Students' Attitudes towards the Use of Mobile Learning in Universities of Northeast Nigeria

Ahmed Alkali JIME[1], Bashir Mohammed Abdul-Rahman SAEED[2], and Iya Aliyu Gana[3]

1, 3: Education Department, Faculty of Education, University of Maiduguri
Email: ahmadjime@unimaid.edu.ng
Email: aliyuganaiya@gmail.com

2: Department of Educational Sciences, Faculty of Education El Hassahissa, University of Gezira, Republic of Sudan
Email: bishbishbish656@gmail.com

Abstract

The study aimed to explore students' attitudes towards mobile learning in northeast Nigerian universities. The research involved a cross-sectional survey design, involving 347 students from a population of 5,527. The researchers used a self-developed instrument called Students' Attitudes on Mobile Learning Tool (SAMTL) to collect data. The results showed that the majority of students aged 26 to 35 enrolled in m-learning programs, were highly motivated by the content on the LMS, and were satisfied with their scores obtained through m-learning. Over 60% of the respondents were satisfied with their scores, and over 80% believed that m-learning equipped them with the necessary skills to face competitive work environments. The study also found a statistically significant difference in mean scores between individuals with mobile phones and those without, suggesting a potential association or impact of mobile phone possession on the measured variable. The findings propose that m-learning can equip students with the necessary skills to succeed in a competitive work environment. The study highlights the importance of understanding students' attitudes towards mobile learning in promoting academic success and job skill acquisition. The study also recommended that institutions should enhance the quality and variety of LMS content to maintain high levels of student engagement and motivation. Provide diverse learning materials, including interactive modules, videos, and real-world case studies, to cater to different learning preferences; and institutions should continue to focus on the development of skills that are relevant to the competitive work environment, offer workshops, webinars, and interactive sessions on soft skills, technical skills, and industry-specific knowledge. Also, collaborate with industry professionals to provide mentorship and real-world insights.

Keywords: M-learning, Students, Attitudes, Open, Distance, Learning

Background of the study

The tremendous expansion of information and communication technology (ICT) coupled with the popularity of the internet and the recent outbreak of the novel coronavirus (COVID-19) has increased the shift of many academic activities to mobile learning (m-learning). On the other hand, the omnipresence of mobile devices and fast Internet connectivity has provided people with the advantage of being connected anytime and anywhere. Mobile

learning or m-Learning is commonly associated with mobile technology, especially mobile phones (Mizad et al., 2018).

Furthermore, m-learning has been regarded as wireless learning and a subset of e-learning that focuses more on using personal computers such as desktop computers with Internet access to learn (Rahamat et al., 2017). The letter "m-," which refers to "mobile" in m-learning, is only a mode (medium) of learning, and a mobile phone or tablet PC is only a tool to enhance the learning process (Hussain et al., 2012). The scholar further added that the major focus of m-learning is the learning itself rather than the technology represented by mobile phones (Hussain et al., 2012).

Motivation is a central part of a student's educational experience from preschool onward, but it has received less attention amid an education reform agenda focused mainly on accountability, standards and tests, teacher quality, and school management. Motivation refers to the fun or pleasure derived from using technology. To implement m-learning in higher institutions, the learners need to be motivated and feel the excitement to utilize mobile phones for educational purposes (Alsoud & Harasis, 2021).

Scholars argued that attitudes towards any educational technology could be used to measure to which extent the users of the technology (students and educators) have the ambition to use the technology and whether this technology has positive or negative impacts on the environment. Empirically, studies have supported that users' attitudes lead to the intentions of use and the actual user of the new system. Thereby, attitudes can provide a context for understanding the learner's intention of usage and acceptance of new m-learning technology (Zogheib & Daniela, 2022).

Statement of the Research Problem

Mobile learning is one of the potential alternatives to expand access to education globally. It is evident nowadays that the technological advancement and the gap in real contact created by the COVID-19 pandemic have caused a shift from face-to-face educational activity to m-learning. Many researchers have extensively studied the impact of m-learning and students' attitudes towards it and have found that m-learning has many benefits such as ensuring the continuity of education (Akinbadewa & Sofowora, 2020; Seage & Türegün, 2020), providing lifelong learning (Salhab & Daher, 2023), and reducing the high costs associated with traditional education (Alsoud & Harasis, 2021). Also, studies on m-learning have reported some limitations such as teaching methods, scheduling, and time have existed since the teacher and the learner were located in different places (Alsoud & Harasis, 2021).

