21 TERTIARY INSTITUTION STUDENTS' PERCEIVED PREPAREDNESS TO ADOPT MOBILE-LEARNING TECHNOLOGY (MLT) INNOVATION IN SOUTH-WESTERN, NIGERIA

Dr. OTUNLA, Adekunle Olusola, TIJANI, Rasheed Adekunle, Dr. ADAMOLEKUN 'Wole, & ONI, Matthew Taiwo

Abstract

Modern telecommunication technology devices, tools and applications have become mobile-learning (m-learning) platforms for learning and innovative teaching strategies. Such technologies are adaptable to tertiary education for both open and distance learning (ODL) as well as blended learning in the conventional school environment. However, it has been observed that most tertiary institutions are still engrossed in face-to-face teaching and learning approaches in a situation where most of the students are perceived to be digital natives with perceived high potentials for technology adoption. Therefore, this study investigated tertiary institution students' perceived preparedness to adopt mobile-learning technology (MLT) innovation in South-Western, Nigeria. The study adopted ex-post facto research design of descriptive survey type; it involves a total sample of 450 tertiary institution students from three public institutions in Oyo State. Data was collected using a duly validated researcher-designed instrument titled 'Tertiary Institution Students Mobile-Learning Questionnaire' (TISMLQ) r=0.84; it measures students' self-efficacy on use of mobile technology and level of preparedness towards mobile-learning technology (MLT) adoption. Data collected was analysed using descriptive and inferential statistics. Findings revealed perceived high self-efficacy on use of mobile technology and very high rate of mobile phone-ownership especially, the use of smart phones. The study concludes that tertiary institution students in Nigeria South-Western states are highly prepared to adopt mobile-learning technology. Hence, we recommend that tertiary institution lecturers should explore curriculum integration of mobile-learning, while students should channel mobile phone use towards academic activities. Lastly, workable institutional Information Technology (IT) policy should be implemented by tertiary institutional leaders in South-Western Nigeria.

Key words: Mobile-learning, Information Communication Technology (ICT), ICT Proficiency, Preparedness, Self-efficacy, Technology adoption

Introduction

Communication and media technological development has hitherto been an integral part of human development and history from the Old Stone Age to the New Stone Age and to the most recent era of 'Digital Age'. The essence of technological development is aimed at making the world a better and convenient place to live in and survive. Advances in tele-communication and computer technology are major important success of the contemporary world which has become supportive to all facet of human endeavour including education, training and instruction with valuable tools to teach, support and improve human learning. Rapid development in media and communication technologies allow distance education programs offered at tertiary education level to provide specialized instruction to students in geographically remote locations using mobile-learning technologies (MLT). Today's higher education exists in a world that is characterised by knowledge economy with considerable transformations, not only in the education sector but also in the wider society. In addition, the computer age is creating expanded participation and increased opportunities within higher education for interpersonal communication and access to digital resources among major stakeholders.

Further, it has also become obvious to scholars that there are changing characteristics and circumstances among contemporary higher education students due to fresh demands in terms of the new knowledge, skills and competencies that could fit individuals into contemporary world-of-work Thus, many job seekers are expected to acquire certifications from academic and professional institutions to meet with new career and job demands in the industries, services, trade and commerce. Consequently, the accelerated advancements in communication technologies especially, mobile telephoning applications and device architectures, higher education teachers in Nigeria, who are mostly digital migrants in the current dispensation of digital divide, are under pressure to use available digital media to deliver instruction to students in various locations to meet the diverse educational needs of potential students' population.

Mobile technology has emerged as a tool for information sharing as a bye-product of Information and Communication Technology (ICT). ICT according to Rouse (2005; 2014) referred to an umbrella term that includes any communication device or application which include radio, television, mobile devices, computer and network, hardware and software, satellite systems and various services and applications

associated with it, such as videoconferencing and distance learning technologies. Majumdar (2006) postulate that the major emphasis of ICT infusion in teaching should be seen as a way that will improve learning, motivate and engage active participation of learners, promote collaboration, foster enquiry, and exploration and create a new learner-centered learning community. The Internet serves as a driving force for most of the modern communication technological development and innovations through which learners are able to gain easy access to a wide range of ideas and experiences for the purposes of improving teaching and learning from diverse group of people, communities and cultures from different part of the world.

