

**ADOPTION AND USE OF MOBILE PHONE TECHNOLOGY FOR LEARNING BY
LIBRARY AND INFORMATION SCIENCE POSTGRADUATE STUDENTS IN TWO
LIBRARY SCHOOLS IN NIGERIA****By****Olatokunbo Christopher Okiki (CLN)****and****Stella Chinnaya Nduka (CLN)****Abstract**

This study investigated the adoption and use of mobile phone technology for learning by Library and Information Science Postgraduate Students in University of Ibadan (UI) and the Tai Solarin University of Education (TASUED). A descriptive survey research design was adopted. Total enumeration of respondents was used to capture 222 respondents for the study. A validated, self-designed, and close-ended questionnaire was used to gather data from the respondents. Descriptive statistics (frequency count, percentage, mean, standard deviation) and Multiple Regression Analysis were used to analyse the data gathered for the study. Findings revealed a high level of mobile phone technology adoption among LIS postgraduate students. There is a high level of accessibility to mobile phone technology among LIS postgraduate students. It also reported high accessibility to mobile phone technology among LIS postgraduate students. The findings revealed further that most of the respondents agreed that they use mobile phone technology for their academic learning. The hypothesis revealed no significant difference between the adoption and use of mobile phone technology for learning by LIS postgraduate students. Based on the findings, it was recommended that mobile phone app usage should be encouraged in universities, and workshops should be organised to educate postgraduate students on the importance of using mobile phone technology in their knowledge quest.

Keywords: Mobile phone technology, ICTs, Mobile Learning, Postgraduate students, Universities.

Introduction

The advancement of information and communication technologies has inevitably brought about the integration of mobile technology for teaching, learning and research in Higher education institutions globally. The development in mobile computing and communication has led to many mobile phones, tablet computers, smartphones, Ipads, and notebooks, which made the Internet more accessible to students. Thus, mobile Technologies can also refer to all forms of technologies that

can make learning easier and delivered in a short time. According to Obiadazie and Obijiofor (2015), mobile devices or electronic products are provided with basic mobile communication hardware like WiFi and 2.5G/3G Internet USB sticks that enable users to connect to the Internet via mobile and wireless networks without securing a landline or an expensive broadband connection via DSL, cable Internet or fibre optics. Mobile devices provide 24/7 portability and wireless network that supports people's lifelong learning and life-wide learning (Yokus and Yelken, 2017).

The mobile smartphone is one of the mobile learning technology devices that can be adopted and used for learning by the LIS postgraduate students. Interactive Educational Systems Designs Inc. (2012) submitted that the greatest benefits of adopting mobile phone technology in learning are their ability to engage the students, allow interactive learning, and support the personalisation of instruction to meet the needs of different students. Also, mobile technologies are easily accessible to everyone, especially university students, in their learning process. The affordability and coverage of mobile telephony services have increased its importance not just as a means of two-way communications but for ease of access to information (Obiadazie and Obijiofor, (2015).

Notably, Ahmad (2020) noted that university students are serious users of mobile phones, and this usage has repercussions on learning outcomes at the tertiary level. According to Adegbiya and Bola (2015), learning with mobile technology is an emerging educational phenomenon resulting from integrating electronic learning platforms and mobile technologies.

Mobile technology has transitioned from a subordinate method of electronic learning into its educational area, and it has become a new field of research globally. The exclusive abilities of mobile devices like connectedness, camera, sensors, and GPS provides a huge potential to enrich academic experience and success and students are not bound to the geographical borders of the

classroom because they can record their observations, discuss ideas with their friends in mobile technology platforms due to the adoption and use of mobile devices (Chen, Seilhamer, Bennett and Bauer, 2015).