However, because decisions relating to integrating technology into education are often made at the higher managerial (constitutional) level, it is the students' attitudes, readiness, and intentions to adopt the new technology that makes for (accounts for/leads to) successful implementation of m-learning. Therefore, knowing how and why individuals adopt new technology has been of interest to many researchers. Moreover, it is essential to understand the reasons why some students adopt a particular technology and reject another (Straub, 2019). Consequently, the northeastern region of Nigeria has been termed as an educationally disadvantaged region, and the Boko Haram insurgency has also contributed significantly to the infrastructural decay of institutions of learning in the region. This is another reason for studying the attitude of students towards m-learning before thinking of a rapid educational development in the region. Hence, this research investigates students' attitude towards m-learning in Nigerian Universities, specifically in the Northeast.

Research Objectives

1. Determine the age category of students who enrol into academic programmes that exclusively use m-learning
2. Determine student's satisfaction with use of mobile learning for academic activities in the Universities;
3. Determine the attitude of students towards using m-learning for job skill acquisition
4. Understand if the student's possession of mobile devices has any influence on their technological skills for mobile learning.

Research Questions

1. What is the age category of students that enrol into programmes that exclusively use m-learning?
2. Are students who engage in m-learning at the Universities satisfied with their academic achievement through m-learning
3. What is the attitude of students towards using m-learning to enhance job skills

Research Hypothesis

HO_1: there is no significant difference between the mean score of students' possessions of technological gadgets and their skill set for mobile learning.

Methodology

Design of the Study

The study adopts a cross-sectional survey research design in studying the attitude of students towards the use of mobile learning in Nigerian Universities, especially in northeast Nigeria.

Descriptive survey design is a procedure in quantitative research which enables investigators to administer a survey to a sample or to the entire population of people to describe the attitudes, behaviour, opinions, or characteristics of the population (Creswell, 2014).

Area of the Study

The study area for this study is the northeastern states in Nigeria, comprising six (6) states (Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe). The northeast zone lies between the location of latitude 15.4653° East and longitude 11.5648° north.

Population of the Study

The population of the study consists of all undergraduate students in the Federal Universities in Northeast Nigeria, who are enrolled on the distance learning programmes at the 2022/2023 session that deliver the teaching contents exclusively via m-learning. However, documents obtained from the National Universities Commission (NUC) revealed that only two (2) Universities (Modibbo Adama University of Technology, Yola and the University of Maiduguri) have the approval to operate open and distance learning programmes in the northeast. Therefore, the population of this study was restricted to these two (2) Universities.

Sample and Sampling Technique

Since there is no heterogeneity in the population, the researcher combined the population of students from the University of Maiduguri and those from Modibbo Adama University of Technology Yola. He derived a sample for this study using Krejcie and Morgan (1970) table for sample size. Comprehensively, there is a population of five thousand, five hundred and twenty-seven (5,527) students registered into the ODL programmes in the two (2) institutions in the northeastern state of Nigeria. Hence, a sample of three hundred and sixty-one (361) was drawn for analyses in the study, as was calculated below and shown in table 3.

Instrument for Data Collection

The researcher used a self-designed instrument named Students' Attitudes on Mobile Learning Tool (SAMTL) to collect data for analysis in this study. The instrument consists of a general information section and five (5) other sections with twelve (12) items each, targeted to address each of the five (5) research questions raised in the study.

