PREDICTORS OF MOBILE TECHNOLOGY ACCEPTANCE AMONG STUDENTS IN NIGERIAN UNIVERSITIES

Gana Abraham Sha'aba (PhD) & Abubakar Mohammed Ndanusa (PhD)
National Open University of Nigeria, (NOUN),
Faculty of Education and Learning Content Management System, Abuja[1],
Niger State Teachers Professional Development Institute, Minna[2]
abagny40@gmail.com, ndanusa006@gmail.com

Abstract

This study investigates the predictors of mobile technology acceptance among students in Nigerian universities, focusing on social influence and perceived ease of use. A survey design was employed to explore how these factors influence students' attitudes toward adopting mobile learning technologies. The study's population consisted of university students across various disciplines, with a purposive sampling method selecting 480 participants from seven Nigerian universities. Data were collected using a structured questionnaire measuring social influence, perceived ease of use, and students' attitudes toward mobile learning. The instruments' reliability was confirmed with Cronbach's Alpha coefficients of 0.84 for social influence and 0.80 for perceived ease of use. Descriptive statistics and regression analysis were used to analyze the data. The results indicate that social influence has a significant positive effect on students' attitudes toward mobile learning, with a Beta (β) of 0.437, $t = 8.976$, and $p < .001$. Perceived ease of use also significantly influences attitudes, although to a lesser extent, with a Beta (β) of 0.122, $t = 2.434$, and $p = .015$. These findings suggest that both social factors and usability play key roles in driving mobile technology acceptance. The study provides valuable insights into how educational institutions can foster mobile learning adoption by creating supportive social environments and ensuring the usability of mobile platforms.

Keywords: Mobile Technology Acceptance, Social Influence, Perceived Ease of Use, Student Engagement

Introduction

The integration of mobile technology into education is revolutionizing how students interact with learning resources. Mobile learning technologies provide access to academic content and collaborative tools, empowering students to learn at their own pace and from any location. In Nigeria, mobile learning is particularly advantageous in addressing challenges such as overcrowded classrooms, insufficient resources, and limited access to traditional learning tools. However, the successful adoption of mobile learning in Nigerian universities depends heavily on students' acceptance of these technologies.

Performance expectancy is a pivotal factor influencing technology acceptance. It refers to an individual's belief that using a specific technology will enhance their performance (Venkatesh et al., 2003). In the context of mobile learning, performance expectancy measures the extent to which students believe these technologies improve academic outcomes and facilitate better access to learning resources. Similarly, facilitating conditions, as defined by the Unified Theory of Acceptance and Use of Technology (UTAUT), pertain to the resources and infrastructure required to support effective technology use. These include access to reliable internet, technical support, and digital literacy training (Venkatesh et al., 2003).

Frameworks like the Technology Acceptance Model (TAM) and UTAUT have been extensively applied in research to analyze technology adoption. TAM emphasizes perceived usefulness and ease of use, while UTAUT incorporates additional constructs such as performance expectancy, social influence, and facilitating conditions. Together, these models offer comprehensive insights into the factors driving technology acceptance in education (Venkatesh et al., 2003).

Purpose of the Study

The purpose of this study is to investigate the factors influencing students' attitudes toward mobile learning technologies in Nigerian universities, focusing on social influence and perceived ease of use as predictors of technology acceptance.

Significance of the Study

This study is significant as it addresses the unique challenges associated with adopting mobile learning in Nigerian universities. These challenges, including infrastructural and economic limitations, often hinder technology integration. By examining the roles of social influence and perceived ease of use, the study provides a deeper understanding of how these factors interact to shape mobile learning acceptance. The findings aim to inform policies and strategies to improve the accessibility and effectiveness of mobile learning in higher education.

Research Objectives

1. To evaluate the impact of social influence on students' attitudes toward mobile learning.
2. To assess how perceived ease of use influences students' acceptance of mobile learning technologies.

Research Questions

1. To what extent does social influence affect students' attitudes toward mobile learning?
2. How does perceived ease of use influence students' attitudes toward mobile learning?