With regards to mobile-learning, Milrad (2006) noted that advancements in mobile and wireless technologies is highly impactful in educational settings and is generating a new approach for technology-enhanced learning also termed; mobile learning' (m-learning). Schofield West and Taylor (2011) defined mobile learning as handheld technologies, together with wireless and mobile phone networks, to facilitate, support, enhance and extend the reach of teaching and learning. Mobile-learning is defined as the use of mobile technology with information and communication technology (ICT), to enable learning anytime and anywhere. Allen (2011) observed that the popularity of different types of mobile devices, including smartphones such as iPhones, android, windows and BlackBerries, tablets and Portable Digital Formats (PDF) reader with different functionalities like GPS, social media, short messages services, text messaging, voice messaging and multimedia capabilities has prompted education reformers to explore possibilities of mobile devices as means for improving education in the 21st century. It implies that, with mobile technology, learning takes place in different forms and ways, mobile devices can be used to access educational resources, connect with others and create content, both inside and outside classrooms. Onasanya, Samuel and Onasanya (2012) assert that the use of ICT tools facilitate learners to study, explore, exchange and present information in a positive and creative way.

Mtega, Bernard, Msungu and Sanare (2012) also affirm that the use of advanced computing and information technology in educational settings has increased drastically during the last decades with the observations that the use of computer-based training and later on networked-based learning were mainly due to the development of the World Wide Web (www), the development which has redefined the concept of e-learning.

Therefore, mobile technology is also becoming fast essential in everyday life of both adults and young in nearly every society including people living in the rural communities. Arash and Chih-Hung (2014) postulate that the propagation of mobile technologies along with ever-present Internet access has significantly changed the lives of people, with multi-services from simple voice and messaging devices to highly flexible multi-functional mobile devices that can be used almost anytime and anywhere for a wide range of purposes which include the social interactivity and for supplementing self-learning. Buttressing this postulation, Callum, Jeffrey and Kinshuk (2014) infer that the use of mobile devices have developed greatly over the last few years and have enabled learning to be more available and accessible to all and sundry. Thus, mobile phone Internet accessibility has provided educators with fantastic ways to support teaching and training outside the classroom.

United Nations Educational Scientific and Cultural Organization (UNESCO) affirms that mobile learning encompasses efforts to support broad educational goals such as the effective administration of school systems and improved communication between teachers and students or students and students (UNESCO, 2015). Again, Mamudu and Oyewo (2015) noted that mobile learning has become a major focus in education, because it has transformed the way students learn and want to learn; more so that the learning environment is gradually shifting from the physical to the virtual. The duty now rests on higher education teachers to harness from the benefits of mobile learning and also tackle the various problems posed by this new way of learning. Then mobile should be considered a possibility among tertiary education students based on the fact that it is readily available, accessible and flexible in use to facilitate knowledge sharing.

However, one major issue with mobile technology adaptation has to do with the problem associated with digital divide arising from information capitalism and digital nativity. Prensky (2001) refers to students who were born after 1985 as digital natives and presumably majority (if not all) of current students in tertiary institutions in Nigeria fall under this classification. According to Prensky (2001), they are so classified because they have interacted with computers, listening to music on iPods, playing video games, and using cell phones to communicate with others. In contrast to digital natives are digital immigrants whom Judge, Puckett and Bell (2006) regarded as individuals who were born before the existence of digital technology but are making efforts to adopt it to

some extent later in life. Although, application of these classification may slightly differ from one culture to another depending on the extent to which technology has penetrated into their country. However, the classification may not be totally fitted into the Nigerian environment because accessibility to information and communication technology (ICT) tools and application was restricted to the business world in Nigeria until the end of the year AD 2000.

The situation regarding digital divide is drastically changing, with effect from AD 2001 when the Global System for Mobile-telecommunication (GSM) was introduced into the Nigerian market through the issuance of operating licenses to four pioneer telecommunication service providers and other Internet Service Providers (ISP) by the Nigerian Communications Commission (NCC) being the Nigerian government sole regulatory agency in the telecommunication industry (Otunla & Akinyemi, 2015). Consequently, the implication of Prensky (2001); Judge, Puckett and Bell (2006) definitions is that, majority of contemporary teachers and parents are in the category of digital immigrants i.e. those who grew up before the digital age, where items such as home computers, the internet, and mobile phones were either non-existent or not as widely available. To this end, authors of this study presumed that implementing mobile-learning may be regarded as highly-tasking a technological activity, because most adults in Nigeria including teachers and parents are digital immigrants whereas many of the students who are digital natives might find technology use to be pleasurable, and have greater understanding of its concepts more than their teachers, parents, or adults generally.

