Ed Process Int J

www.edupij.com

ISSN 2147-0901 (Print), 2564-8020 (Online)

EDUCATIONAL PROCESS
INTERNATIONAL JOURNAL

Critical Factors Influencing the Adoption of Mobile Games in African Students: Case of an Extended Technology Acceptance Model

Aderonke A Oni, David Ajayi, Oluwarotimi A Randle

Research Article

Cite this article: Oni A. A., Ajayi, D., & Randle, O. A. (2025). Critical Factors Influencing the Adoption of Mobile Games in African Students: Case of an Extended Technology Acceptance Model. *Educational Process: International Journal, 19,* e2025546. https://doi.org/10.22521/edupij.2025.19.546

Received June 21, 2025
Accepted October 29, 2025

Keywords: Mobile game adoption, extended technology acceptance model, intrinsic motivation, perceived usefulness, self-determination theory

Author for correspondence:
Oluwarotimi Randle
rotimirandle@gmail.com
University of the Witwatersrand, South Africa

Abstract

Background/purpose. Although the adoption of mobile games among African students has increased significantly, the factors that influence this adoption have not been fully explored. The goal is to understand mobile gaming adoption in Africa by examining both psychological and external factors.

Materials/methods. This study explored the key factors that influence mobile game adoption using an extended Technology Acceptance Model, incorporating intrinsic motivation, perceived usefulness, and perceived ease of use. This study examined how students' perceptions of mobile games and their intention to use them are influenced by competence, relatedness, and control. The study employed a quantitative design to collect data from 350 students at a private Nigerian university using a structured questionnaire. Structural equation modeling was used for data analysis.

Results. The findings indicated that perceived usefulness and ease of use were significantly enhanced by competency and control, highlighting the role of intrinsic motivation in mobile gaming adoption. Relatedness did not significantly affect perceived ease of use, suggesting that social interactions have a limited influence on adoption. Perceived usefulness and ease of use strongly affected intention to use mobile games, but economic constraints, inadequate infrastructure, and cultural perceptions of gaming hindered actual usage.

Conclusion. These findings show the importance of game developers creating more accessible gaming experiences and policymakers improving digital infrastructure and integrating mobile games into learning. This study enhances understanding of mobile gaming adoption in Africa, emphasizing the significance of both psychological and external factors in shaping adoption behaviors.

1. Introduction

The rapid expansion of smartphone ownership and internet connectivity has intensified the adoption of mobile games among African students. Given the widespread availability of portable devices such as smartphones, tablets, and iPads, students now have constant access to mobile games they can play anywhere (Chatterjee et al., 2022). Al-Samarraie et al. (2021) opined that the reach of mobile games has expanded because their developers have adopted the free-to-play model, thereby resulting in a large and diverse user base. Mobile gaming has now become an integral segment of the digital entertainment industry and it is noted by Baabdullah (2018) to continually experience remarkable growth. Commenting on its advantage, Boyle et al (2016) noted that mobile games have been shown to not just be limited to recreation but also provide support for cognitive development, problem-solving skills, and digital literacy, which in turn make it add educational and social benefits to entertainment (Boyle et al., 2016).

Although there has been extensive research on internet use, digital entertainment, and technology adoption across various contexts (Dwivedi et al., 2019; Venkatesh & Bala, 2008), there is very little examination of the unique factors that drive the adoption of mobile gaming among African students. Existing studies often focus on general technology acceptance or gaming behaviors worldwide or in Western societies, with very little attention to the relationships among socioeconomic, technological, and cultural factors that shape gaming decisions in the educational and social sectors across Africa. This therefore shows a clear research gap: the insufficiency of empirical evidence explaining how these variables influence the adoption of mobile games among African students, especially when it is premised on a detailed theoretical model such as the Technology Acceptance Model (TAM).

TAM, developed by Davis (1989), identifies perceived usefulness and perceived ease of use as key determinants of technology acceptance. Although the TAM framework has been widely applied in existing studies, there is a need to develop an extended TAM approach for the adoption of mobile gaming in Africa that incorporates additional motivational, social, and contextual factors. These may include entertainment value, social influence, affordability, data costs, device limitations, and cultural perceptions of gaming, that is, whether viewed as an educational tool or as a distraction (Katz & Gonzalez, 2016). Despite challenges with infrastructure, such as inconsistent internet access and power supply issues, the adaptability of mobile games —many of which can be played offline or require minimal data —ensures continued engagement (Ouedraogo et al., 2022). Furthermore, the localization of game content to reflect African narratives and languages enhances relevance and user experience, fostering a deeper connection with the medium (New Zealand, 2024).

This study is significant because it contributes to both theory and practice. In terms of theory, this game serves as an extension of the TAM framework by integrating motivational and contextual variables relevant to African students. Practically, it provides an understanding for game developers, educators, and policymakers who want to develop mobile gaming experiences for both entertainment and educational purposes. It is important to understand this dynamism because of the youthful population of Africa, with over 60% under 25 years, coupled with a growing mobile user base of more than 650 million and an additional 40 million internet users added in 2023 shows a strong preference for digital entertainment (Astute Analytica, 2024; Onukwue, 2025; Verified Market Research, 2024). Mobile games not only meet recreational needs but also foster social interaction, competition, and community building (Statista, 2024, as cited by Chandy, 2024).

This study therefore seeks to address the question of *w*hat factors influence the adoption of mobile games among African students within an extended TAM framework. Specifically, it aims to: (1) identify and examine the relative influence of perceived usefulness, perceived ease of use, and intrinsic motivational factors on mobile gaming adoption; (2) explore the impact of socioeconomic

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

and cultural settings on adoption patterns; and (3) provide actionable recommendations for the enhancement of mobile gaming engagement and benefits in Africa. Consequently, the study fills a notable gap in the literature by providing evidence grounded in context that supports academic understanding and practical interventions.

2. Literature Review

The increase in the adoption of digital technologies and the evolving role of mobile gaming in education, entertainment, and socialization have led to significant academic interest in mobile gaming among students over the years. It is important to understand the factors that influence mobile gaming adoption by examining diverse theoretical frameworks, technological factors, sociocultural influences, and economic conditions. TAM serves as a foundational theory for explaining how individuals adopt and use technology. However, the model needs to be extended to capture additional factors, including social influence, enjoyment, and accessibility, to ensure its applicability to mobile gaming (Davis, 1989; Venkatesh & Bala, 2008).

Mobile games have evolved from mere tools for recreation to platforms that facilitate cognitive development, collaboration, and even learning. Several studies have demonstrated that mobile games enhance problem-solving skills, decision-making, and strategic thinking (Hamari et al., 2016). Boyle et al. (2016) observed that the gamification of learning has increased interest in serious games, which are designed as a fusion of entertainment and educational objectives. However, African students' level of engagement with mobile gaming for both entertainment and educational purposes is dependent on diverse factors, which include accessibility, perceptions of gaming, and the level of technology available in their respective regions. Katz and Gonzales (2016) opined that, despite the global popularity of mobile gaming among African students, the adoption process remains complex and is influenced by several challenges unique to the region, underscoring the need for a detailed theoretical investigation. Key among these challenges is inadequate infrastructure, including irregular internet connectivity, affordability of devices and data, limited localized content, and sociocultural perceptions regarding digital entertainment. These constraints often affect the motivational and perceptual characteristics that drive or hinder adoption. Therefore, there is a need to study the factors that affect mobile game adoption from a standpoint that incorporates external variables unique to the African environment.