Research Hypotheses

HO1: Social influence does not significantly affect students' attitudes toward mobile learning.
HO2: Perceived ease of use does not significantly influence students' attitudes toward mobile learning.

Literature Review

Mobile Learning Concepts and Characteristics

Mobile learning (M-learning) is a form of e-learning that leverages mobile and wireless devices to deliver educational content. It allows for flexibility and accessibility, enabling students to learn across diverse environments. According to Deegan, and Rothwell (2010), M-learning is defined as "learning with the aid of a mobile device." Usability, an essential feature of M-learning, refers to how effectively, efficiently, and satisfactorily users achieve specific goals in particular environments (ISO, 1998).

Key characteristics of M-learning include usability, collaboration, mobility, connectivity, and content adaptability. Usability focuses on optimizing features like screen size, battery life, and user interfaces for educational purposes. Collaboration facilitates interactions between students and instructors, while mobility ensures learning materials are accessible anytime and anywhere. However, challenges such as implementation costs and the need for technical support can impact M-learning adoption, particularly in developing regions like Nigeria.

Applications and Requirements of Mobile Learning in Higher Education

Mobile technologies such as smartphones and tablets have become indispensable in higher education. These devices allow for enhanced interactivity, enabling students to access learning materials, share assignments, and engage in collaborative activities. For instance, learners can use wireless networks like Bluetooth or Wi-Fi to communicate and collaborate seamlessly. Video recording and self-assessment capabilities further enhance the learning experience.

However, successful implementation of mobile learning requires baseline infrastructural support. According to Mehdipour and Zerehkafi (2013), mobile technologies must be portable, unobtrusive, and adaptable to individual learning preferences. They should also facilitate lifelong learning by enabling continuous communication and resource management.

Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT model, developed by Venkatesh et al. (2003), provides a robust framework for understanding mobile learning adoption. The model identifies four key constructs:

1. Performance Expectancy (PE): Belief that using a technology will enhance performance.
2. Effort Expectancy (EE): Perception of ease of use associated with the system.
3. Social Influence (SI): Extent to which individuals perceive that important others expect them to use the technology.
4. Facilitating Conditions (FC): Perceived availability of resources and support for technology use.

UTAUT also considers moderating factors such as gender, age, and experience, which influence behavioral intentions.

Empirical Evidence on Mobile Learning Adoption

Several studies have applied UTAUT constructs to investigate technology adoption. For instance, Odegbesan et al. (2019) found that performance expectancy, effort expectancy, and social influence were key determinants of e-learning adoption in Nigerian universities. Similarly, Nwone and Mutula (2019) highlighted the significance of effort expectancy and facilitating conditions in professors' use of electronic resources.

In a South African context, Liebenberg et al. (2018) reported that performance expectancy and effort expectancy strongly influenced ICT adoption. Additionally, cultural and contextual factors, such as social influence, were significant predictors in studies by Mensah (2019). These findings collectively demonstrate the relevance of UTAUT constructs in analyzing mobile learning adoption behaviors.

Methodology

This study adopted a descriptive survey design to examine the influence of social influence and perceived ease of use on students' attitudes toward mobile learning in Nigerian universities. A descriptive survey design was deemed appropriate because it allows for the collection of quantitative data to analyze relationships among variables systematically. This approach facilitates the understanding of how specific factors, such as social influence and perceived ease of use, shape students' attitudes toward adopting mobile technologies for learning. A purposive sampling technique was employed to select a sample of 480 students from seven Nigerian universities. The sample included students from various academic disciplines, ensuring a diverse range of responses reflective of the broader student population. The purposive sampling method was chosen to target students with varying levels of exposure to mobile learning technologies, which enhanced the robustness and representativeness of the findings. A structured questionnaire was developed to collect data on the constructs of social influence, perceived ease of use, and students' attitudes toward mobile learning.