Empirical evidences abound on adoption and impact of mobile learning in education especially as supplementary to classroom interactions and for open and distance education. In a survey conducted by Kahveci (2010) on the use of technology for learning; findings indicated that students perceived the use of technology in education as a need for learning, regardless of their various personal characteristics such as gender, level, previous experience, and content area of interest. Yang (2012) in an experimental study reported that students displayed better academic performance in learning with the use of mobile devices and had positive attitudes toward mobile-learning. While, Anyanwu, Ossai-Onah and Nse (2012) reported that the use of mobile devices in research by Nigerian students obviously produced significant benefits in their academic pursuits and enables students' access to reliable and current

information resources which can be relevant to their academic pursuit. The authors also, noted that the use of mobile devices in research help the students to bridge the gap that exist between the students and their course content. Also, Francis, Clive and Jey (2013) concluded that like other countries of the world, mobile-learning would expand the possibilities of extending open and distance learning education to all nooks and crannies of the country. Riham (2014) arising from a study concluded that students' attitudes are high, while students' perceptions are moderate. Findings from Riham (2014) indicated that the utilisation of mobile-learning improves students' learning performance inside and outside the classroom. Thus, the main advantage of m-learning is that it can be used anywhere-anytime; and it can be adopted to enhance students' interaction and learning experiences.

In a cross-cultural mobile phone-ownership survey among African countries, Pew Research Center (2015) reported that across the seven countries surveyed, roughly two-thirds or more attest to own a cell or mobile phone. The report further shows that ownership of mobile phones are very high in South Africa and Nigeria, where about nine-in-every-ten have a mobile phone. The implications are that there is a high rate of availability of phones with different capabilities just as Nigerian teachers and Nigerian higher education students are highly familiar with the use of mobile phone applications such as: web browser, multimedia and video applications provide opportunities for text messaging, high social networking activities and lots more. All these are possible indicators to the readiness of the educators and students to accepting the new trend in education.

However, Dawabi, Wessner and Neuhold (2014) have identified two significant gaps in current knowledge about learners and mobile devices which are; new-generation of learners and students do not automatically apply the functionality of their devices to the attainment of deep learning outcomes and that there is a lack of studies on adoption of mobile-learning research into sustainable change in curriculum, policy and infrastructure. These gaps are very relevant and applicable in contemporary Nigeria educational system and practice.

Statement of the Problem

Mobile devices have become common tool in the hand of the contemporary Nigerian tertiary students in both urban and rural settings; even though such mobile devices can perform various functions to

facilitate learning, but their potentials have not been fully optimized. In contrast, the adverse effects of mobile devices include distraction in the classroom, perceived reduction in cognitive abilities, tools for cheating during examinations, cyber bulling and addiction to social networking sites. Presumably, higher institution students in Nigeria own one type of mobile telephone device or the other with daily internet access which has improved vastly the use of mobile devices over the years. However, its major value has not been fully explored by most students in higher institutions of learning while others have grossly abused or misuse its values. More so it has been identified that there is a lack of studies on adoption of mobile-learning research into sustainable change in curriculum, policy and infrastructure. Arising from all these, tertiary institution students' self-efficacy in the use of mobile-learning is very gamine and preparatory to their eventual adoption. Therefore, this study investigated tertiary institution students' perceived preparedness to adopt mobile-learning technology (MLT) innovation in South-Western, Nigeria.

Objectives of the Study

The objectives of this study are:

1. To ascertain the type of mobile technology that is mostly used by tertiary institution students in South-Western Nigeria.
2. To ascertain the level of tertiary institution students' self-efficacy in the use of mobile technology in South-Western Nigeria.
3. To determine the level of preparedness of tertiary institution students towards the use of mobile-learning technology in South-Western Nigeria.