The original TAM, introduced by Davis (1989), posits that perceived usefulness and perceived ease of use are the primary factors driving technology adoption. However, Hsu and Lu (2007) contended that TAM alone cannot fully capture the behavioral complexities that influence mobile game adoption, especially in non-work-related contexts where hedonic and social factors play key roles. The Unified Theory of Acceptance and Use of Technology, developed by Venkatesh et al. (2003), is an expansion of TAM that incorporates constructs such as social influence and facilitating conditions, thereby making it more applicable to mobile gaming adoption (Dwivedi et al., 2019). There is a need to adapt these models to the African context to address additional challenges, such as digital literacy, cost barriers, and variations in cultural attitudes toward gaming.

One factor that influences the adoption of mobile gaming is perceived enjoyment, which significantly affects students' willingness to engage with mobile games. According to Ha et al. (2007), perceived enjoyment is a critical determinant of mobile game adoption because, unlike other technologies that are productivity-oriented, mobile games are largely used for entertainment. Research has shown that, in addition to utility, enjoyment is the most significant factor predicting the adoption of mobile games, especially among younger users (Zhou, 2015). However, the level of enjoyment people derive from mobile games varies due to factors such as game design, user experience, and the availability of interactive features (Gisbert-Pérez et al., 2024). In the African context where economic constraints can limit access to high-quality games, students might struggle

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

to fully experience the entertainment value of mobile gaming. Santhanamery and Ramayah (2018) noted that connectivity and network issues can disrupt gameplay, leading to frustration and a decline in the rate of gaming adoption.

Another salient factor that affects the adoption of mobile gaming is social influence. According to Lin (2010), extensive research has examined the influence of peers, social norms, and online communities on gaming behaviors. Social gaming, which allows players to interact with friends, compete in multiplayer modes, and share gaming achievements, contributes to the growing popularity of mobile games (Hamari & Koivisto, 2015). African students, like their counterparts around the world, are influenced by social networks and recommendations from peers when choosing a mobile game. However, in some African societies, cultural perceptions of gaming can discourage students from engaging in mobile gaming, as it is sometimes seen as a distraction from academic responsibilities (Munga, 2012). Additionally, parents' attitudes shape students' behavior towards gaming, as some parents view it as an activity that should be restricted due to its perceived lack of productivity.

Economic factors, including affordability and access to gaming devices, also play a significant role in the adoption of mobile games among African students. Despite the growing popularity of smartphones across the continent, the high costs of premium mobile games, in-app purchases, and data consumption still serve as barriers to adoption (Price, 2017). Many students use low-cost smartphones that may lack the processing power needed for high-quality gaming. Alzouma (2005) posited that the high cost of mobile data in certain African countries discourages students from engaging in online gaming, which requires constant internet access. In contrast, students in developed countries have greater access to high-speed internet and advanced gaming devices, allowing them to enjoy a seamless gaming experience. These economic disparities underscore the need for affordable gaming solutions that reflect students' financial realities in Africa.

Technical and infrastructural factors are also key to the adoption of mobile gaming. A reliable internet connection is essential for online multiplayer games and cloud-based gaming services. However, many African regions still struggle with slow internet speeds, unstable connections, and high latency (Asongu & Odhiambo, 2019). In countries with limited broadband access, students may have to rely on offline mobile games, which restricts their ability to participate in social and interactive gaming experiences. Moreover, mobile gaming companies do not prioritize African markets due to concerns about profitability. This results in fewer localized gaming options aimed at African audiences. According to Nijihia (2024), this causes African students to adapt to games designed for Western or Asian markets, which may not always resonate with their cultural preferences and interests.

Cultural attitudes toward gaming influence the patterns of adopting gaming options. While gaming is widely accepted as a mainstream form of entertainment in many parts of the world, it is still met with skepticism in some African societies due to the dual perspectives held by the populace. In this regard, SCCG (2024) observed that while some people view mobile gaming as a leisure activity that distracts students from their academic performance and productivity, others recognize its possible benefits for cognitive development and socialization. Additionally, the perception that gaming is a male-dominated activity influences adoption, as female students may be less likely to engage with mobile games due to societal expectations and gender norms (Owiti, 2016). Understanding these cultural factors is essential for developing strategies that promote inclusive gaming experiences that appeal to a diverse student population.

This study empirically investigated the adoption of mobile gaming among African students by testing an extended TAM that included intrinsic motivation constructs (competency, relatedness, and control) in the core TAM framework. Specifically, it examined how these motivational factors

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

influenced perceived usefulness and perceived ease of use, and how these perceptions subsequently shaped students' behavioral intentions to use mobile games and their actual usage. Considering the significant development occurring in the African digital sector, mobile gaming offers numerous benefits for entertainment, education, and social engagement.

2.1. Underpinning Theory

The role of an underpinning theory is to provide a framework through which research can be conducted. The section discusses TAM and extends it with intrinsic motivation.

Technology Acceptance Model

TAM is one of the most influential and widely used frameworks for explaining and predicting user acceptance and utilization of technology (see Figure 1). Originally developed by Davis (1989), TAM was designed to clarify system use and to evaluate behavioral intentions associated with technology adoption. The model has received significant empirical support over time, with studies confirming its predictive power across various technological contexts, including office applications, communication technologies, and internet-based systems (Davis, 1989; Taylor & Todd, 2001; Venkatesh et al., 2003).

TAM emphasizes two main constructs: perceived usefulness and perceived ease of use. Perceived usefulness refers to the extent to which an individual believes that using a particular system will enhance their job performance. In contrast, perceived ease of use refers to the degree to which an individual believes that using the system requires little to no effort (Davis, 1989). These constructs play a significant role in shaping individuals' attitudes toward technology, which ultimately influence their behavioral intentions to use it (Ajzen & Fishbein, 1980; Armitage & Conner, 2001).

A growing body of research has further examined how these factors influence technology use in diverse settings. In a study examining mobile learning apps, Al-Azawei and Alowayr (2021) used TAM to investigate how students' perceived usefulness and ease of use affected their adoption of mobile learning technologies. The findings revealed that perceived usefulness was a stronger predictor of students' intentions to use educational apps than perceived ease of use. This insight has significant implications for educators and developers aiming to increase student acceptance of educational technologies.

Building on TAM, researchers have identified several external factors that influence technology adoption. Hamari and Koivisto (2015) expanded TAM by incorporating gamification in the context of smartphone adoption. Their findings suggested that incorporating gamified elements significantly increased perceived usefulness and perceived ease of use, thereby enhancing users' intention to adopt smartphones. This demonstrates how adaptable TAM is in explaining the influence of external factors on user attitudes and intentions to adopt technology.

Additionally, several studies have confirmed the relationship between perceived usefulness and behavioral intention. Hossain et al (2023) investigated -e-commerce platforms in developing economies. The researchers found that perceived usefulness had a significant positive impact on consumers' behavioral intentions, regardless of perceived ease of use. This supports the assertion that individuals are likely to continue using specific technology as long as they find it useful, even if the system is somewhat difficult to navigate.

Despite the strong support for TAM, there are still debates regarding its applicability in different cultural settings. Al-Azawei and Alowayr (2021) examined the TAM framework in the context of mobile health applications in Malaysia. Their findings revealed that cultural factors significantly influenced both perceived ease of use and usefulness of these applications. This suggests that TAM should be adapted to align with specific cultural settings.

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

Furthermore, recent studies have examined the reliability and validity of TAM instruments, such as Venkatesh and Bala (2008) who conducted a meta-analysis on the reliability of TAM scales across multiple industries. Their study found that the constructs of perceived usefulness and ease of use remain highly reliable indicators of technology adoption, with only minor variations in certain contexts. This suggests that although TAM is universally applicable, contextual modifications may be necessary to enhance its explanatory power in specific contexts.