Validation and Reliability of the Instrument

Face validity and content validity are two forms of validity that are usually assessed qualitatively. Face validity measures what the instruments are intended to measure. Content validity ensures that the instruments contain questions which cover all aspects of the construct being measured. The constructed instrument was validated by the research

supervisors and other experts in educational psychology and educational technology from the University of Maiduguri and University of Jos in Nigeria, and the University of Gezira, republic of Sudan. The validation score is calculated at 0.67. The different parts of the questionnaire are calculated for reliability separately for each construct. Because the instrument has a Likert scale, the researcher used the split-half method and applied the Spearman-Brown formula to calculate the reliability of the instrument. This method provides the researcher with information on how consistently the measure assesses the construct of interest. Because multiple constructs were involved in the study, the researcher separated the constructs that were being measured as suggested by (Korb, n.d.). The reliability coefficient of the instrument was established to be 81.73.

Procedure for Data Collection

The researcher was introduced to the Centres of Distance Learning at the University of Maiduguri and Modibbo Adama University of Technology, Yola through a letter from the University of Gezira. Data was collected electronically employing secure survey applications known as the Kobo Toolbox, which is an innovative open-source platform for data collection, management, and visualization. This open-source software is powered by Enketo web forms and can be assessed using any browser on mobile devices, laptops, or desktops. The web form URL was distributed to the Universities via a letter written by the researcher to the centres following his introduction by the University of Gezira. After which, the link was shared on the Learning Management System (LMS) for students to access and respond to the survey.

Method of Data Analysis

Survey responses were analysed using descriptive statistics, specifically frequency count, percentage, mean and standard deviations to answer the research questions and define the population parameters. The IBM SPSS version 25 was used to perform all the analyses mentioned in the study. Descriptive statistics helps to summarize the overall trends or tendencies in the data. It provides an understanding of how varied the scores might be, and provides an insight into where one score stands in comparison with others through the application of central tendency (mean, median, and mode) and variability (variance, standard deviation, range), 2014).

Results and Discussion

RQ1: What is the age category of students that enrol into programmes that exclusively use m-learning?

Table 1: Age category of the respondents

Value	Frequency	Percentage
15–25 years	14	3.79
26–35 years	226	61.25
36–45 years	89	24.12
Above 45 years	18	4.88

Source: survey data (2023)

Data in table 1 above shows the age category of respondents to this survey and the trend indicates that the majority of the respondents (61.25 %) are between the ages of 26 to 35 years, closely followed by those between the ages of 36 to 45 with 24 %. The data also revealed that very few young people between the ages of 15 to 25 years enrol into programmes that are exclusively delivered through m-learning.

RQ 2: Are students who engage in m-learning at the Universities satisfied with their academic achievement through m-learning.

Table 2: Independent study time of students (hours) per day?

Value	Frequency	Percentage
1 hour	46	12.47
2 hours	117	31.71
3 hours	99	26.83
4 hours	63	17.07
5 hours	14	3.79
6 hours	7	1.90
Above 6 hours	1	0.27

Source: survey data (2023)

Data on table 2 describes the distribution of independent study time (in hours per day) among students. This data shows that very few students (0.27%) study for more than 6 hours per day. The distribution shows that most students using m-learning study between 1 and 4 hours per day.

Table 3: Students motivated by the learning contents on the LMS

Value	Frequency	Percentage
Strongly Agree	103	27.91
Agree	232	62.87
Disagree	4	1.08
Strongly Disagree	8	2.17

Source: survey data (2023)

The data in table 3 describes the motivation levels of students regarding the learning contents on the Learning Management System (LMS). The majority of students (62.87%) agree that the learning contents on the LMS motivate them, and a significant portion (27.91%) strongly agree with the statement. Whereas, very few students (1.08% and 2.17%) disagree or strongly disagree with the statement, indicating that the learning contents on the LMS are generally well-received and considered motivating by most students.

Table 4: Satisfaction with scores obtained through m-learning

Value	Frequency	Percentage
Strongly Agree	89	24.12
Agree	225	60.98
Disagree	28	7.59
Strongly Disagree	5	1.36

Source: survey data (2023)

Data on table 4 describes the levels of satisfaction among students with the scores they obtained through mobile learning (m-learning)The majority of students (60.98%) agree that they are satisfied with the scores they obtained through m-learning, data also indicates that significant portion (24.12%) strongly agree with the statement. However, a smaller portion of students (7.59%) disagree, and very few (1.36%) strongly disagree with the statement. Overall, the data indicates a high level of satisfaction with m-learning scores among the students.