The instrument utilized a 5-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5), to measure participants' levels of agreement with statements related to each construct. The questionnaire was reviewed by experts in educational technology to ensure its content validity, relevance, and appropriateness for the study's objectives. To ensure the reliability of the instrument, a pilot test was conducted with 50 students who were not part of the final sample. The pilot test confirmed the reliability of the questionnaire, yielding Cronbach's Alpha values of 0.84 for social influence and 0.80 for perceived ease of use. These values indicate a high level of internal consistency for the constructs being measured, demonstrating the robustness of the data collection instrument. Data were analyzed using descriptive statistics and regression analysis with the help of SPSS software. Descriptive statistics, such as means and standard deviations, were used to summarize students' responses and provide insights into the central tendencies and variability of the data. Regression analysis was employed to determine the extent to which the independent variables (social influence and perceived ease of use) predicted the dependent variable (students' attitudes toward mobile learning). This statistical approach allowed for an in-depth examination of the strength and significance of relationships between the constructs, addressing the study's research questions and testing the hypotheses. The combination of validated instruments, pilot testing, and rigorous statistical analysis ensured the reliability and validity of the study's findings. This methodological framework provides a comprehensive approach to understanding the factors influencing students' attitudes toward mobile learning, offering valuable insights for educational policymakers and stakeholders in Nigerian universities.

Results

Research Question One

To what extent does performance expectancy influence students' attitudes toward mobile learning?

Table 1: Extent at which performance expectancy influence students' attitudes toward mobile learning

SN	Question	Mean	SD
1	My peers encourage me to use mobile learning platforms for academic purposes.	4.4	0.70
2	My family supports the use of mobile learning for my studies.	4.2	0.75
3	Faculty members recommend mobile learning tools for coursework.	4.3	0.71
4	I use mobile learning platforms because my classmates use them frequently.	4.5	0.68
5	My instructors emphasize the importance of mobile learning during lectures.	4.2	0.73
6	Friends often share mobile learning resources with me.	4.3	0.72
7	I feel motivated to use mobile learning because of group assignments that require it.	4.1	0.74
8	My faculty integrates mobile learning tools into assessments and assignments.	4.4	0.69
	Overall Mean/SD	**4.3**	**0.72**

Table 1 demonstrates the significant influence of performance expectancy on students' attitudes toward mobile learning, with an overall mean of 4.3 and SD of 0.72. The highest-rated item (4), "I use mobile learning platforms because my classmates use them frequently" (Mean = 4.5, SD = 0.68), highlights the critical role of peer influence in driving adoption. Faculty encouragement, as seen in items such as item (3) "Faculty members recommend mobile learning tools" (Mean = 4.3, SD = 0.71), further

reinforces the academic relevance of these platforms. Family support and structured assignments also contribute positively to students' attitudes, albeit to a slightly lesser degree. These results underline that performance expectancy is strongly tied to the social and academic environments in which students operate. Effective peer, faculty, and institutional integration significantly shape students' perceptions and drive adoption.

Research Question Two

To what extent does Perceived ease use of mobile technology influence students' attitudes toward mobile learning?

Table 2: Extent at which students Perceived Ease Use of mobile technology and its influence on their attitude towards mobile learning

SN	Question	Mean	SD
1	I find mobile learning platforms easy to navigate.	4.1	0.76
2	It is simple to access materials and resources through mobile learning.	4.2	0.78
3	Using mobile learning tools does not require significant effort.	3.8	0.80
4	I can quickly learn how to use mobile learning applications.	4.3	0.74
5	Mobile learning tools are user-friendly, even for beginners.	4.0	0.77
6	It is easy to find help when I face challenges with mobile learning platforms.	3.9	0.79
7	Mobile learning platforms have clear instructions for users.	4.1	0.75
8	I rarely experience technical issues when using mobile learning platforms.	3.7	0.81
	Overall Mean/SD	**4.0**	**0.78**

Table 2 highlights the role of perceived ease of use in shaping students' attitudes toward mobile learning, with an overall mean of 4.0 and SD of 0.78. The highest-rated item, "I can quickly learn how to use mobile learning applications" (Mean = 4.3, SD = 0.74), indicating the importance of intuitive design in fostering positive attitudes. Accessibility, as reflected in "It is simple to access materials and resources" (Mean = 4.2, SD = 0.78), is another key factor supporting adoption. However, the lowest-rated item, "I rarely experience technical issues" (Mean = 3.7, SD = 0.81), highlights occasional barriers that hinder seamless use. Despite these challenges, the generally high scores indicate that mobile platforms are perceived as user-friendly and accessible. Addressing technical issues and providing reliable support could further enhance the perceived ease of use.