This study examined the intrinsic motivation factors that may influence the perceived usefulness and perceived ease of use in the adoption of mobile games.

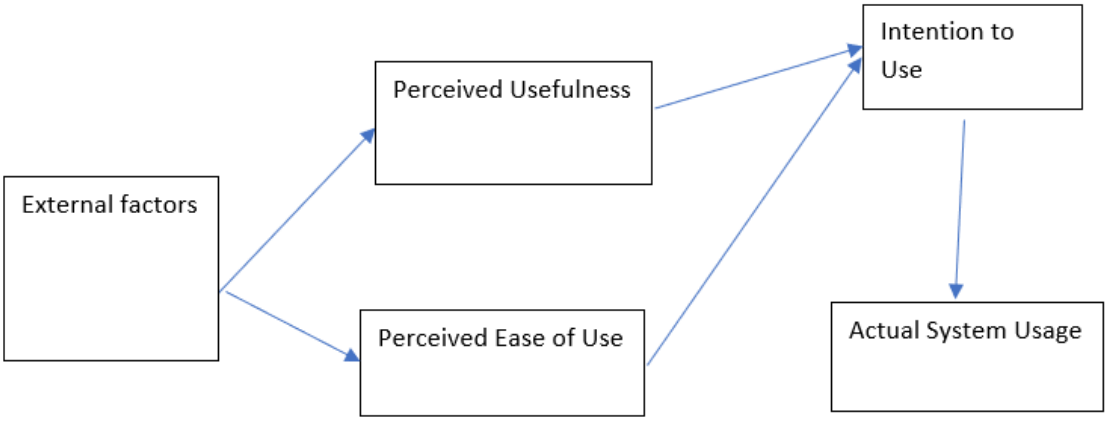

Figure 1. TAM (adapted from Alkailani and Kumar, 2016)

Extended TAM: Intrinsic Motivation

Motivation serves as a fundamental driver of human behavior, influencing the adoption and utilization of technology. Motivation is commonly categorized into intrinsic and extrinsic motivation. Intrinsic motivation refers to engaging in an activity for its inherent satisfaction, while extrinsic motivation involves performing a task to achieve external rewards or to avoid negative outcomes. Understanding these motivational factors is crucial for comprehending technology acceptance and usage among individuals.

Recent studies have emphasized the significance of intrinsic motivation in technology adoption. For instance, Lai et al (2023) examined the role of intrinsic motivation in the adoption of ChatGPT to support active learning. Their findings indicated that intrinsic motivation positively influenced users' intentions to adopt and utilize the technology, highlighting its importance in promoting active engagement with new systems. Similarly, Saravanos et al. (2022) extended TAM to incorporate the phenomenon of warm-glow, which encompasses both intrinsic and extrinsic motivational aspects. Their study found that the perceived intrinsic warm-glow significantly influenced user adoption decisions, underscoring the relevance of intrinsic motivation in technology acceptance.

Extrinsic motivation also plays a role in technology adoption, particularly when external rewards or incentives are present. However, the interplay between intrinsic and extrinsic motivation can be complex. Lowry et al. (2013) proposed the Hedonic-Motivation System Adoption Model, suggesting that both intrinsic and extrinsic motivations should be considered in system design to enhance user acceptance and engagement.

In educational settings, incorporating gamified technologies has been shown to enhance students' intrinsic motivation and overall academic well-being. A study featured by *The Learning Scientists* demonstrated that gamified technologies can significantly boost intrinsic motivation, resulting in improved academic outcomes (Murray, 2024). Furthermore, recent research has explored the relationship between technology acceptance and self-regulated learning. A study

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

published in *Education and Information Technologies* (An et al., 2024) suggested that perceived acceptance of technology can enhance students' ability to engage in self-regulated learning. This finding highlights the importance of intrinsic motivation in educational technology adoption.

This study incorporated three core components of intrinsic motivation: competency, relatedness, and control, which were drawn from Self-Determination Theory as developed by Ryan and Deci (2000). These constructs provided a psychological perspective on the ways in which user motivation can be better understood.

Competency refers to individuals' perception of their own ability to effectively interact with and master mobile gaming platforms. It shows skill and self-efficacy, which are important in shaping users' evaluations of a system's usefulness and ease of use. When users feel competent, they are more likely to engage meaningfully with technology and view it as a tool that supports their goals (Ryan & Deci, 2020). In this study, competency refers to the extent to which students feel confident in playing and succeeding in the mobile gaming environment.

Relatedness refers to the extent to which users feel socially connected and experience meaningful interactions while using mobile games. It reflects a user's need to belong and engage with others in the digital environment. In terms of gaming, this may include multiplayer interactions, peer recommendations, or social recognition through game achievements. Relatedness is particularly significant in collectivist cultures, such as those found in many African societies, where behavioral intentions are largely determined by communal validation and peer influence (Owiti, 2016; Wang et al., 2021). The inclusion of relatedness in this study underscores the social dimension of technology use and its potential to enhance user engagement.

Control, also referred to as autonomy, is defined as the level to which an individual feels they have authority over their actions in a digital environment. In mobile gaming, this involves the ability to make independent choices about when and how to play, which features to engage with, and how much to personalize the experience. A higher sense of control contributes to intrinsic motivation because it confirms the user's freedom to explore and learn at their own pace without feeling constrained. In the context of this study, control is measured by how much students feel that their mobile gaming experiences are self-directed and aligned with their personal interests.

Figure 2 demonstrates the extended TAM, which incorporates intrinsic motivation — competency, relatedness, and control. The hypotheses (H1a-c, H2a-c, H3, and H4) are described in the section that follows.

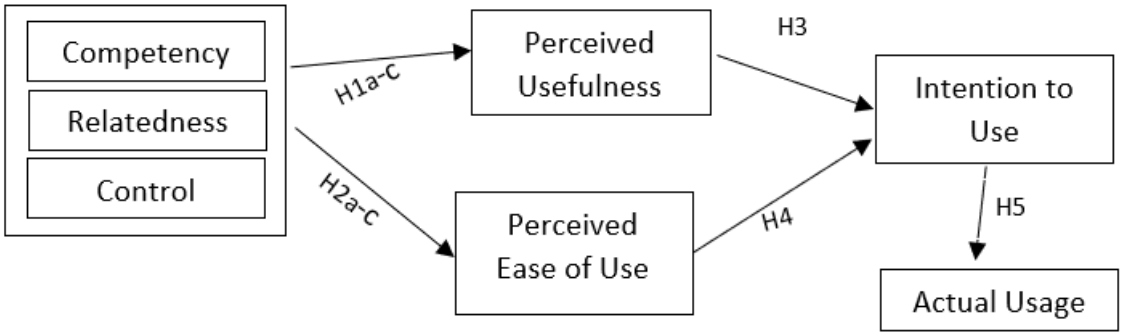

Figure 2. Extended TAM

2.2. Hypotheses

H1a-c: There is a relationship between intrinsic motivation and perceived usefulness

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

Intrinsic motivation refers to the internal drive to engage in activities for the inherent satisfaction they provide, rather than for external rewards. This motivation can significantly influence an individual's perception of a technology's usefulness. When individuals find personal satisfaction in using a system, they are more likely to perceive it as useful, especially in terms of enhancing their performance or fulfilling their needs. Previous studies have shown that individuals with higher intrinsic motivation are more likely to value the utility of the system, leading to stronger beliefs in the system's usefulness (Ryan & Deci, 2020). Therefore, intrinsic motivation can enhance the perception of a system's usefulness, particularly when the system aligns with personal goals or provides a sense of accomplishment.

