. It is important to note that smartphones were first invented in 1992 and released in the marketplace for purchase in 1994. Personal computers were available before the invention of the Internet. In 1989, Tim Berners-Lee designed the World Wide Web (WWW). At the end of 1990, the first web page served on the open web.

Furthermore, Smart technologies merchants provide extensive support for users by giving access to a variety of applications on their websites. As indicated by data-report, more than 4.57 billion individuals around the globe presently utilise the web nearly 60% of the world's population. However, in early 2020, more than 3.5 billion smartphone users were present worldwide. These huge numbers of users are connected to the internet by using smartphones or computers. This led to the quick realization that people all over the world are online, and this brought about development market products online.

Smart technologies depend on smart software. It means that software should be able to handle unpredictable events in unknown environments. A smart technology software should be able to deal with internal and external events adequately (Rogers, 2004). However, use of innovative technology is an effective tool for marketing library products and services (Werthner & Klein, 2005).

The targets set in the self-adaptive software (Qianxiang, 2005) partially overlap with the principles of intelligent technologies. Self-adaptive software researchers are focusing on software ability to adapt itself to the implementation environment. This report sets different targets: troubleshooting smart software exploitation failures by applying automatic indications of possible failures and reporting them to staff. Implementation of this approach is more convenient to use in practice.

2. Statement of the Problem

It was observed that many librarians lack the skills needed in the use of smart technologies available for effective library management and library service delivery in the contemporary world. However, the attitude of library personnel toward the use of smart technology especially the current technology trends, have to improve to have a meaningful effect on Library performance. Therefore, this study focused on how smart technologies coupled with human behaviour could enhance performance in the selected University Libraries in Nigeria.

3. Research Questions

1. What are the smart technologies available for use in the university libraries?
2. How effective are smart technologies in providing services in university libraries?
3. What are the effects of smart technologies on organisational performance in university libraries?
4. What relationship exists among smart technologies, human behaviour and organisational performance?
5. What are the factors militating against the use of smart technologies in university libraries?

4. Literature Review

Smart systems can be regarded as self-sufficient, intelligent, technical systems with advanced functionality enabled by underlying micro-, nano- and bio-systems and components (European Commission, 2014). The deployment of smart systems in a business can enhance its effectiveness and the quality of its services and enable decisions to be made more effectively

(Chen, Chiang, and Storey, 2012). It supports identifying the means through which a firm can attain its core objective of delivering the best results in various functional departments (Fanning and Centers, 2013). In turn, decisions are made on the basis of collected data, and smart actions are executed. According to Jara, Parra and Skarmeta (2014), smart systems can overcome issues that beset the environment, society and the economy because they serve to solve problems like resource scarcity and where globalization fails to deliver benefits. Thus, they are used in every industry worldwide to achieve a competitive edge and increase productivity.

Information and communication technology (ICT) is an umbrella term that includes all technologies for manipulating and communicating information. It encompasses any medium to record information (Agbo, 2011). Along with this rapid technological advancement, the internet has created a borderless surge of information, boosting services in our libraries. Since the problems of information explosion in the 1970s, libraries in the developed world have strived to adopt ICT in their services to facilitate the flow of information to and from users (Okore, 2005).

However, today, librarians have incorporated a host of new tools for digital services. Libraries in the developing world are currently attempting to take advantage of these smart technology devices (Corral, 1995). With ICT, the Online Public Access Catalogue (OPAC), a networked universally accessible entity, helps the reference librarian to access the holdings of a library anywhere easily. Before the introduction of ICT, inter-library loans were a problem because of the physical delivery of documents. However, with the new technologies of scanning and digitizing, delivery and retrieval of articles and other documents to off-site users has been made easy.

Libraries play a significant role in the achievement of university goals, and these roles become more critical in the adoption and integration of smart technologies into information service delivery. It has been noted that knowledge of technology usage improves capacity in every field of human behaviour, including library and information science. Smart technologies transmit, store, create, share or exchange information. Smart technologies can influence and affect the performance of library staff when applied to library operations. In order to maximize the benefits of technology, library staff needs to be trained on how to use them.