Library and Information Science postgraduate students pursue a higher degree certificate in library Schools in their various universities. They are expected to adopt mobile technologies in their learning and research process to enhance and increase their learning rates and research activities. Based on the previous studies, the adoption and use of mobile phone technologies would allow LIS postgraduate students to reinforce their knowledge skills and motivate them to be explorative. Moreover, to meet the students learning needs, different mobile phone applications have been developed to assist learning, such as discussion forums, text-based activities, audio-based learning, and interactive game-based language learning. Hence the main purpose of this study is on LIS postgraduate students' adoption and use of mobile phone technologies for learning in two selected universities in South-West Nigeria. Specifically, the study examined the adoption, accessibility and use of mobile phone technology for learning by the LIS Postgraduate students. However, there is a paucity of literature on this study because it seems no study has been carried on specifically on LIS postgraduate students' adoption and use of mobile phone technology.

Objectives of the study

- i. To find out the level of adoption of mobile phone technology among LIS postgraduate students of University of Ibadan (UI) and the Tai Solarin University of Education (TASUED).
- ii. To determine the level of accessibility of mobile phone technology among LIS postgraduate students;

- iii. assess the level of use of mobile phone technology for course assignments of LIS postgraduate students;
- iv. examine the problems affecting the use of mobile technology among LIS postgraduate students.

1.2 Hypothesis

H₁: There is no significant difference between LIS postgraduate students' adoption and use of mobile phone technology.

Literature Review

Mobile technologies, especially phones, are potential learning and research infrastructure used by individuals for teaching, learning and research purpose. Singh and Nikandia (2017) noted that mobile technologies are new communication tools. Mobile technologies are transforming how people can search the information, receive information and interact with the information on an everyday basis for learning and research activities. Mobile phones provide unique learning opportunities and have the advantage of portability and mobility. Universities, teachers and students can use mobile technologies for teaching and innovations, m-learning, instruction on a mobile device, web technology, etc. Also, software vendors are now developing portals and mobile platforms to support educational activities.

Hawamdeh and Soykan (2021) submitted that mobile technology has increasingly evolved globally and has become an essential contributor to any age. Mobile technology provides convenient access without the limitations of time and location. The researchers further submitted that many new technologies are created to enhance and promote the day-to-day lives of human beings. In the contemporary era, mobile phones and other mobile devices are beginning to affect

how learning takes place in various fields and contexts, including the field of library and information studies. The devices are portable, readily available, and affordable. In addition, Gafni, Achituv and Rachmani (2017) posit that mobile learning gives easy access to learning material, particular places, learning time, feedback, and self-test. Subsequently, mobile learning is an attractive and flexible process that encourages and motivates students to study independently.

The benefits of using mobile technology for learning by the LIS postgraduate students cannot be over-emphasised because mobile learning or technology provides guidance for learners to use and apply the technology in their daily lives. Using this superb technology will take the students to higher thinking order skills where they get to appreciate, develop, and take care of technology as not something they have to use but a tool that they can apply and learn from (Murugan and Sai, 2017). This will further develop their technical skills towards achieving a sense of satisfaction in their learning process (Murugan and Sai, 2017).

Heiphetz (2011) reported that mobile technology would enable the students to have free and easy access to the contents and freedom in learning; the contents and process can be customised to their learning plan. In addition, mobile technology would help and keep the students updated in their learning process. Marwan, Madar, and Fuad(2013), from their study, reported that students' previous knowledge and experience with ICT positively influenced the students to perceive mobile phone technology as a positive opening to learning; they also found out that the students would readily adopt mobile devices for their learning process. Using mobile devices in the teaching and learning scenario can be regarded as "catching up learning quickly" (Murugan and Sai, 2017). This is because mobile technology can enrich students' learning process due to its versatility, high motivation, and active participation in the classroom. Marwan, Madar and Fuad

(2013) emphasise that mobile phones have the potential and ability to facilitate the learning process without a learner being tied up in a physical location during the learning process.