H2a-c: There is a relationship between intrinsic motivation and perceived ease of use

Intrinsic motivation can also influence how users perceive the ease of use of technology. When individuals are intrinsically motivated, they are more likely to explore, engage with, and experiment with systems without being deterred by initial challenges. This increased engagement can lead to the perception that the system is becoming easier to use over time. Furthermore, individuals with high intrinsic motivation are often more willing to invest time in learning and mastering a system, which can lower perceived barriers to use (Venkatesh & Bala, 2008). Consequently, intrinsic motivation can positively impact perceived ease of use, as motivated users tend to navigate technological challenges more effectively, leading to a smoother user experience.

H3: There is a relationship between perceived usefulness and intention to use

Perceived usefulness is a key determinant in forming an individual's intention to use a system, as outlined in TAM. If users believe that a system will significantly enhance their job performance or help them achieve their goals, they are more likely to develop a strong intention to use it. Numerous studies have confirmed that perceived usefulness is among the most influential factors driving technology adoption across domains such as business, education, and healthcare (Venkatesh & Bala, 2008). Thus, individuals' intention to use technology is highly contingent on how useful they perceive it to be in meeting their needs or improving their performance.

H4: There is a relationship between perceived ease of use and intention to use

Perceived ease of use plays a crucial role in shaping an individual's intention to use a system. If users perceive a system as easy to use, they are more likely to form a favorable intention toward adopting it, as ease of use reduces the cognitive effort required to interact with the technology (Davis, 1989). When a system is perceived as user-friendly, it fosters positive attitudes and increases users' willingness to try it, which in turn influences their intention to use it. Recent research has reinforced the idea that ease of use is often a primary factor in initial adoption decisions, particularly for users who are not highly familiar with the technology (Hamari & Kovisto, 2015). Therefore, the ease of use significantly impacts users' intentions to engage with the system.

H5: There is a relationship between intention to use and actual usage

The relationship between the intention to use and actual usage is central to understanding the adoption process. According to TAM, intention to use is a strong predictor of actual use, as individuals who have formed a positive intention are more likely to translate it into actual behavior. Numerous studies have confirmed that intention to use is a significant predictor of actual system usage across different contexts (Agarwal & Karahanna, 2000). However, it is important to note that factors such as external barriers, technological issues, or environmental influences can sometimes interfere with the transition from intention to actual usage. Despite these factors, a strong intention to use typically leads to higher actual usage rates, especially when users are motivated and perceive the system as useful and easy to use.

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

3. Methodology

This study employed a quantitative research design to examine the relationships among perceived usefulness, perceived ease of use, and intrinsic motivation factors (competency, relatedness, and control) in the adoption of mobile technology. The quantitative approach was selected because it facilitated statistical generalization, and previous studies have demonstrated that this method is effective in research on the adoption of technology (Venkatesh & Bala, 2008). The study employed a cross-sectional survey design, which enabled data collection at a single point in time. Responses were collected on perceptions and behaviors related to mobile gaming adoption. A structured questionnaire was primarily used as the data collection tool, allowing for a standardized approach to gathering information.

The respondents in this study were students from a private university in Nigeria. The decision to focus on students as the target population was justified by their high engagement with digital technologies, including mobile gaming (Owiti, 2016). A minimum sample size of 400 respondents was calculated using Cochran's sample size formula for large populations to ensure statistical representativeness (Cochran, 1977). The study used multistage sampling technique to select respondents across faculties and departments. In the first stage, stratified sampling was adopted to group the schools into faculties. In the second stage, simple random sampling was used to select two departments from each faculty. In the final stage, the study employed purposive sampling to recruit participants who met specific criteria relevant to the research objectives. To be included, participants had to; (1) be currently enrolled in the selected Nigerian private university; (2) own or have regular access to a smartphone, tablet, or laptop capable of running mobile games, and (3) be willing to engage with a designated mobile game for the purposes of this study. Only students aged 16 years and above were considered to avoid the need for parental consent.

Students were excluded if they had no prior exposure to mobile gaming, had visual or motor impairments that would make gameplay difficult, or were unwilling to participate in the familiarization exercise with the selected game. Those who had not engaged with any form of mobile gaming in the three months preceding the study were also excluded to ensure familiarity with digital gaming environments.

To ensure consistency in measuring the constructs of the Technology Acceptance Model (TAM), all participants were introduced to a common mobile game, Awale, which is a traditional African strategy board game adapted for mobile devices. Before the survey was administered, students were given dedicated time to familiarize themselves with the interface, rules, and features of the game. This familiarization process ensured that all participants had a shared reference point when responding to survey items measuring perceived usefulness, perceived ease of use, and intrinsic motivational factors. This however, reduced the participants to 350 as against the 400 calculated sample size

Data collection was conducted by distributing paper surveys, with assistance from two research assistants. The survey included closed-ended questions that were designed to assess constructs from the extended TAM and intrinsic motivation. To ensure content validity, the questionnaire was adapted from previously validated scales used in earlier studies on mobile gaming adoption, specifically those by Davis (1989) that focused on perceived usefulness and perceived ease of use. A five-point Likert scale was used to measure responses, with 1 indicating 'strongly disagree' and 5 indicating 'strongly agree'. A pilot study was conducted with 50 students to evaluate the reliability and clarity of the survey instrument, using Cronbach's alpha to assess its internal consistency.

Data analysis was conducted using SmartPLS for structural equation modeling (SEM). Descriptive statistics, including means, standard deviations, and frequency distributions, were used to summarize the demographic characteristics of the study participants. Partial least squares SEM was employed to

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

examine the relationships among the study variables. The use of SEM was warranted because it allowed for the analysis of complex relationships among latent constructs and could test for both mediation and moderation effects (Hair et al., 2019). The assessment of the measurement model included tests for validity and reliability using confirmatory factor analysis. The structural model was evaluated using path coefficients, R-squared values, and model fit indices.

Ethical considerations were strictly adhered to throughout the study. Participation was voluntary, and all respondents gave their informed consent prior to data collection. Confidentiality and anonymity were upheld by ensuring that no personally identifiable information was collected. Additionally, ethical approval was obtained from the relevant institutional review boards before conducting the study.

4. Data Analysis and Results

4.1. Demographic Profile of Respondents

A total of 350 respondents completed the paper-based questionnaire, yielding 310 valid responses, while 40 were invalid due to incomplete information. The 310 valid responses resulted in an 86% response rate of which 61% were male and 39% female. The largest age group was 21 to 25 years, accounting for 43.9% of the respondents. The second-largest age group was 17-18 years, accounting for 31.6% of respondents. The third-largest age group was those aged 19 to 20 years, who constituted 24.5% of the respondents. All respondents were undergraduate students studying either computer science or management information systems. Computer science accounted for 70% (217) of the respondents, while management information systems accounted for 30% (93). In total, 102 respondents (32.9%) were in their first year. The third- and fourth-year students made up 39.4% and 27.7% of the respondents, respectively. Respondents were asked to describe their level of experience with various technologies. Most respondents were competent or expert users of various technologies. However, almost a quarter of the respondents indicated that they were novice users of shared economy and global positioning systems (GPS). Table 1 displays the respondents' level of technology experience.