In addition, Ghazanfar, Chuanmin, Khan and Bashir (2011) noted that the management of human resources at work is a vital component of the management process. To realise the critical importance of people in the organisation, it is imperative to recognise that the human element and the organisation go together. One way of achieving this goal and to realise the critical importance of the people in the organisation is to keep them motivated. Ali and Ahmed (2009) examined that in the information age, people are now seen as the primary source of an organisation's competitive advantage and that human capital is more essential than financial capital in determining an organisation's performance. Since organisations are under constant pressure to enhance and improve their performance, management is looking more inwards at the interdependent relationships that exist between organisational performance and human behaviour. Indeed, the importance of the human factor was summarized by Lawler (2003) when he stated that how people are treated increasingly determines whether an organisation will prosper or even survive.

Organisational performance is the accomplishment of the task that makes up an individual's job. However, organizational performance is the effort exerted by library staff in Nigerian universities to accomplish the task or duties expected of them to achieve results. According to Kamali, Khan, Khan and Khan (2009), performance can be regarded as almost any behaviour which is directed toward task or goal accomplishment. Performance is the product of ability multiplied by motivation; ability is the product of aptitude multiplied by training and resources; while motivation is the product of desire multiplied by commitment.

Therefore, it can be said that the organizational performance of a library staff in Nigerian university library is the outcome of his or her ability and motivation. This ability includes his or her inherent aptitude, technology literacy acquired on the job and the available resources. Human behaviour in the context of this research entails the degree of commitment of library staff in terms of dedication, loyalty, punctuality and effort. It is important for the two variables of ability and behaviour to be at equilibrium if the library staff is to perform well on the job.

Bill (2003) identified contributing influences of an individual's attitude towards technological innovation/ improvisation in the workplace. Multiple factors stemming from an individual's knowledge, beliefs, values, cognitive/ mechanical ability, gender, organisational culture and social information processing tend to influence an individual's attitude. Now, since an

organisation comprises many individuals with various combinations of above, careful consideration must be given before introducing any innovation. The study observes higher adoption rates where employees have control over the innovation and its implementation; therefore the organisation must provide information sharing, a risk-free environment and evolve a learning system (Bhattacharjee, 1997).

In addition, an organization consists of human and other resources; an organization can be described as an assemblage of human resources harnessing the other resources available to achieve set goals and objectives. However, organisational performance describes how efficient the organization is in its quest to achieve the goals that have been set. How well an organization deploys its resources, human and material, determines how well-set goals are accomplished (Richard & Yip, 2008). Therefore, organizational performance refers to the measure of the achievements of an organization against set goals or standards.

Attainment of goals and objectives becomes the major preoccupation of an organization such that organizational performance is a celebrated phenomenon (Chearskul, 2010). Performance management processes help an organization to seek out more value from its employees and this impact positively on organizational performance. Also, monitoring and feedback enhances the contribution of performance management systems as this allows a constant review of employee performance.

Ajidahun (2004) put forward that university libraries in Nigeria are now being gradually computerized, thus these libraries are expected to provide ICT facilities for greater productivity and service in which case; users will no longer be dependent on librarians as search intermediaries. More so, Onifade and Sowole (2011) noted that libraries are no longer passive and archival institutions but are effective service institutions. The responsibilities of libraries go beyond gathering and organizing books and journals to include an active role in disseminating information. One way this can be achieved is through effective service, which can be harnessed by the use of computers and smart technology facilities. Taken together, the results highlight the importance of organizational changes stimulated by IT in the changing demand for workers of different types [Blili & Raymond 1993].

5. Research Design

This study adopted a descriptive survey design. The study was carried out in three Universities, which include, the University of Ibadan, Federal University of Agriculture, Abeokuta, and Osun State University. All these universities are equipped with standard academic libraries with many library personnel. Therefore, the study targeted library personnel in the selected universities. The total population for the study was fifty (50) library personnel. The personnel include Academic Librarians, Library Officers and Supporting Staff. A set of questionnaires was designed as the instrument that was used for data collection. The questionnaire was divided into two sections, namely Sections. ‘A and ‘B’. The research questions were analysed using descriptive statistics such as frequency counts, percentages, mean and standard deviation.