Research Questions

The following research questions were used in the study:

1. What is the rate of mobile phone ownership technology and type, which is mostly used by tertiary institution students in South-Western Nigeria?
2. What is the level of tertiary institution students' self-efficacy in the use of mobile technology in South-Western Nigeria?
3. What is the level of preparedness of tertiary institution students towards the adoption of mobile-learning technology in South-Western Nigeria?

Methodology

The study adopted ex-post facto research design of descriptive survey type. The population for this study comprised undergraduates students in tertiary institutions in South-Western Nigeria which has six states namely Lagos, Ogun, Oyo, Osun, Ekiti and Ondo states. Tertiary institutions in the states cut across both public and private institutions. Oyo State was purposively selected for sampling being that it possesses the same socio characteristics with all the other five states in South-Western Nigeria. As at the time of carrying out this study (September, 2018), tertiary institutions in Oyo state include: University of Ibadan, Ibadan, Ladoke Akintola University, Ogbomosho, Lead City University, Ibadan, Ajayi Crowther University, Oyo, The Polytechnic Ibadan, Ibadan, Ibarapa Polytechnic, Eruwa, Ibadan City Polytechnic, Ibadan, Federal College of Education (Special), Oyo, Emmanuel Alayande College of Education, Oyo, Mufu Lanihun College of Education, Ibadan and Al-Ibadan College of Education, Ibadan and Delar College of Education. Further, multistage sampling techniques was adopted to select three tertiary institutions in Oyo State based on institutional type. Sample for the study was drawn randomly from the selected institutions as follows: University of Ibadan-150, The Polytechnic Ibadan-154 and Federal College of Education (Special) Oyo-146. In all, the study involved a total sample of 450 tertiary institution students from the three public institutions in Oyo State.

Instruments used for data collection was a research-designed questionnaire titled; 'Tertiary Institution Students Mobile Learning Questionnaire' (TISMLQ). The instrument was used to measure tertiary institution students' self-efficacy on use of mobile technology and level of preparedness towards the use of mobile learning technology (MLT) adoption and the instrument yielded a reliability value of r=0.84. The data collected was analyzed using descriptive statistics i.e. frequency counts, Percentages, Mean and Standard deviation.

Results and Discussions

Research Question One: What is the rate of mobile phone-ownership and type of mobile technology which is mostly used by tertiary institution students in South-Western Nigeria?

Table 1: Mobile Phone-Ownership Rate and Types of Mobile Technology Mostly Used by Tertiary Institution Students

Mobile Devices	University of Ibadan (N= 150)		The Polytechnic Ibadan (N=154)		Federal College of Education (Special) Oyo (N = 146)	
	In Use N (%)	*Not in Use N (%)*	*In Use N (%)*	*Not in Use N (%)*	*In Use N (%)*	*Not in Use N (%)*
Smartphone	90 (60.0%)	60 (40.0%)	105 (68.0%)	49 (32.0%)	120 (82.2%)	6 (17.8%)
E-book Reader	6 (4.0%)	144 (96.0%)	0 (0%)	154 (100%)	1 (0.7%)	145 (99.3%)
I-Pod	11 (7.4%)	139 (92.6%)	6 (4.0%)	144 (96.0%)	1 (0.7%)	145 (99.4%)
Personal Digital Assistant	4 (2.7%)	146 (97.3%)	0 (0%)	154 (100%)	1 (0.7%)	145 (99.4%)
Tablet PC	9 (6.0%)	141 (94.0%)	20 (8.2%)	134 (91.8%)	4 (2.7%)	142 (97.3%)
Mp3 Player	15 (10%)	135 (90%)	10 (6.5%)	144 (93.5%)	19 (13.0%)	127 (87.0%)
Mp4 Player	15 (10%)	135 (90%)	9 (5.8%)	145 (94.2%)	21 (14.4%)	125 (85.6%)

Source: Field Survey (2018)

Table 1 shows the frequency of mobile phone-ownership and type of mobile technology devices in use among students in the sample tertiary institutions. Findings revealed that undergraduates from the University of Ibadan reported that 60.0% of the respondents used smartphone, while 40.0% uses other types. The result further revealed that the percentages of students that use other types of mobile devices such as; E-book Reader, I-pad, Tablet PC. Mp3, player etc. are not up to 10.0%. More so, the result from The Polytechnic Ibadan also revealed that 70.0% of the students used smart phones while the percentage of the students that use other devices is less than 15.0%. Similarly, the result from Federal College of Education, (Special) as reported by students show that 44.8% of the students used smartphone while less than 15.0% used other devices.