Table 1. Level of Experience with Technologies

Technology	Novice (%)	Competent (%)	Expert (%)
Mobile cell phone	2.6	23.2	74.2
Tablet computer (e.g. iPad)	3.5	34.5	62.0
Google Maps	12.9	45.5	41.6
Shared economy (e.g. Uber, Taxify)	24.8	46.5	28.7
GPS	21.9	50.3	27.8
SMS	3.9	39.0	57.1
Electronic mail (Email)	3.2	40.6	56.2
Phone calls	3.9	25.8	70.3

4.2. Validity and Reliability Analysis

Confirmatory factor analysis was performed to evaluate the unidimensionality of the measurement model. This study employed a reflective measurement model, meaning that each

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

indicator was expected to have a loading of at least 0.707 on its corresponding construct (Oni et al., 2022; Roldán & Sánchez-Franco, 2012). This analysis is intended to confirm that only measurement items strongly associated with their corresponding latent variables, rather than with any other latent variables in the model, are retained for further analysis. As a result, one item from behavioral intention (BI1) and one item from actual use (AU3) were excluded from further analysis. The second measurement item of actual use also had a factor loading of 0.692. While it was slightly below the required threshold, it was retained to avoid the limitation of using only one item to measure a construct. However, further reliability and validity measures on the construct provided acceptable values, except for the average variance extracted (AVE)-based reliability. As shown in Table 2, all other indicators met this threshold, indicating strong indicator validity.

To assess the internal consistency and reliability of the reflective constructs, two key measures were used: composite reliability and Cronbach's alpha. Internal consistency reliability reflects how consistently the items measure the underlying construct. In addition, AVE-based reliability (rho_A) and composite reliability (rho_C), also known as omega coefficients, were calculated as recommended measures of reliability. According to Hair et al. (2019), values above 0.70 are considered acceptable for these reliability metrics in SmartPLS 4. Table 2 presents the reliability results, showing that all constructs demonstrate satisfactory composite reliability and Cronbach's alpha, indicating strong internal consistency.

Convergent validity was assessed, which refers to the extent to which items of a construct correlate positively with one another (Hair et al., 2019). This was measured using AVE, which was calculated as the average squared factor loading across each construct's indicators. AVE values in this study ranged from 0.632 to 0.913, all exceeding the recommended minimum of 0.50 (Hair et al., 2019), suggesting adequate convergent validity for all constructs. The results are shown in Table 2.

Table 2. Validity and Reliability of the Measurement Model

Factors	Indicators	Loading	Cronbach Alpha	Rho_A	Rho_C	AVE
Intrinsic motivation: Competency	IMC1	0.893	0.848	0.852	0.908	0.767
	IMC2	0.855				
	IMC3	0.879				
Intrinsic motivation: Relatedness	IMR1	0.753	0.853	0.862	0.895	0.632
	IMR2	0.854				
	IMR3	0.857				
	IMR4	0.735				
	IMR5	0.766				
Intrinsic motivation: Control	IMCI1	0.727	0.911	0.920	0.954	0.740
	IMCI2	0.885				
	IMCI3	0.895				
	IMCI4	0.904				

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

Factors	Indicators	Loading	Cronbach Alpha	Rho_A	Rho_C	AVE
	IMCI5	0.877				
Perceived ease of use	PEU1	0.790	0.910	0.920	0.937	0.709
	PEU2	0.927				
	PEU3	0.909				
	PEU4	0.921				
Perceived usefulness	PU1	0.794	0.858	0.960	0.904	0.701
	PU2	0.840				
	PU3	0.856				
	PU4	0.858				
Behavioral intention	BI2	0.953	0.905	0.907	0.955	0.913
	BI3	0.958				
Actual usage	AU1	0.969	0.919	−5.788	0.826	0.709
	AU2	0.692				

To assess discriminant validity, we applied the Fornell–Larcker criterion. This method evaluates whether each construct accounts for more variance among its indicators than among indicators of other constructs in the model. Discriminant validity is confirmed when the square root of the AVE for each construct exceeds its highest correlation with any other construct (Hair et al., 2019). Table 3 presents the results, indicating that each construct met the criterion and confirming discriminant validity.

Table 3. Discriminant Validity

	Actual Use	Ease of Use	Intention	Relatedness	Usefulness	Competency	Control
Actual use	0.842						
Ease of use	0.039	0.888					
Intention	0.056	0.646	0.956				
Relatedness	0.149	0.467	0.477	0.795			
Usefulness	0.037	0.660	0.560	0.562	0.837		
Competency	0.034	0.684	0.568	0.516	0.694	0.876	
Control	0.088	0.582	0.746	0.513	0.491	0.508	0.860

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

4.3. The Inner Model

The initial assessment of the structural (inner) model aimed to evaluate the hypothesized relationships using path coefficients. These coefficients indicate the strength of the relationships among the exogenous latent variables. To assess their significance, we applied the partial least squares algorithm and performed bootstrapping with 5 000 resamples. Table 4 displays the path coefficients for each proposed relationship, along with the corresponding *T*-statistics and *p*-values. Based on these results, six out of the nine hypotheses in the research model were supported, as demonstrated in Figure 3 and Table 4.

Table 4. Structural Model Results

Hypothesis	Path coefficients (*β*)	*T*-statistics	*p*-value	Decision
H1a: Competency -> Usefulness	0.517	8.720	0.000	Supported
H1b: Relatedness -> Usefulness	0.241	4.633	0.000	Supported
H1c: Control -> Usefulness	0.104	1.862	0.063	Not supported
H2a: Competency-> Ease of Use	0.505	8.528	0.000	Supported
H2b: Relatedness -> Ease of Use	0.053	1.024	0.306	Not supported
H2c: Control -> Ease of Use	0.298	4.198	0.000	Supported
H3: Usefulness -> Intention	0.237	3.733	0.000	Supported
H4: Ease of Use -> Intention	0.490	7.064	0.000	Supported
H5: Intention -> Actual Use	0.056	0.687	0.492	Not supported

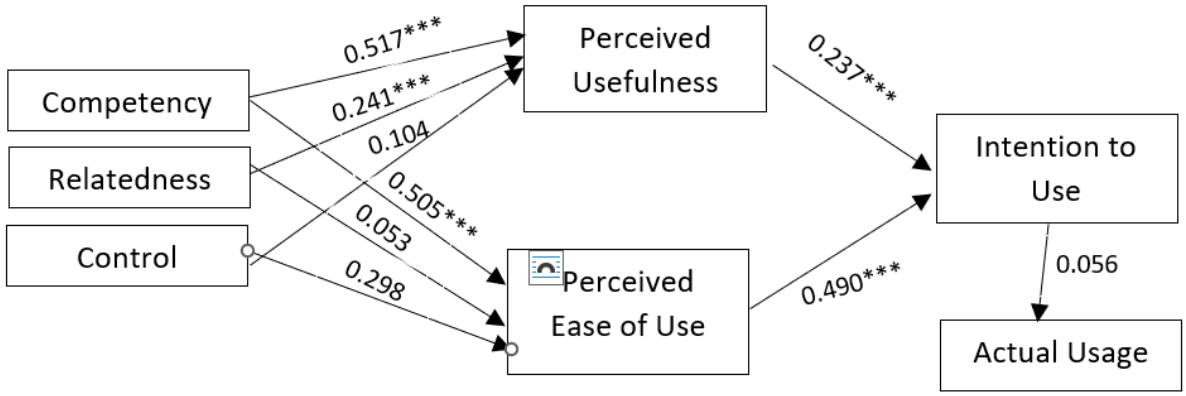

Figure 3. Extended TAM with Coefficients of Paths

5. Discussion

5.1. Intrinsic Motivation and Perceived Usefulness

The findings of this study show a profound link between intrinsic motivation—covering dimensions such as competency, relatedness, and control —and the perceived usefulness of mobile gaming platforms among African students. In particular, the great association that exists between competency and perceived usefulness goes in line with the tenets of Self-Determination Theory (SDT) as articulated by Ryan and Deci (2000), which posits that individuals who experience a heightened sense of competence in their engagements with technology are predisposed to attribute greater

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

utility to it. This alignment with the theory is further supported by Hamari et al. (2019), who, in their study examining digital platforms, explain how the instrumental values of a platform are amplified by users' mastery of its functionalities. In line with mobile gaming, the result of the current study suggests that when students in African societies perceive themselves as adept at controlling game mechanics, they are more inclined to see these platforms as not just tools for entertainment but as vehicles for cognitive enhancement and skill development. This perspective is particularly important in environments with resource-constrain like Africa, where digital technologies often serve dual purposes of leisure and informal learning, as pointed out by Owiti (2016) in his analysis of communal digital behaviors.