6. Data Analyses

Demographic Information of Respondents		
Gender	Frequency	Percentage
Male	23	57.5%
Female	17	42.5%
Total	40	100
Educational Qualification	Frequency	Percentage
SSCE	1	2.5%
OND/HND	2	5%
B.Sc/ B.A/BLS	20	50%
MLIS	13	32.5%
Ph.D	4	10%
Total	40	100

Age Distribution	Frequency	Percentage
Below 25 years	3	7.5%
25-29 years	1	2.5%
30-34 years	9	22.5%
35- 39 years	9	22.5%
40-44 years	7	17.5%
45-49 years	4	10%
Above 50 years and above	7	17.5%
Total	40	100
Marital Distribution	Frequency	Percentage
Single	9	22.5%
Married	31	77.5%
Total	40	100
Job Designation	Frequency	Percentage
Librarian	18	45%
Paraprofessional	16	40%
Supporting staff	6	15%
Total	40	100

Table 1

Table 1 above shows that 23 (57.5%) of the respondents were males and 17 (42.5%) were females. The age distribution shows that 3 (7.5%) were below 25 years, 1 (2.5%) was within 25-29 years, 9 (22.5%) were between 30-34 and 9 (22.5%) were between 35-39 years, 4 (10%) were within 45-49 years and 7 (17.5%) were above 50 years. The marital distribution shows that most of the respondents were married, 31 (77.5%), and 9 (22.5%) were single. Educational qualification shows that 20 (50%) had B.Sc/ B.A/BLS, 13 (32.5%) had MLS, 1 (2.5%) had SSCE, and 4 (10%) had PhD degrees. The job designation shows that 18 (45%) were librarians, 16 (40%) were paraprofessionals, and 6 (15%) were supporting staff.

6.1. Research question one: What are the smart technologies available for use in your library?

Strongly agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD)

Table 2 above shows the smart technologies that are available for use in the libraries. It revealed that the Internet was 3.61 and ranked highest by the mean score rating and was followed in succession by Smartphones which was 2.68; others are Cell phones at 2.61, MP3 Players at 2.58, Pocket-size computers at 2.58, Facsimiles 2.53, Tablets at 2.45, PDAs 2.33, iPods 2.3, Blackberry 2.28 and lastly Organizers 2.15. The result drawn from the table shows that the internet, smartphones, cell phones and MP3 Players were the major smart technologies available for use in these libraries.

S/N	Smart Technology Available for Use	SA	A	D	SD	\bar{x}
1	Internet	28 70%	7 17.5%	5 12.5%	0 0%	3.61
2	Smart phones	11 27.5%	13 32.5%	8 20%	8 20%	2.68
3	Cell phones	8 20%	16 40%	8 20%	8 20%	2.61
4	MP3 Players	11 27.5%	8 20%	14 35%	7 17.5%	2.58

5	Pocket-size computers	8 20%	14 35%	11 27.5%	7 17.5%	2.58
6	Facsimile	8 20%	13 32.5%	11 27.5%	8 20%	2.53
7	Tablets	8 20%	10 25%	14 35%	8 20%	2.45
8	PDA's (Personal Digital Assistant)	5 12.5%	14 35%	10 25%	11 27.5%	2.32
9	IPods	7 17.5%	7 17.5%	17 42.5%	9 22.5%	2.3
10	Blackberry	6 15%	10 25%	13 32.5%	11 27.5%	2.27
11	Organizers	5 12.5%	9 22.5%	13 32.5%	13 32.5%	1.89
Weighted Mean = 2.11						

Strongly agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD)

Table 2

6.2. Research question two: How effective is the smart technology employed in your library services?

Table 3 shows the effectiveness of smart technology adopted in library services. It shows that “provides access to unlimited information from different sources ranked highest by the mean score rating and was followed by “provides information flexibility to be used by any individual according to his/her requirements. This was followed by “provide speedy and easy access to information and provides increased flexibility. It can be drawn from the table that these four were effectively used for smart technology adopted.