Inference could be drawn that majority of the tertiary institution students own and use smartphones more than other mobile devices which is highly common among the Polytechnic Ibadan students. The finding agrees with the submission of Allen (2011) who observed that there is a high availability of different types of mobile devices, including smartphones such as iPhones, e.t.c.

Also, the rate of mobile phone-ownership among tertiary institution students in Western-Nigeria is very high, as all the students covered in the study use one type of mobile phone or the other. The finding corroborates with the African regional survey conducted across the seven countries by Pew Research Center (2015) which reported that ownership of mobile phones are very high in South Africa and Nigeria, with roughly two-thirds or more attest to own a cell or mobile phone.

Research Question Two: What is the level of tertiary institution students' self-efficacy in the use of mobile technology in South-Western Nigeria?

Table 2: Tertiary Institution Students' Level of Self-Efficacy in Mobile Technology Use

ITEM	SA	A	D	SD	Mean	Std. Dev.
I don't need assistance to browse using my mobile device	288 (64.4)	106 (23.7)	26 (5.8)	27 (6.0)	3.06	1.04
I can capture video materials using my mobile device	299 (66.9)	107 (23.9)	31 (6.9)	10 (2.2)	3.45	.86
I can attach document to e-mails with my mobile device	283 (63.3)	116 (26.0)	31 (6.9)	17 (3.8)	3.56	.71
I can search for academic materials using my mobile device	297 (66.4)	106 (23.7)	21 (4.7)	23 (5.1)	3.49	.78
I can capture pictures using my mobile device	354 (79.2)	81 (18.1)	9 (2.0)	3 (0.7)	3.54	.76
I can download educational materials from the internet using my mobile device	293 (65.5)	126 (28.2)	20 (4.5)	8 (1.8)	3.75	.53
I can create a folder in my mobile device	256 (57.3)	130 (29.1)	43 (9.6)	18 (4.0)	3.58	.68

I can make video calls using mobile device	256 (57.3)	130 (29.1)	43 (9.6)	18 (4.0)	3.50	.73
I can check incoming mails using mobile device	279 (62.4)	119 (26.6)	37 (8.3)	12 (2.7)	3.38	.83
I can create a shortcut menu in my mobile device	254 (56.8)	138 (30.9)	39 (8.7)	16 (3.6)	3.49	.76
I can move or delete an application using my mobile device	278 (62.2)	135 (30.2)	28 (6.3)1	6 (1.3)	3.41	.79
I can create a word file and save it with my mobile device	252 (56.4)	135 (30.2)	46 (10.3)	14 (3.1)	3.53	.67
I can move a file in and out of a folder on my mobile device	270 (60.4)	121 (27.1)	40 (8.9)	16 (3.6)	3.40	.81
I can locate files easily in my mobile device	282 (63.1)	123 (27.5)	29 (6.5)	13 (2.9)	3.44	.79
I can use different soft wares with my mobile device	235 (52.6)	129 (28.9)	55 (12.3)	28 (6.3)	3.48	.76

Source: Field Survey (2018); Benchmark for Mean ratings ranges from: 0.1-1.4=SD, 1.5-2.4=D, 2.5-3.4=A &3.5-4.0=SA)

Table 2 presents the level of tertiary institution students' self-efficacy in the use of mobile technology, the result revealed 88.1% of the students sampled agreed that they don't need assistance to browse using their mobile device while 11.9% disagreed (mean=3.06, SD=1.04). Similarly, 90.1% agreed that they can capture video materials using their mobile device while 9.9% disagreed (mean 3.45, SD=0.86). In the same vein, 89.3% agreed that they can attach document to e-mails with my mobile device while 10.7% disagreed (mean= 3.56, SD=0.71). More so, 90.1% of the respondents agreed that they can search for academic materials using my mobile device while 9.9% disagreed (mean=4.49, SD=78).