Moreover, the influence of relatedness on perceived usefulness reveals a social dimension that broadens the discussion of technology adoption. The outcomes of this study corroborate those of Wang et al. (2021), who emphasized the pivotal role of social connectivity in fostering positive evaluations of technological artifacts. In the African environment, characterized by strong communal ties, the manifestation of relatedness becomes visible through features such as multiplayer modes or social sharing functionalities in mobile games, which enhance users' sense of belonging and, consequently, how they appraise the usefulness of the platform. This finding aligns with several literature on gamification in African universities, such as the work by Oluwajana et al. (2022), which integrated SDT with the Technology Acceptance Model (TAM) to show how social elements in e-learning platforms bolster perceived benefits. Similarly, Jordaan (2023) in the South African Journal of Information Management examined the role of mobile gaming in information disclosure, noting that perceived utility is amplified by social motivations, facilitated by community-driven value creation.

However, the absence of a significant relationship between control (autonomy) and perceived usefulness in this study makes it different from established narratives, such as those presented by Raman et al. (2022), who contended that autonomy in technology use cultivates a stronger sense of usefulness by empowering users to control their experiences. This difference may be traceable to the inherent structure of mobile games, which often impose rigid rules and progression paths, thereby curtailing perceived autonomy, especially in African markets where budget-friendly games prioritize simplicity over customization. Furthermore, comparative studies specific to Africa, such as those of Asongu and Odhiambo (2019), show that this can worsen due to infrastructural constraints that might restrict autonomous interactions because of limited device capabilities.

Prior studies, are mostly centered on the Western societies and have overlooked how cultural communalism and economic barriers modulate these relationships. Therefore, this research fills this gaps by showing that while competency and relatedness are strong enhancers of perceived usefulness in Africa, the diminished role of control shows the need for game designs that are culturally attuned.

5.2. Intrinsic Motivation and Perceived Ease of Use

As regards the relationship that exists between intrinsic motivation and perceived ease of use, the findings of this study show how competency significantly bolsters the perception of users about mobile games being intuitive and accessible. This corroborates Davis' (1989) foundational TAM proposition that perceived complexity is reduced by skill proficiency, as supported by Rafdinal et al. (2020), who observed that experienced gamers encounter lower barriers when using the platforms. In the African setting, where digital literacy levels vary, competency acts as a bridge, enabling students to overcome initial hurdles and perceive games as user-friendly. This is consistent with Venkatesh and Bala (2008), who argued that the learning curve is diminished by mastery, and it extends to mobile gaming through parallels in mobile learning studies, such as those by Al-Emran et

al. (2019) on STEM education in rural Africa, where adoption is facilitated by ease of use driven by competency.

The positive influence of control on perceived ease of use further aligns with theoretical expectations, thereby suggesting that users who feel empowered to manipulate game elements view the interface as more straightforward. This finding resonates with Hamari and Koivisto (2015), although in a manner that is contrasting as regards relatedness, and is supported by recent integrations of SDT and TAM in gamification, as in Rodrigues et al. (2016), where perception of usability is enhanced by autonomy. Conversely, the non-significant role of relatedness challenges social motivation theories, diverging from Hamari and Koivisto (2015), who posited that interactions are eased by connectivity. Nijihia (2024) attributes this to the emphasis on individual mastery in mobile gaming, especially in Africa, where intermittent connectivity prioritizes solo play. This is buttressed in cross-cultural analyses by Bakkar et al. (2023), which shows how infrastructural barriers in Africa diminish the impact of social features on ease of use.

The scholarly contribution of this study is made manifest in its detailed explication of intrinsic the differential effects of motivation on perceived ease of use within African mobile gaming, which is an aspect that is rarely covered in prior literature. While studies such as Shroff et al. (2017) have proposed frameworks for intrinsic factors in mobile learning, few have dissected these in gaming contexts, especially in Africa. By showing that competency and control are dominant drivers while relatedness lags, it bridges gaps in SDT applications, as noted in continuance intention research by Hsu and Lin (2023). This balanced understanding advances theoretical models through the incorporation of contextual moderators such as cultural individualism-collectivism, thereby providing a blueprint for future cross-cultural validations and informing design strategies to enhance accessibility in low-resource settings.

5.3. Perceived Usefulness and Behavioral Intention

The findings of this study confirm that perceived usefulness plays a pivotal role in shaping the behavioral intention of African students in the adoption of mobile gaming, which resonates with the core propositions of the Technology Acceptance Model (TAM) (Davis, 1989). The perception that mobile games provide tangible benefits, such as cognitive development, entertainment, or even informal skill acquisition, is a significant driver of students' inclination to engage with these platforms. This result is in close alignment with Wu and Santana (2022), who found that the intention of students to use mobile games increase when they perceive these platforms as enhancing cognitive abilities or providing recreational value. However, this finding partially diverges from Lowry et al. (2013), who argued that in hedonic technologies like mobile games, enjoyment often supersedes functional utility as a driver of adoption. The present study suggests that in African societies, where there are resource constraints and digital technologies often serve diverse roles, the substantial influence of perceived usefulness is maintained even in hedonic contexts. For instance, mobile games that incorporate educational elements or problem-solving challenges may resonate strongly with students who view them as tools for intellectual growth, as supported by studies on gamification in African education (Oluwajana et al., 2022).

Sánchez-Franco et al. (2021) integrated TAM with loyalty intention frameworks to show that perceived value fosters sustained engagement with digital platforms, however, their study focused on utilitarian systems. The current findings extend this by illustrating that perceived usefulness drives adoption in hedonic systems like mobile gaming, particularly in African settings where great priority is placed on pragmatic benefits. Conversely, Hadi and Wirawan (2025) emphasized enjoyment over utility in Southeast Asian gaming markets, suggesting that there are variations in motivational drivers across regions.

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

This study makes a significant contribution to the literature by serving as a bridge between the hedonic and utilitarian perspective in the application of TAM. While prior research often dichotomizes these motivations, this study shows that perceived usefulness is an essential determinant of behavioral intention in African mobile gaming thereby filling a gap in TAM extensions specific to regions. It shows the amplification of the role of functional benefits by cultural and economic contexts, thereby providing a theoretical refinement of TAM that accounts for environments that are constrained in terms of resources. Practically, this guides developers to integrate utilitarian features, such as skill-building or educational content, into mobile games in a bid to enhance adoption among African students, thereby contributing to efforts aimed at promoting digital inclusion.

5.4. Perceived Ease of Use and Behavioral Intention

The pronounced influence of perceived ease of use on behavioral intention shows that it is central in driving the adoption of mobile gaming among African students, which aligns with TAM's assertion that adoption likelihood is enhanced by intuitive interfaces (Venkatesh et al., 2003). The findings of this study show that user-friendly designs with minimal learning curves are paramount, especially for students challenged by resource constraints such as outdated devices or limited digital literacy. This corroborates Rafdinal et al. (2020), who found that adoption in mobile gaming platforms is encouraged by seamless navigation, and Raman et al. (2022), who emphasized that intuitive interfaces outweigh long-term benefits in hedonic contexts. In African settings with limited access to advanced devices, ease of use is an essential enabler, as shown in studies on the adoption of mobile learning among disadvantaged university students (Mafenya et al., 2022).