Hypothesis Testing

Hypothesis One

Social influence does not significantly affect students' attitudes toward mobile learning.

Table 3: Regression Analysis on Social Influence affect students' attitudes toward mobile learning

Predictor	Beta (β)	t-value	p-value
Social Influence	.437	8.976	< .001

Table 3 reveal that social influence significantly affects students' attitudes toward mobile learning. The Beta (β) value of .437 indicates a strong positive relationship, meaning that as social influence increases, students' willingness to adopt mobile learning also increases. The t-value of 8.976 is high,

showing that this effect is statistically robust across the sample. Additionally, the p-value (< .001) confirms that the relationship is highly significant, rejecting the null hypothesis. These results highlight the critical role of social factors, such as peer encouragement and faculty support, in shaping positive attitudes toward mobile learning.

Hypothesis Two

Perceived ease use of mobile technology does not significantly influence students' attitudes toward mobile learning.

Table 4: Regression Analysis Perceived ease use of mobile technology influence on students' attitudes toward mobile learning.

Predictor	Beta (β)	t-value	p-value
Perceived Ease of Use	.122	2.434	.015

The results in Table 4 show that perceived ease of use has a significant, albeit smaller, effect on students' attitudes toward mobile learning. The Beta (β) value of .122 indicates a positive relationship, where improved usability of mobile platforms slightly enhances students' attitudes. The t-value of 2.434 supports the reliability of this relationship, and the p-value of .015 confirms its statistical significance. These results suggest that while ease of use contributes to shaping attitudes, it is a secondary factor compared to social influence. Platforms that are easy to navigate and user-friendly can improve students' adoption rates, though social dynamics play a larger role.

Discussion

The study's results indicate the importance of social influence and perceived ease of use in shaping students' attitudes toward mobile learning. Social influence emerged as the most significant factor, while perceived ease of use also played a crucial, albeit secondary, role in determining students' engagement with mobile learning technologies.

The findings indicate that social influence significantly affects students' attitudes toward mobile learning. With a Beta (β) value of .437, t = 8.976, and p-value < .001, the results confirm that social influence is a strong and statistically significant predictor of students' attitudes. The high mean score for the item "I use mobile learning platforms because my classmates use them frequently" (Mean = 4.5) highlights the substantial role peer influence plays in encouraging students to adopt mobile learning technologies. This result emphasizes that students are more likely to engage with mobile learning tools when they observe their peers actively using them. Additionally, the involvement of faculty and family support, as reflected in high mean scores for items like "Faculty members recommend mobile learning tools for coursework" (Mean = 4.3) and "My family supports the use of mobile learning for my studies" (Mean = 4.2), suggests that a strong social network encourages adoption. This aligns with the findings of Venkatesh et al. (2003), who identified social influence as a pivotal factor in technology adoption, particularly in educational settings. Peer-led initiatives, along with faculty recommendations, can create an environment where mobile learning is seen as a valuable and supported tool. Therefore, educational institutions should harness the power of social validation to foster a more mobile-learning-friendly atmosphere.