RQ3: What is the attitude of students towards using m-learning to enhance job skills?

Table 5: Self-motivated to study through m-learning

Value	Frequency	Percentage
Strongly Agree	78	21.14
Agree	251	68.02
Disagree	14	3.79
Strongly Disagree	4	1.08

Source: survey data (2023)

This table describes the levels of self-motivation among students to study through mobile learning (m-learning). The majority of students (68.02%) agree that they are self-motivated to study through m-learning, where a significant portion (21.14%) strongly agree with the statement. Although, a smaller portion of students (3.79%) disagree, and very few (1.08%) strongly disagree with the statement. Generally, the data indicates a high level of self-motivation to study through m-learning among the students.

Table 6: I think learning through mobile has the benefit of equipping me with the required skills to face the challenges of a competitive work environment.

Value	Frequency	Percentage
Strongly Agree	62	16.80
Agree	243	65.85
Disagree	34	9.21
Strongly Disagree	8	2.17

Source: survey data (2023)

Table 6 describes students' perceptions of whether learning through mobile (m-learning) equips them with the required skills to face the challenges of a competitive work environment. The data reveals that the majority of students (65.85%) agree that m-learning benefits them by equipping them with the required skills to face the challenges of a competitive work environment. Although, a significant portion (16.80%) strongly agree with the statement, where smaller portion of students (9.21%) disagree, and very few (2.17%) strongly disagree with the statement. Comprehensively, the data indicates that most students believe that m-learning is beneficial in preparing them for the competitive work environment.

Table 7: I think the academic experience gained through m-learning matches that which can be acquired through conventional face-to-face learning.

Value	Frequency	Percentage
Strongly Agree	55	14.91
Agree	233	63.14
Disagree	50	13.55
Strongly Disagree	9	2.44

Source: survey data (2023)

Data on table 7 describes students' perceptions of whether the academic experience gained through mobile learning (m-learning) matches that which can be acquired through conventional face-to-face learning, the majority of students (63.14%) agree that the academic experience gained through m-learning matches that of conventional face-to-face learning. But, a significant portion (14.91%) strongly agree with the statement, and a smaller portion of students (13.55%) disagree, and very few (2.44%) strongly disagree with the statement. The data indicates that most students believe that m-learning provides an academic experience comparable to that of conventional face-to-face learning.

HO1: there is no significant difference between the mean score of students' possessions of technological gadgets and their skill set for mobile learning.

Table 8: t-test Analysis of the mean score of Students' Possession of Technological Gadgets and their skill set for m-learning

Mobile Phone Procession	N	Mean	SD	df	t	p-Value	Remark
Yes	341	28.83	4.83				
				345	2.238	0.02	HO_1 is rejected
No	6	24.17	6.59				

Source: survey data (2023)

The provided information appears to be a snippet from a statistical analysis, specifically Table 4, detailing the comparison of mean scores between two groups based on mobile phone possession. The table showcases statistics for individuals who possess a mobile phone (n = 341) and those who do not (n = 6). The mean score for individuals with mobile phones is 28.83 with a standard deviation of 4.83, while for those without phones, the mean score is 24.17 with a higher standard deviation of 6.59. The analysis conducted using a t-test with 345 degrees of freedom resulted in a calculated t-value of 2.238 and a corresponding p-value of

0.02. Notably, the p-value of 0.02 falls below the typical significance threshold of 0.05, indicating statistical significance. Consequently, the null hypothesis Ho1 (which presumably posited no difference between the means of the two groups) is rejected. This hypothesis suggests that there is a statistically significant difference between the mean scores of individuals with mobile phones compared to those without, likely implying a potential association or impact of mobile phone possession on the measured variable.

Discussion of Findings

According to the study, the majority of people enrolled in m-learning programmes are between the ages of 26 and 35. Most mobile learning programmes are appropriate for people who do not have the opportunity to attend advanced-level education at the appropriate age. Females who marry young tend to return to school after childbearing, and m-learning provides them with opportunities that they would not have had otherwise. Furthermore, self-sponsoring individuals who enter a trade, work, obtain the Nigerian Certificate of Education, or gain vocational education after secondary education would only begin to be financially independent in this age range. This finding is in tandem with that of Adamu (2022) where he stressed that the sampled students who chose to study via m-learning in Nigeria were aged 25–34. This was followed by those who were engaged in a particular career and saw m-learning as opportunities to gain a higher certification while retaining their career (27% of respondents).