Compared with this study, the stronger impact of ease of use over usefulness contrasts with utilitarian technology adoption models, in which functionality often dominates (Venkatesh & Davis, 2000). This divergence aligns with hedonic technology research, such as Ha et al. (2013), which shows perceived enjoyment and ease as primary drivers in gaming contexts. However, African society introduces a unique point of view; for instance, Mafenya (2020) noted that teachers in Pretoria prioritized ease of use in mobile learning due to infrastructural barriers, a parallel applicable to gaming. This contrasts with findings from high-income markets, where users may tolerate complexity for advanced features (Venkatesh et al., 2012). The emphasis of the current study on ease shows the need for African students for accessible platforms that accommodate low digital literacy and the scarcity of resources.

This study contributes significantly to the literature by foregrounding perceived ease of use as a dominant driver in African mobile gaming adoption, which therefore addresses a gap in TAM applications specific to contexts (Dwivedi et al., 2024). It extends prior research by showing how intuitive design is amplified by infrastructural and literacy constraints, thereby providing a theoretical refinement of TAM for low-resource settings. Practically, it informs game developers to prioritize simplicity and compatibility with low-end devices, enhancing accessibility for African users. This fills a research gap in understanding how ease of use drives adoption in developing regions, thereby, providing a foundation for future studies to examine cross-contextual variations in user experience design.

5.5. Behavioral Intention and Actual Usage

Contrary to expectations, the study did not find significant support for the relationship between behavioral intention and actual usage. These findings resonate with Asongu and Odhiambo (2019), who noted how infrastructural challenges in Africa disrupt the translation of intention into usage across digital technologies. For instance, students may intend to play mobile games but face prohibitive data costs or unreliable networks, which hinder actual engagement, a phenomenon also noted in mobile banking studies (Adeola et al., 2025). This contrasts with previous research, such as

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

that by Venkatesh and Bala (2008), which found that actual usage is strongly predicted by intention. This divergence shows that there is a need for context-specific models that account for external constraints, a gap not adequately addressed in global TAM applications (Rahi et al., 2019). This may also be explained by external barriers, such as data costs, limited device storage, or network instability, which hinder students from acting on their intentions (Alzouma, 2005). Okonkwo et al. (2020) observed that infrastructural challenges in Africa often mediate the link between intention and usage, making adoption dependent on external conditions rather than solely on individual intentions.

This study contributes to the literature by showing the mediating role of infrastructural and economic barriers in African mobile gaming adoption, addressing a critical gap in understanding how the link between intention and usage is disrupted by contextual factors. It extends TAM by incorporating external moderators, thereby providing a theoretical framework for studying adoption in environments constrained by resources. In practice, it shows the need for low-bandwidth games and offline functionality to bridge this gap, informing developers and policymakers on strategies to enhance digital access.

5.6. The Role of Economic and Infrastructural Constraints

The findings also show the significant role played by economic and infrastructural constraints regarding the adoption of mobile gaming. Many respondents indicated that they faced challenges related to mobile data costs and device limitations, which aligns with previous studies, such as those by Asongu and Odhiambo (2019), that indicated affordability as a major barrier to the adoption of digital technologies in Africa. Although economic constraints were not directly tested as variables in this study, the lack of a strong relationship between behavioral intention and actual usage indicated that the adoption process is mediated by financial and infrastructural barriers. This finding is corroborated by Nijihia (2024), who observed that African students often engage in offline gaming due to the high cost of data.

These barriers do not just limit access but also mediate the relationship between behavioral intention and actual usage, as seen in mobile health applications where cost and connectivity disrupt adoption (Adeola et al., 2025). In contrast, studies in high-income environments, such as those on gaming continuance (Hsu & Lin, 2023), rarely show such constraints, emphasizing user motivation over systemic barriers.

This study greatly contributes to the literature by integrating economic and infrastructural constraints into discussions of mobile gaming adoption, thereby addressing a gap in research on gaming within African settings. It extends TAM and UTAUT frameworks by foregrounding systemic barriers as mediators, thereby providing a theoretical viewpoint for the analysis of adoption in low-resource settings. Practically, it calls for game designs that minimize data usage and support low-end devices, thereby contributing to strategies for digital inclusion. This fills a research gap in understanding how gaming adoption is shaped by external constraints, thereby, providing a foundation for future studies on technology access in developing regions.

5.7. Cultural Perceptions and Gaming Adoption

The study further showed the influence of cultural attitudes toward gaming. While some students viewed mobile gaming as a productive cognitive exercise, others saw it as a distraction from academic pursuits. This perception aligns with the findings of the study by SCCG (2024), which revealed that the adoption of gamification in certain African societies is limited by cultural stigmatization. Similarly, gender dynamics also played a role, with male students showing higher adoption rates than female students. This corroborated Owiti's (2016) study, which suggested that gaming is often perceived as an activity dominated by males.

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

These findings contrast with Western gaming cultures, where gaming enjoys strong social acceptance (Lowry et al., 2013), underscoring the role of cultural norms in shaping perceptions of technology.

Comparative studies show more complexities. While Bitanihirwe and Ssewanyana (2022) examined the cultural evolution of gambling in Africa, juxtaposing it with gaming suggest that societal attitudes toward non-utilitarian technologies are improving but remain constrained by traditional views. Conversely, industry reports (Africa Games Industry, 2025) indicate growing acceptance among younger demographics, thereby suggesting a generational shift. The findings of this study, as regards gender disparities, also align with general digital access research, such as GSMA (2023), which noted gender gaps in mobile technology use across Africa.

This study contributes to the literature by elucidating the socio-cultural dimensions of mobile gaming adoption in Africa, thereby addressing a specific gap in gaming research. It extends TAM through the incorporation of cultural moderators, thereby providing a framework for the analysis of technological adoption is shaped by societal norms. Practically, it informs developers to design games that are culturally sensitive, that challenge stigmatization and address gender disparities, and enhance inclusivity. This fills a research gap in understanding socio-cultural influences on gaming, thereby, paving the way for cross-cultural studies on technology acceptance.

6. Conclusion

This study investigated the adoption of mobile games among African students through an extended Technology Acceptance Model that incorporated intrinsic motivation, perceived usefulness, and perceived ease of use. The results showed that intrinsic motivation, especially the sense of control and competence, played a crucial role in shaping students' perceptions of mobile games as both useful and easy to use, thereby fostering stronger intentions to engage with them. Furthermore, perceived usefulness and ease of use were found to be significant predictors of the intentions of students to adopt mobile games. Nonetheless, despite these positive perceptions, actual use was constrained by contextual barriers, including high internet data costs, limited access to suitable devices, and infrastructural limitations. This shows the need for strategies that address both the psychological drivers of adoption and the external barriers to access. For sustainable adoption, game developers should focus on creating gaming experiences that are engaging, yet affordable, while policymakers should give priority to the improvement of digital infrastructure. Educators can also utilize mobile games as effective tools for the enhancement of learning engagement. Therefore, the findings contribute to a deeper understanding of mobile gaming adoption in Africa by highlighting the relationships among motivational, perceptual, and contextual factors.