The general indication from the finding is that the level of tertiary institution students' self-efficacy in the use of mobile technology in Western-Nigeria is high since majority of the mean responses range from 3.0-4.0. Hence, inference could be made that tertiary institution students have a high level of self-efficacy in mobile technology/device use.

The finding agrees with the digital nativity of Prensky (2001) who refers to students born after 1985 as digital natives; since majority of tertiary

institution students covered belong to digital native group. Findings further partially agree with the submission of Riham (2014) who concluded that students' attitude towards mobile-technology use was positive.

Research Question Three: What is the level of preparedness of tertiary institution students towards the adoption of mobile-learning technology in South-Western Nigeria?

Table 3: Level of Tertiary Institution Students' Preparedness towards the Adoption of Mobile-Learning Technology

Item	SA	A	SD	D	Mean	Std. Dev.
I have a mobile device with facilities for browsing	293 (65.5)	115 (25.7)	21 (4.7)	18 (4.0)	3.53	.77
I always have subscription for internet usage on my phone on weekly basis	185 (41.4)	164 (36.7)	53 (11.9)	45 (10.1)	3.09	.96
Accessing course material on mobile device is not a problem to me.	242 (54.1)	142 (31.8)	38 (8.5)	25 (5.6)	3.34	.86
I always search for academic resources on my mobile device	238 (53.2)	144 (32.2)	28 (6.3)	37 (8.3)	3.30	.91
I always chat to contribute to educational problems on my mobile device.	254 (56.8)	137 (30.6)	21 (4.7)	35 (7.8)	3.36	.89
My phone has strong longer hours of power for browsing.	175 (39.1)	166 (37.1)	62 (13.9)	44 (9.8)	3.06	.96
I could delete materials very fast.	267 (59.7)	131 (29.3)	33 (7.4)	16 (3.6)	3.45	.78
I could open documents of different formats on my mobile phone	234 (52.3)	125 (28.0)	41 (9.2)	47 (10.5)	3.22	.99
I have basic knowledge of mobile computing	249 (55.7)	148 (33.1)	30 (6.7)	20 (4.5)	3.40	.80
My phone has a strong battery to stay connected every day	170 (38.0)	165 (36.9)	56 (12.5)	56 12.5)	3.00	1.00

I could receive and send mails without any hindrance on my mobile device.	226 (50.6)	139 (31.1)	48 (10.7)	34 (7.6)	3.25	.93
My phone has a wide screen for easy preview.	193 (43.2)	153 (34.2)	55 (12.3)	46 (10.3)	3.10	.98
I could solve simple arithmetical problems on my mobile phone	215 (48.1)	135 (30.2)	51 (11.4)	46 (10.3)	3.16	.99
Sending information is not a problem for me using my mobile device.	265 (59.3)	126 (28.2)	26 (5.8)	30 (6.7)	3.40	.87
I do not have problem of occasional network fluctuation in my location.	133 (29.7)	125 (28.0)	75 (16.8)	114 (25.5)	2.62	1.16

Source: Field Survey (2018) Benchmark for Mean ratings ranges from: 0.1-1.4=SD, 1.5-2.4=D, 2.5-3.4=A &3.5-4.0=SA

Table 3 shows the level of preparation of tertiary institution students for the adoption of mobile devices for learning activities, the result revealed that 91.2% of the respondents agreed that they have a mobile device with facilities for browsing while 7.8% disagreed (Mean=3.53, SD=0.77). So also, 78.1% agreed that they always have subscription for Internet usage on their phone on weekly basis while 21.9% disagreed (mean=3.09, SD=0.96). Similarly, 85.9% agreed that accessing course-related material on mobile device is not a problem to them while 14.1% disagreed (mean=3.34, SD=0.86). Responding on the need to always search for academic resources on their mobile device, majority (91.1%) of the tertiary institution students attested through their agreement, while only 8.3% disagree (Mean=3.30, SD=0.91). In response to the capacity of their mobile phone battery to stay connected throughout the day, the majority (88.0%) affirmed while 12.5% disagree; (Mean=3.0, SD=1.0). Lastly, on the students' ability to solve simple arithmetical problems using their mobile phone, the majority (89.3%) attested in affirmation while 10.3% decline (Mean=3.16, SD=.99). The only exception is the problems associated with occasional network fluctuation that recorded a low rating (Mean=2.62, SD=1.16).