The study also found that majority of the students that enrol on m-learning programmes can independently study for 1 to 3 hours daily, and they are also highly motivated by the contents on the LMS. More so, the majority of the respondents are satisfied with the scores they obtain through m-learning. This finding also conforms to the findings of Mizad et al. (2018) which suggests that 94% of the respondents agreed that m-learning courses are interesting, and they are highly motivated and satisfied with m-learning.

Excelling in m-learning involves aspects of motivation, attention, and the learning readiness process itself. Motivation is not the only absolute condition that must be met to learn well, but plays an important role in determining m-learning success (Nursaptini, et al. 2020). This survey indicated that over 80% of students are self-motivated to study via m-learning and believe it prepares them for a competitive work environment. As a result, they have favourable attitudes towards m-learning, which provides them with the necessary skill set to succeed. These findings also agrees with the study by (Salhab & Daher, 2023) in which participants reported a wide range of motivators for them to persist while learning, with their

peers and the instructor as being the most significant. A student stated: "This class was different in terms of sharing my opinions on many tools like Padlet, google documents, and forums. I believe mobile devices motivate students to share their opinions" This implies that m-learning affected the students' attitudes by having motivating content and a motivating instructor.

An independent sample t-test was performed in order to test if there is any statistical significance between the mean score of students who own mobile gadgets and their skill set for mobile learning (navigating through the LMS contents, sharing information and collaborating with other students remotely). The analysis conducted using a t-test with 345 degrees of freedom resulted in a calculated t-value of 2.238 and a corresponding p-value of 0.02. Conspicuously, the p-value of 0.02 falls below the typical significance threshold of 0.05, indicating statistical significance. This finding is in line with that of (Alsoud & Harasis, 2021) which was carried out on students from Midwestern University in the USA and students from Higher College of Technology in the UAE) indicated that students who own smartphones (114 students) were more positive towards M-learning and skilled than those who do not own them (12 students) with ($p < 0.03$).

Summary of Findings

1. The study found that mostly, people between the ages of 26 to 35 form the majority of the enrolments on m-learning programmes.
2. The study also found that majority of the students that enrol on m-learning programmes can independently study for 1 to 3 hours daily, and they are also highly motivated by the contents on the LMS. More so, over 60 % of the respondents are satisfied with the scores they obtain through m-learning
3. Consequently, the study found that more than 80 % of the students are self-motivated to study using m-learning and also believe that m-learning equips them with the necessary skill set to face the challenges of a competitive work environment. Therefore, they have positive attitudes towards m-learning, equipping them with the required skill set to strive.
4. The study finally found that there is a statistically significant difference between the mean scores of individuals with mobile phones compared to those without, likely implying a potential association or impact of mobile phone possession on the measured variable

Conclusions

According to the study, the majority of individuals enrolled in m-learning programs are between the ages of 26 and 35. These programs cater to those who missed the opportunity for advanced education at the conventional age, such as females returning to education after childbearing and individuals gaining financial independence later through vocational or trade education. This aligns with Adamu (2022), who found that most m-learning students in Nigeria were aged 25-34, with many viewing m-learning as a path to higher certification while maintaining their careers. The study also revealed that most students can independently study for 1 to 3 hours daily and are highly motivated by the LMS content, with a significant majority satisfied with their m-learning scores, echoing Mizad et al. (2018). Excelling in m-learning involves motivation, attention, and learning readiness, with over 80% of surveyed students self-motivated and believing m-learning prepares them for a competitive work environment. This finding aligns with Salhab and Daher (2023), who noted the importance of peer and instructor support in m-learning. An independent sample t-test indicated a statistical significance between the mean scores of students who own mobile gadgets and their skills in navigating LMS content and collaborating remotely, consistent with Alsoud and Harasis (2021). Overall, the study suggests that m-learning provides a comparable academic experience to conventional learning, equipping students with necessary skills and maintaining high levels of motivation and satisfaction.