S/N	Smart Technology Employed in the Library	SA	A	D	SD	\bar{x}
1	Provides access to unlimited information from different sources.	21 52.5%	18 45%	1 2.5%	0 0%	3.53
2	Provide speedy and easy access to information.	15 37.5%	22 55%	2 5%	1 2.5%	3.3
3	Provides increased flexibility.	15 37.5%	22 55%	2 5%	1 2.5%	3.3
4	Provide round-the-clock access and service to users.	12 30%	20 50%	6 15%	2 5%	3.07
5	Provide regular updates on topics of interest to users.	10 25%	22 55%	8 20%	0 0%	3.07
6	Service delivery monitoring is easier.	11 27.5%	22 55%	5 12.5%	2 5%	3.07

7	Help to reduce excess workload	10 25%	24 60%	4 10%	2 5%	3.07
8	Provides information flexibility to be used by any individual according to his/her requirements.	17 42.5%	21 52.5%	2 5%	0 0%	3.4
9	Promote teamwork across geographical distances.	8 20%	24 60%	8 20%	0 0%	3.02
10	Responsibilities could be evenly shared when overwhelmed.	7 17.5%	25 62.5%	7 17.5%	1 2.5%	2.97
Weighted Mean = 3.18						

Table 3

6.3. Research question three: What are the effects of smart technology on organizational performance in university libraries?

Table 4 shows the effects of smart technology on organizational performance in university libraries. It shows that “It saves time, space, energy and resources”^{3.33} ranked highest by the mean score rating and was followed by “It provides efficient and accurate services”^{3.3}, “It helps for the betterment of library image by providing better services in modern Ways”^{3.2}). It can be drawn from the table above that these three affected the library positively and directly.

S/N	Effects of Smart Technology	SA	A	D	SD	\bar{x}
1	The smartness of technology also rubs on the librarian as being smart.	10 25%	17 42.5%	13 32.5%	0	3.38
2	It saves the time, space, energy and resources	17 42.5%	20 50%	2 5%	1 2.5%	3.35
3	It provides efficient and accurate services;	18 45%	17 42.5%	4 10%	1 2.5%	3.32
4	It helps for the betterment of library image by providing better services in modern Ways	14 35%	21 52.5%	4 10%	1 2.5%	3.22
5	It has invented the ways of resource sharing by co-operation and co-ordination	15 37.5%	18 45%	6 15%	1 2.5%	3.2
6	Portability and mobility of smart technology has removed the problem of information location.	13 32.5%	20 50%	7 17.5%	0	3.17
7	It assist to provide high quality of services and increases the range of services	9 22.5	25 62.5%	5 12.5%	1 2.5%	3.07
8	Information explosion is better managed with the large storage capacity of smart technology	8 20%	27 67.5%	4 10%	1 2.5%	3.07
9	It has bridged the communication gap between the librarians and the library users.	10 25%	19 47.5%	11 27.5%	0	2.99

10	It helps control the tremendous escalation of information;	12 30%	15 37.7%	10 25%	3 7.5%	2.91
Weighted Mean = 3.17						

Table 4

6.4. Research question four: What relationship exists among smart technology, human behavior and organizational performance?

Table 5 shows the existing relationships among smart technology, human behaviour and organisational performance. It shows that “The use of smart technology helps library personnel to perform their task with ease”3.33 ranked highest by the mean score rating and was followed by “Human behaviour and smart technology impact positively on organizational performance”3.3, “Smart technology improves levels of performance in my organization”3.23. Results from the table show that there’s a positive relationship between smart technology, human behaviour and organizational performance.

S/N	Smart Technology, Human Behavior and Organisational Performance	SA	A	D	SD	\bar{x}
1	The use of smart technology helps library personnel to perform their task with ease	18 45%	18 45%	3 7.5%	1 2.5%	3.35
2	Human behaviour and smart technology impact positively on organisational performance	16 40%	21 52.5%	2 5%	1 2.5%	3.32
3	Smart technology improves levels of performance in my organisation	17 42.5%	18 45%	2 5%	3 7.5%	3.25
4	The use of smart technology is one of the factor that boost human behaviour in the library	16 40%	17 42.5%	6 15%	1 2.5%	3.22
5	The levels of performance in the library is as the result of positive human behaviour toward the smart technology	15 37.5%	18 45%	6 15%	1 2.5%	3.2
6	The use of smart technology and human behavior increases organisational productivity	11 27.5%	26 65%	2 5%	1 2.5%	3.2
7	Smart technology organisational effectiveness	12 30%	24 60%	2 5%	2 5%	3.17
8	Using smart technology software help to take a huge amount of workload off the library personnel	13 32.5%	19 47.5%	7 17.5%	1 2.5%	3.12
9	There are some changes in level of performance by library staff as a result of smart technology	11 27.5%	23 57.5%	4 10%	2 5%	3.09
10	Smart technology enables the personnel to serve their patron better	12 30%	20 50%	6 15%	2 5%	3.07
Weighted Mean = 3.19						

Table 5

6.5. Research question 5: What are the factors militating against the use of smart technology in university libraries?

Table 6 shows the factors militating against the use of smart technology in the university libraries. The three major factors that militate against the use of smart technology based on this research according to mean score ranking are “Poor funding of ICT infrastructures” 3.3, “Erratic power supply” 3.28 and “Lack of adequate budget” 3.25.