Arising from the findings, tertiary institution students' mean ratings range from 3.0-4.0 which is an indication that majority agreed with nearly all the statements but for one. Generally, it could be concluded that majority of the tertiary institution students are highly prepared to adopt

mobile-learning technology (MLT) as they could perform basic digital operations on mobile technology devices. This finding agrees totally with the digital nativity classification of Prensky (2001) who referred to students born after 1985 as digital natives because the majority of Oyo State tertiary institution students covered in this study are digital natives. Also, corroborate the findings of Callum, Jeffrey and Kinshuk (2014) that infers that use of mobile devices have developed greatly over the last few years.

Hence, inference could be made that tertiary institution students are highly prepared for the adoption of mobile-learning technology as supplementary to the conventional teaching approaches.

Summary of Findings

Summary of findings arising from this study based on the three questions earlier asked are as follows:

1. Majority of the tertiary institution students in South-Western Nigeria own and use smartphones which is more than the other type of mobile devices in use
2. Very high level of self-efficacy on use of mobile technology was reported as perceived among tertiary institution students in South-Western Nigeria.
3. There was a very high rate of mobile phone-ownership among tertiary institution students in Western-Nigeria.
4. Hence, inference could be made that tertiary institution students in Western-Nigeria are highly prepared for the adoption of mobile-learning technology (MLT).

Conclusion

Arising from the findings from this study, we conclude that there is perceived high self-efficacy on the use of mobile technology among tertiary institution students in South-Western Nigeria. This is reflected in a very high rate of mobile phone-ownership and use of smart phones which is an indication that tertiary institution students in South-Western Nigeria are highly prepared to adopt mobile-learning technology (MLT) as supplementary to the conventional teaching approaches that is mostly prevalent among tertiary institutions in Nigeria as at the time of this study.

Recommendations

Arising from the findings of this study we recommend that:

1. Tertiary institution students in Western-Nigeria should diversify their social use of the mobile phone for social interactions towards academic activities since, majority of them reported high rate of ownership of smartphones.
2. Tertiary institution lecturers in Western-Nigeria should explore curriculum integrating of mobile-learning technologies alongside the conventional method of teaching.
3. Higher education leaders and administrators especially, in Western-Nigeria should put in place workable institutional Information Technology (IT) policy that will encourage both lecturers and students to adopt and use mobile-learning technology (MLT).
4. Proper implementation of the Nigerian IT Policy should be intensified by relevant government agencies.
5. Researchers in Nigeria should focus their efforts on reporting the use of mobile-learning technologies in teaching and learning so as to contribute to the existing body of knowledge.
6. There should be synergy between instructional developers and experts in curriculum/courseware development and other professional in: information technology (IT), broadcasting/media education/mass communications, computer/information science, educational/media technology and other related field of studies to fashion out strategies for the development and deployment of teaching and learning using mobile applications and technologies in various subjects and courses for all category of students/pupils from pre-primary, post-primary to tertiary education respectively.

References

Allen, R. (2011,). Can Mobile Devices Transform Education*? Education Update* on Retrieved from 12/09/2018 from: http://www.ascd.org/publications /newsletters/education-update/feb11/vol53/num02/Can-Mobile-Devices-Transform-Education¢.aspx

Anyanwu, E. U., Ossai-Onah, O. V. & Nse, J. (2012). Use of Mobile Phones for Research Among Undergraduates in Two Polytechnic Libraries in Imo State, Nigeria. *The Information Manager, 1 & 2*, 52-55. Retrieved on 20/7/2018 from: https://www.academia.edu/5056672/Use of Mobile Phones for

Research Among Undergraduates inTwo Polytechnic Libraries i n Imo StateNigeria.by

Arash , N., & Chih-Hung , C. (2014). Discovering Determinants of Users Perception of Mobile Device Functionality Fit. *Computers in Human Behaviour*, 75-84.