Recommendations

1. Institutions should develop a targeted marketing and outreach campaigns aimed at individuals aged 26 to 35. Highlight the benefits of m-learning for career advancement, skill development, and flexible learning schedules that fit their lifestyle.
2. Institutions should enhance the quality and variety of LMS content to maintain high levels of student engagement and motivation. Provide diverse learning materials, including interactive modules, videos, and real-world case studies, to cater to different learning preferences.
3. Institutions should continue to focus on the development of skills that are relevant to the competitive work environment. Offer workshops, webinars, and interactive sessions on soft skills, technical skills, and industry-specific knowledge. Also, collaborate with industry professionals to provide mentorship and real-world insights.
4. The Federal Government of Nigeria through the Federal Ministry of Communications, Innovation, and Digital Economy in collaboration with the Federal Ministry of Education

should increase access to mobile devices for all students to bridge the digital divide and ensure equitable learning opportunities. Consider partnering with mobile device manufacturers and service providers to offer discounted or subsidized devices and data plans for students.

References

Adamu, A. U. (2022). *Status of Open and Distance education in Nigeria: Commonwealth of Learning:* British Columbia Canada. Pp 30-31.

Akinbadewa, B.O., & Sofowora, O.A. (2020). The effectiveness of multimedia instructional learning packages in enhancing secondary school students' attitudes toward Biology. *Int. J. Stud. Educ.*, 2, 119–133.

Alsoud, A. R., & Harasis, A. A. (2021). The Impact of COVID-19 Pandemic on Student's E-Learning Experience in Jordan. *Journal of Theoretical and Applied Electronic Commerce Research, 16*(5), 1404–1414. https://doi.org/10.3390/jtaer16050079

Creswell, J. W. (2014). *Educational research planning: Conducting, and evaluating quantitative and qualitative research*. PHI Publishers.

Hussain, S., M.R. Manap, Z. Amir & Krish, P. (2017). Mobile learning readiness among Malaysian students at higher learning institutes. *Asian Social Science, 8*(12): 276. Available at: https://doi.org/10.5539/ass.v8n12p276.

Korb, D. K. A. (n.d.). Calculating reliability.

Krejcie, R. V. & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement,* 30, 607-610.

Mizad, M., Yusoff, Z. S., Sayadi, Z. A., Latif, A. A., & Sukiman, S. L. (2018). Students readiness and motivation to use mobile phone for learning English at higher learning institution. *International Journal of Asian Social Science, 8*(11), 1077–1087. https://doi.org/10.18488/journal.1.2018.811.1077.1087

Nursaptini, Syazali, M., Sobri, M., Sutisna, D., & Widodo, A. (2020). Profil kemandirian belajar mahasiswa dan analisis faktor yang mempengaruhinya: komunikasi orang tuadan kepercayaan diri. *JPE (Jurnal Pendidikan Edutama), 7*(1), 1–30. Retrieved from https://ejurnal.ikippgribojonegoro.ac.id/index.php/JPE/article/view/711/pdf

Rahamat, R.B., Shah, P.M., Din, R.B. & Aziz, J.B.A. (2017). *Students' readiness and perceptions towards using mobile technologies for learning the English language literature component*. The English Teacher.

Salhab, R. & Daher, W. (2023). The Impact of Mobile Learning on Students' Attitudes towards Learning in an Educational Technology Course. *Multimodal Technologies and Interaction,* 7(74).

Seage, S.J.; Türegün, M. (2020). The effects of blended learning on STEM achievement of elementary school students. *International Journal of Resources in Education and Science* 6, 133–140.

Straub, E.T. (2019). Understanding Technology Adoption: Theory and Future Direction for Informal Learning. *Review of Educational research, 79*(2), 625-649.

Zogheib, B., & Daniela, L. (2022). Students' perception of cell phones' effect on their academic performance: A Latvian and a Middle Eastern University cases. *Technology, Knowledge and Learning, 27*(4), 1115–1131. https://doi.org/10.1007/s10758-021-09515-4