Furthermore, Murugan and Sai (2017) noted that mobile phones allow individuals to participate actively in their learning process and knowledge creation. Prokofyeva and Boltunova (2018) noted that mobile devices and wireless technologies would become a daily part of learning activity. Many students are technically and psychologically ready to use mobile technologies in learning. Sophonhiranrak (2021) conducted a systematic review to map the features and functions of mobile devices and their application in mobile learning in the higher education context. It focuses on the features of mobile learning and the barriers influencing factors using mobile devices in learning. The review showed that mobile devices are used as learning tools for jobs like submitting homework, reflecting on immediate learning experiences, and sharing ideas. The study revealed the main barriers to using mobile as technology-related problems, basic skills in using mobile devices and instructors' attitudes towards applying mobile devices in education. Also, Ahmad (2020) examines students' perceptions, views, and thoughts on their use of mobile phones in an educational atmosphere among 144 students from the University of the West Indies, Jamaica. The findings indicated that students' perception of mobile phone use as a learning tool was generally positive. Auma (2017) investigated the adoption and use of smart device applications for academic work by university students from the University of Nairobi and found that the adoption rate of smartphone devices among the students is high because smart devices are readily available and easier to access information on it.

Methodology

A descriptive survey was adopted for this study. The study population consists of LIS Postgraduate students in two public universities in South- West, Nigeria with full Nigeria

University Commission (NUC) accreditation at the postgraduate level. The two universities are the University of Ibadan (UI) and the Tai Solarin University of Education (TASUED). The breakdown of the population is as follows: University of Ibadan (UI) - 186 and the Tai Solarin University of Education (TASUED) -36. The total enumeration sampling method was used due to the small population size.

Two hundred twenty-two (222) copies of the questionnaire were administered, while 201 were returned and found useful for the study, given a response rate of 91%. The data collected were analysed and interpreted using descriptive statistics such as frequency and percentage.

Results

Research Question 1: What is the level of adoption of mobile phone devices by the LIS postgraduate students?

Table 1: Level of Adoption of mobile phone technology

Items	Frequency (%)
Smartphones	141(70.1%)
Traditional phone	60(29.9%)

Table 1 shows the frequency of the level of adoption of mobile phone devices. The result depicts that 141(70.1%) of the respondents adopted Smartphone for learning, while 60(29.9%) adopted traditional phones. This shows a high mobile phone technology adoption level among LIS postgraduate students.

This finding aligns with Auma (2017) who found that the adoption rate of Smartphone devices among students is high because smart devices are readily available, and it is easier to access information on it. There is evidence in developing countries complementing mobile

learning for teaching and learning. For example, Hawamdeh and Soykan (2021) submitted that mobile technology has increasingly evolved globally and has become an essential contributor to learning.

Research Question 2: What is the level of accessibility to mobile phone technology by the LIS postgraduate students?

Table 5: Level of accessibility of mobile phone technology

Items	Mean	Std. Dev	Remark
Access academic databases and other academic websites	2.50	.492	Significant
Access information online, meet their information needs via learning management systems	2.61	.000	Significant
Students can easily access their lecture notes on their Smartphone	2.88	.921	Significant
Access to local AM/FM stations	2.42	.302	Non-significant
Average Mean	2.60	0.429	Significant

The result in table 2 showed an average mean of 2.60 is greater than the accepted mean of 2.50, indicating that in all the items measuring the level of accessibility of mobile phone technology, the total of 3 items was significant while only 1 item was non-significant. The results show a mean score of ($\chi = 2.88 > 2.50$) indicated students can easily access their lecture notes on their Smartphone, ($\chi = 2.61 > 2.50$) indicated accessing information online, meet their information needs via learning management systems, ($\chi = 2.50$) indicated accessing academic databases and other academic websites, ($\chi = 2.42 < 2.50$) indicated having access to local AM/FM stations. The result shows that with an average mean of 2.60, which is greater than the 2.50 minimum, the level of accessibility of mobile phone technology is high. Hence, there is high accessibility to mobile phone technology among LIS postgraduate students.