Callum, K. M., Jeffrey , L. & Kinshuk. (2014). Factors Impacting Teachers' Adoption. *Journal of Information Technology Education: Research, 13*. Retrieved on 20/7/2018 from: http://www.jite.org/documents/Vol13

Dawabi, P., Wessner, M., & Neuhold, E. (2004). Using Mobile Devices for the Classroom of the Future: Learning with Mobile Devices. *Research and Development*, 55-60

Francis, B. O., Clive, T. & Jey, N. (2013). Prospects and challenges of mobile learning implementation in Nigeria: case study of National Open University of Nigeria. *International Conference on ICT for Africa, Harare, Zimbabwe.* Retrieved on 13/10/2018 from: http://www.aijcrnet.com /journals /Vol 5 No 4 August 2015/12.pdf

Judge, S., Puckett, K., & Bell, S. (2006). Closing the Digital Divide: Update from the Early Childhood Longitudinal Study. *The Journal of Educational Research, 100,* 52-60. Retrieved on 10/08/2018 from: http://dx.doi.org/10.3200/ JOER. 100.1.52-60

Kahveci M.. (2010). Student's Perceptions to Use Technology for Learning: Measurement Integrity of The Modified Fennema-Sherman Attitudes Scales. *The Turkish Online Journal of Educational Technology* 9(1), 185-201.

Majumdar, S. (2006). *Emerging Trends in ICT for Education & Training.*

Mamudu, P. A. & Oyewo, A. O. (2015). Use of Mobile Phones for Academic Purposes by Law Students of Igbinedion University, Okada Nigeria. *Scientific and Academic Publishing*. Retrieved on 15/11/2016 from: http:// article.sapub.org/10.5923.j.library.20150404.01.html

Milrad, M. (2006). How Should Learning Activities using Mobile Technologies be Designed to Support Innovative Educational Practices*? Kaleidoscope*. Nottingham

Mtega, W. P., Bernard, R., Msungu, A. C. & Sanare, R. (2012). Using Mobile Phones for Teaching and Learning Purposes in Higher Learning Institutions: the Case of Sokoine University of Agriculture in Tanzania. *Proceedings and report of the 5th UbuntuNet Alliance annual conference,* (pp. 118-129). Retrieved on 15/10/2016 from: https://www.ubuntunet.net/sites/default/files /mtegaw.pdf#

Onasanya S. A., Samuel, N. & Onasanya, T. O. (2012). Digital Mobile Devices and Students' Acquisition of Hidden Curriculum in Nigerian Senior Secondary Schools. A Multi-disciplinary Publication of 13th the West Africa University Games Forum). *International Journal of the 13th West Africa University Games,* 1 (1). Retrieved on 20/10/2018 from: http://westafricauniversitygames.org/Publication/waugj/index.php/waugj/index

Otunla, A. O. & Akinyemi, J. O. (2014). Technology Integration in the Classroom: Report of an Asynchronous Online Discussion among a Group of Nigerian Graduate Students in B. F. Adeoye and L. Tomei (Eds) *Effects of Information Capitalism and Globalization on Teaching and Learning.* United States of America: IGI Global; Information Science Reference. DOI: 10.4018/978-1-4666-6162-2.ch013; Available @: http://www.igi-global.com Pp. 154-153.

Pew Research Center (2015) *Cell Phones in Africa: Communication Lifeline*. Retrieved online on 13/10/2018 from: http://www.pewglobal. org/ files/ 2015/04/Pew-Research-Center-Africa-Cell-Phone-Report-FINAL-April-15-2015.pdf

Prensky, M. (2001) Digital Natives, Digital Immigrants. *On the Horizon, 9* (6), 1-6.

Rouse, M. (2005). ICT) *Information and Communication Technology* Retrieved Online on 20/7/2018 from: www.maximise.ICT.co

Rouse, M. (2014). *Tablet (Tablet PC).* Retrieved online on 20/7/2018 from: http://searchmobilecomputing.techtarget.com/definition/tablet-PC

Schofield, C. P., West, T., & Taylor, E. (2011). How mobile technologies are changing the executive learning landscape. Retrieved on 20/7/2018 from:https://uniconexed.org/2011/research/UNICON-Going Mobile In Executive Education-Schofield-Taylor-West-Nov-2011.pdf

Yang, S. (2012). Exploring College Students' Attitudes and Self-Efficacy of Mobile Learning. *The Turkish Online Journal of Educational Technology, II*(4).

United Nations Educational Scientific and Cultural Organisation. (2015). ICT in Education. Accessed online on 10/08/2017 @: http://www.unesco.Org /new/en/unesco/themes/icts/m4ed/

.