S/N	Factors Militating Against the Use of Smart Technology	SA	A	D	SD	\bar{x}
1	Poor funding of ICT infrastructures	17 42.5%	18 45%	5 12.5%	0 0%	3.32
2	Erratic power supply	17 42.5%	18 45%	4 10%	1 2.5%	3.3
3	Lack of adequate budget	16 40%	18 45%	6 15%	0 0%	3.27
4	Constant change of software and hardware	15 37.5%	18 45%	5 12.5%	2 5%	3.17
5	Insufficient bandwidth	12 30%	23 57.5%	3 7.5%	2 5%	3.15
6	Lack of commitment by institutional management	14 35%	16 40%	8 20%	2 5%	3.07
7	Lack of technical IT knowledge by library staff	11 27.5%	19 47.5%	8 20%	2 5%	2.99
8	Lack of updated ICT strategy	10 25%	21 52.5%	7 17.5%	2 5%	2.99
9	Copyright and intellectual property rights management	8 20%	24 60%	4 10%	4 10%	2.91
10	Inadequate existing ICT resources	10 25%	20 50%	8 20%	2 5%	2.97
11	Difficulty in training the academic librarians	12 30%	15 37.5%	8 20%	5 12.5%	2.86
12	Skill level of academic librarians	8 20%	18 45%	12 30%	2 5%	2.81
13	Academic librarians reluctance to use ICT	10 25%	12 30%	12 30%	6 15%	2.66
14	Lack of ICT qualified staff	4 10%	19 47.5%	12 30%	5 12.5%	2.56
Weighted Mean = 3.0						

Table 6

7. Discussion of Findings

The findings on the smart technologies available for use in the libraries show that Smartphones 2.68, the Internet 3.61 and Cell phones 2.61 were the significant technologies available for use in contemporary libraries. This finding is in agreement with Jara, Parra and Skarmeta (2014), who postulated that smart systems overcome issues that beset the environment, society and the economy because they serve to solve problems like resource scarcity and where globalization fails to deliver benefits. Thus, they are used in every industry throughout the world to achieve a competitive edge and increase productivity.

The result on the effectiveness of smart technology adopted in their library services shows that access to unlimited information from different sources^{3.48}, information flexibility to be used by any individual according to his/her requirements^{3.38}, speedy and easy access to information and increased flexibility^{3.28} were the major effectiveness of smart technology adopted in the library. This research also agreed with Kulkarni and Dhanamjaya, (2017), who asserted that Smart technologies revitalized with enriched content and digital space, modern library infrastructure and physical space could revolutionize access to information and knowledge and leapfrog into the mainstream to cater to the skills and information needs of the 21st century.

8. Conclusion

Smart technologies have brought unprecedented change and transformation to university libraries and information centres. It has created an environment where rapid, continuous change has become the norm. However, the use of computers and other communication tools such as the internet, smartphones, and cell phones for the location of information and the subsequent dissemination of information to users have improved tremendously in the contemporary world. Access has replaced ownership and the Internet has made remote access to databases possible 24 hours, 7 days per week. The university library finds itself in a time of tremendous challenge but it is also a time of boundless opportunity to use technology creatively to enhance service delivery to the user. In order to meet the challenges of the modern age and keep up-to-date with trends in modern information service delivery systems, libraries should be equipped with the requisite skill, which is ICT literacy, for better job performance and overall organisational development.

Recommendations

The under listed are the recommendations for this study:

- 1.Regular in-house training should be organized by the libraries on ICT
- 2.The university libraries should provide more computers for staff
- 3.The University should provide regular internet services on Campus.
- 4.University libraries should provide loan facilities for staff to enable them to purchase personal computers.
- 5.Scholarships should be given to Library staff to strengthen their capacity on ICT.

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