The result is evident in the works of Masiu and Chukwuere (2018), where it was stated that the Smartphone has also made students' lives easier, as they can access their school information on the gadget through electronic learning (e-learning), and mobile learning (m-learning). The development of smartphones keeps on evolving as human lives keep evolving.

Research Question 3: What is the level of use of mobile phone for learning by LIS postgraduate students?

Table 6: Level of use of mobile phone technology for learning

Items	Mean	Std. Dev	Remark
I use mobile phone frequently	3.48	.501	Significant
I use my mobile phone for my learning purpose	3.43	.496	Significant
I have access to information at any time	2.88	.965	Significant
Security in accessing information	2.94	.236	Significant
Mobile phone help to satisfy my information need	3.44	1.098	Significant
Get the opportunity to get information from a distance location	2.47	.980	Non-significant
I get up to date information, both local and international	3.00	.596	Significant
Mobile usage has helped to re-define the academic environment	3.41	.493	Significant
The use of the mobile device has enhanced my ability to retrieve information anywhere 24/7	2.41	.493	Non-significant
Fast Information retrieval	2.06	1.165	Non-significant
It supports my online learning	3.47	.500	Significant
Average Mean	3.03	0.668	Significant

Table 6 shows the analysis of result on the level of use of mobile phone technology use. The average mean for the result is 3.03 ($\bar{x}=3.03>2.50$), indicating that in all the items measuring the use of mobile phone technology for learning, nine items were significant while three items were non-significant. The tested items with their calculated individual mean scores indicated that the respondents agreed that they frequently use mobile phone technology ($\bar{x}=3.48>2.50$), it supports their online learning ($\bar{x}=3.47>2.50$), mobile phones help to satisfy their information needs ($\bar{x}=3.44>2.50$), they use mobile phone for my learning purpose ($\bar{x}=3.43>2.50$), mobile usage has helped to re-define the academic environment ($\bar{x}=3.41>2.50$). Also, ($\bar{x}=3.00>2.50$) agreed that they get up to date information both local and international, ($\bar{x}=3.00>2.50$). The implication is that

majority of the respondents agreed that they use mobile phone technology for their academic learning. That is, the level of mobile phone technology used for learning is high

This finding supports the study of Ahmad (2020) and Sophonhiranrak (2021). They found that students' perception regarding mobile phone use as a learning tool was, in general, positive and that mobile devices are used as learning tools for jobs like submitting homework, reflecting on immediate learning experiences, and sharing ideas. Also, supporting this study, Odebunmi, Onojah and Aderogba (2019) found that postgraduate students use mobile technologies for their learning.

Research Question 4: What are the problems affecting the use of mobile technology by the LIS postgraduate students?

Table 7: Problems affecting the use of mobile technology and use of library resources

Items	Mean	Std. Dev	Remark
Low band width	3.50	.876	Significant
Financial constraint	3.37	.485	Significant
Lack of awareness	2.60	.119	Significant
Fear of virus attack	2.40	.921	Non-Significant
Information overload	2.17	.877	Non-Significant
Incoming calls during the class learning period	3.40	.490	Significant
screen and key sizes	2.50	1.030	Significant
Space not enough	2.20	.083	Non-Significant
Lack of time	2.15	1.050	Non-Significant
unstable internet connectivity	3.28	.450	Significant
Erratic power supply	2.69	.190	Significant
indicated lack of technology know-how	3.39	.489	Significant
Negative attitude towards mobile learning	3.40	1.025	Significant
Lack of smartphones for learning	2.10	1.083	Non-Significant
delay in downloading information materials	2.01	1.187	Non-Significant
Smartphones freezing during learning	3.33	.472	Significant
Not being computer literate	3.32	.467	Significant
Smartphone browsing may at times not support file/ format of contents	3.29	.454	Significant
Average Mean	2.84	0.653	Significant