The analysis reveals that perceived ease of use also significantly impacts students' attitudes toward mobile learning, with a Beta (β) of .122, t = 2.434, and p-value = .015. While the effect is smaller than

that of social influence, the positive Beta value indicates that the easier students perceive mobile learning platforms to be, the more likely they are to engage with them. The highest-rated item, *"I can quickly learn how to use mobile learning applications"* (Mean = 4.3), demonstrates that students value mobile learning platforms that are easy to navigate and learn. Additionally, *"It is simple to access materials and resources through mobile learning"* (Mean = 4.2) suggests that students appreciate platforms that provide easy access to academic resources. However, some technical barriers, such as difficulties with platform navigation (*"I rarely experience technical issues when using mobile learning platforms"* with Mean = 3.7) and accessing support, were noted. These challenges reflect the fact that even though ease of use is important, technical reliability and platform stability are also critical in ensuring sustained engagement. As suggested by Davis (1989), perceived ease of use is an important factor in technology adoption, but its influence is secondary to social factors in this context. This finding is consistent with Wang et al. (2009), who emphasized that user-friendly interfaces improve technology adoption, but it must be accompanied by strong social support systems for maximum effectiveness.

The findings of this study reveal that social influence plays a dominant role in shaping students' attitudes toward mobile learning, while perceived ease of use contributes to enhancing their experience with mobile learning platforms. The study suggests that universities should focus on fostering a supportive social environment through peer-led initiatives and faculty involvement, while also ensuring that mobile platforms are user-friendly and technically reliable. By addressing both social and usability factors, educational institutions can encourage more widespread adoption of mobile learning technologies, ensuring that students are both motivated and equipped to engage with them effectively.

Conclusion

Based on the findings of this study, it can be deduced that social influence plays a dominant role in shaping students' attitudes toward mobile learning technologies in Nigerian universities. The study highlights that peer encouragement, faculty support, and family validation significantly enhance students' willingness to engage with mobile learning platforms. Although perceived ease of use also plays an important role, it is secondary to the impact of social influence. Mobile learning platforms that are user-friendly and easy to navigate are crucial for maintaining student engagement, but the social environment remains the primary driver for adoption.

The results suggest that mobile learning technologies can be more effectively embraced when they are supported by a socially positive environment. Both social influence and ease of use contribute to creating an atmosphere conducive to learning. By fostering supportive social networks and ensuring that mobile platforms are intuitive, institutions can enhance student engagement and overall adoption of mobile learning. Consequently, social influence and ease of use are essential factors for improving attitudes and increasing the successful implementation of mobile learning in higher education.

Recommendations

1. Universities should engage student leaders and peer networks to promote mobile learning.
2. Faculty should integrate mobile learning tools into their teaching practices.
3. Institutions should invest in user-friendly mobile learning technologies with clear navigation and accessible support.

References

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*.

Venkatesh, V., & Bala, H. (2008). UTAUT and Interventions. *Decision Sciences*.

Mensah, J. K. (2019). Factors influencing the intention of university students to adopt and use eGovernment services: An empirical evidence in China. *SAGE Open*, 1–19. https://doi.org/10.1177/2158244019855823

Liebenberg, J., Benade, T., & Ellis, S. (2018). Acceptance of ICT: Applicability of the unified theory of acceptance and use of technology model to South African students. *The African Journal of Information Systems*, *10*(3), 160–173.

Cheng-Min, C. (2019). Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. *Frontiers in Psychology*, *10*, 1–19. https://doi.org/10.3389/fpsyg.2019.01652

Nwone, S. A., & Mutula, S. (2019). Determinants of use of electronic information resources by the professoriate in Nigerian universities: Extending the unified theory of acceptance and utilization of technology model. *South African Journal of Information Management*, *21*(1), 1–8. https://doi.org/10.4102/sajim.v21i1.1108

Odegbesan, O. A., Ayo, C., Oni, A. A., Adeoba, T. F., Okezie, C. G., & Udenwagu, N. E. (2019). The prospects of adopting e-learning in the Nigerian education system: A case study of Covenant University. In *3rd International Conference on Science and Sustainable Development*, IOP Publishing, 2–17. https://doi.org/10.1088/1742-6596/1299/1/012058

Mehdipour, Y., & Zerehkafi, H. (2013). Mobile learning for education: Benefits and challenges. *International Journal of Computational Engineering Research*, *3*(6), 93–101.

Deegan, R., & Rothwell, P. (2010). A classification of m-learning applications from a usability perspective. *Journal of Research Center for Educational Technology*, *6*(1), 16–27.