Table 7 presents the result of the analysis of the problems affecting the use of mobile phone technology by the LIS postgraduate students using the mean score of the items. The average mean score for the result is 2.84($\bar{x}=2.84>2.50$), showing that all the items measure the problems

affecting the use of mobile phone technology. The results showed that 12 items were significant, while six were non-significant. The results show a mean score of ($\bar{x}=3.50>2.50$) indicated low bandwidth, ($\bar{x}=3.40>2.50$) indicated a negative attitude towards mobile learning, incoming calls during class learning period ($\bar{x}=3.40>2.50$), ($\bar{x}=3.39>2.50$) indicated lack of technology know-how, financial constraint ($\bar{x}=3.37>2.50$), Smartphone freezing during learning ($\bar{x}=3.33>2.50$), ($\bar{x}=3.32>2.50$) indicated not being computer literate, ($\bar{x}=3.29>2.50$) indicated that at times Smartphone browsing might not support file/ format of contents, unstable internet connectivity ($\bar{x}=3.28>2.50$), erratic power supply ($\bar{x}=2.69>2.50$) while ($\bar{x}=2.50=2.50$) indicated screen and key sizes as problems affecting the use of mobile phone technology.

This implies that the major problems affecting the use of mobile technology by the LIS postgraduate students are low bandwidth, negative attitude towards mobile learning, incoming calls during the class learning period, lack of technology know-how, financial constraint, Smartphone freezing during learning, not being computer literate, at times Smartphone browsing may not support file/ format of contents, unstable internet connectivity, erratic power supply and screen and key sizes..

This aligns with the study by Darko-Adjei (2019) who found that some of the challenges that make the Smartphone uncomfortable for learning for students as Smartphone freezing during important learning moments, unstable internet connectivity, intruding calls during class hours, and the screen and key sizes and Sophonhiranrak (2021) who revealed the main barriers of using mobile as technology-related problems, basic skills in using mobile devices and instructors' attitude towards applying mobile devices in education.

Therefore, LIS postgraduate students should develop their computer literacy skills in mobile technologies, especially smartphones, to use the technology maximally for learning

purposes. This becomes necessary as information and communication technology has been infused into teaching, learning and research activities

Testing of Research Hypotheses

Research Hypothesis One: There is no significant difference between the adoption and use of mobile phone technology for learning by LIS postgraduate students

Table 8: Regression Analysis of Hypothesis One

R = .992					
R ² = .983					
Multiple R ² (adjusted) = .983					
Standard error of estimate = .169					
Analysis of variance					
Model	Sum of square (SS)	DF	Mean square	F	Sig.
Regression	29.734	1	64.867	4.697	.000 ^b
Residual	5.538	199	.028		
Total	35.273	200			

The table shows that the independent variable (adoption) will significantly influence the use of mobile phone technology; the value of R shows this = .992 and R² (adjusted) = .983, P = .000. However, the result shows no significant difference between the adoption and use of mobile phone technology for learning by LIS postgraduate students' (P < 0.05).

The study showed that the adoption of mobile phone technology will significantly influence the use of mobile phone technology by LIS postgraduate students. The result is in line with the study of Morgan (2012), who affirmed that research is a key component of many college classes.

Conclusion and Recommendations

The proliferation of the Internet and Information Communication Technology has challenged in almost every facet of learning and research, and use of mobile devices by LIS postgraduate students in universities serves as a channel to acquire instructional skills and knowledge at any time and place. Based on the findings of this study, it was concluded that the

rate of adoption of the mobile device is high given that Smartphone are available and make it easier to access information on the device. The study further established that the majority of the students highly use Smartphone for learning. This implies that the students need Smartphone devices to easily access information needed for their learning activities and at a cheaper cost. The study concluded that the student has a positive attitude toward utilising mobile devices for learning.

Based on the findings, the following recommendations were made: Mobile phone apps should be encouraged in universities, and training should be organised to educate students and their lecturers on mobile phone technologies for teaching, learning, and research purposes. Students should be encouraged to develop a positive attitude by updating their knowledge on the use of mobile phone technology for learning activities. Lastly, Head of library schools should include mobile phone technologies in the academic curriculum.

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