7. Limitation

One notable limitation of this study is that the intended sample size of 400 participants was not achieved. Although the final sample was sufficient for the planned statistical analyses, the shortfall may have reduced the statistical power of the study and limited the generalizability of the findings because a larger sample might have captured greater variability in demographic characteristics, gaming habits, and perceptions, thereby providing a more comprehensive understanding of mobile gaming adoption among African students. Therefore, future studies could address this limitation by employing wider recruitment strategies or extending the data collection period to achieve the desired sample size.

https://doi.org/10.22521/edupij.2025.19.546 Published online by Universitepark Press

Declarations

Author Contributions. OR.: Literature review, conceptualization. AO.: methodology, data analysis. AJ.: review-editing and writing, original manuscript preparation. All authors have read and approved the published version of the article.
Conflicts of Interest. There is no conflict of interest
Ethical Approval. Ethical clearance was obtained from Covenant University CU/HREC/AO/297/23
Data Availability Statement. Data was carefully and ethically collected.
Acknowledgments. We appreciate the students who participated in the research

References

Agarwal, R., & Karahanna, E. (2000). Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage. *Information Systems Research*, *33*(3), 842–857. https://doi.org/10.1287/isre.2022.1012

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Prentice Hall.

Al-Azawei, A., & Alowayr, A. (2021). Predicting mobile learning acceptance: An integrated model and empirical study based on higher education students' perceptions. *Australasian Journal of Educational Technology, 37*(3), 38–55. https://doi.org/10.14742/ajet.6154

Al-Samarraie, H., Bello, K. A., Alzahrani, A. I., Smith, A. P., & Emele, C. (2021). Young users' social media addiction: Causes, consequences and preventions. *Information Technology & People*, *35*(7), 2314–2343. http://doi.org/10.1108/ITP-11-2020-0753

Alkailani, M., & Kumar, R. (2016). Impacting innovativeness: The role of interpersonal influences and cultural dimensions on consumer innovativeness. *Journal of Strategic Innovation and Sustainability, 11*(1), 62–78. Retrieved June 16, 2025, from http://www.na-businesspress.com/JSIS/AlkailaniM_Web11_1_.pdf

Alzouma, G. (2005). *The myths of digital technology in Africa: Leapfrogging development? Global Media and Communication, 1*(3), 339–356. https://doi.org/10.1177/1742766505058128

An, F., Xi, L., & Yu, J. (2024). The relationship between technology acceptance and self-regulated learning: The mediation roles of intrinsic motivation and learning engagement. *Education and Information Technologies*, *29*, 2605–2623. https://doi.org/10.1007/s10639-023-11959-3

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *Psychological Bulletin*, *127*(5), 713–735. https://doi.org/10.1348/014466601164939

Asongu, S. A., & Odhiambo, N. M. (2019). *Mobile banking usage, quality of growth, inequality and poverty in developing countries*. *Information Development, 35*(2), 303–318. Retrieved June 16, 2025, from https://ssrn.com/abstract=3070048

Astute Analytica. (2024, December 9). *The African gaming market is skyrocketing to reach US$ 10.81 billion by 2033*. GlobeNewswire. Retrieved June 16, 2025, from Astute Analytica website.

Baabdullah, A. M. (2018). Consumer adoption of mobile social network games (M-SNGs) in Saudi Arabia: The role of social influence, hedonic motivation and trust. *Technology in Society*, *53*(C), 91–102. https://ideas.repec.org/a/eee/teinso/v53y2018icp91-102.html

Boyle, E. A., Hainey, T., Connolly, T. M., Gray, G., Earp, J., Ott, M., & Pereira, J. (2016). An update to the systematic literature review of empirical evidence of the impacts and outcomes of computer games and serious games. *Computers & Education*, *94*, 178–192. https://doi.org/10.1016/j.compedu.2015.11.003

Chandy, A. M. (2024, September 28). *Endless play on hand: Mobile games fuel fun and friendship*. *The Star*. Retrieved June 16, 2025, from The Star website.

Chatterjee, S., Chaudhuri, R., & Vrontis, D. (2022). Examining the antecedents and consequences of addiction to mobile games: An empirical study. *Information Systems and e-Business Management*, *23*(1), 241–260. http://doi.org/10.1007/s10257-022-00614-y

Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). New York, NY: John Wiley & Sons.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008

Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2019). Re-examining the unified theory of acceptance and use of technology (UTAUT): Towards a revised theoretical model. *Information Systems Frontiers*, *21*(3), 719–734. https://doi.org/10.1007/s10796-017-9774-y

Gisbert-Pérez, J., Martí-Vilar, M., Merino-Soto, C., Chans, G. M., & Badenes-Ribera, L. (2024). *Gender differences in internet gaming among university students: A discriminant analysis*. *Frontiers in Psychology*. Advance online publication https://doi.org/10.3389/fpsyg.2024.1412739

Ha, I., Yoon, Y., & Choi, M. (2007). Determinants of adoption of mobile games under mobile broadband wireless access environment. *Information & Management*, *44*(3), 276–286. https://doi.org/10.1016/j.im.2007.01.001

Hamari, J., & Koivisto, J. (2015). Why do people use gamification services? *International Journal of Information Management*, *35*(4), 419–431. https://doi.org/10.1016/j.ijinfomgt.2015.04.006

Hamari, J., Shernoff, D. J., Rowe, E., Coller, B., Asbell-Clarke, J., & Edwards, T. (2019). Challenging games help students learn: An empirical study on engagement, flow and immersion in game-based learning. *Computers in Human Behavior*, *54*, 170–179. https://doi.org/10.1016/j.chb.2015.07.045

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2019). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Los Angeles, CA: Sage.

Hossain, M. I., Hussain, M. I., & Akther, A. (2023). E-commerce platforms in developing economies: Unveiling behavioral intentions through the Technology Acceptance Model. *Open Journal of Business and Management, 11*(6), 2988–3020. https://doi.org/10.4236/ojbm.2023.116165

Hsu, C. L., & Lu, H. P. (2007). Consumer behavior in online game communities: A motivational factor perspective. *Computers in Human Behavior*, *23*(3), 1642–1659. https://doi.org/10.1016/j.chb.2005.09.001

Katz, V. S., & Gonzalez, C. (2016). Community variations in the technology adoption and integration of low-income Latino families. *American Behavioral Scientist*, *60*(1), 59–80. https://doi.org/10.1177/0002764215601712

Lai, C. Y., Cheung, K. Y., & Chan, C. S. (2023). Exploring the role of intrinsic motivation in ChatGPT adoption to support active learning: An extension of the technology acceptance model. *Computers and Education: Artificial Intelligence, 5*, Article 100178. https://doi.org/10.1016/j.caeai.2023.100178

Lin, H.-F. (2010). Understanding behavioral intention to use a cloud computing enterprise system. *International Journal of Information Management, 30*(4), 356–363. https://doi.org/10.1016/j.ijinfomgt.2010.02.005

Lowry, P. B., Gaskin, J., Twyman, N. W., Hammer, B., & Roberts, T. L. (2013). Taking "fun and games" seriously: Proposing the hedonic-motivation system adoption model (HMSAM). *Journal of the Association for Information Systems*, *14*(11), 617–671. https://doi.org/10.17705/1jais.00347

Munga, A. K. (2012). *Adoption of mobile internet among university students in Kenya* [MSc thesis, University of Nairobi]. University of Nairobi Repository. http://erepository.uonbi.ac.ke/handle/11295/21792

Murray, J. (2024, October 24). Can gamified technology be used to enhance student motivation? *The Learning Scientists*. Retrieved from https://www.learningscientists.org/blog/2024/10/24

New Zealand. (2024, April 15). *Playbook for success: Navigating growth and overcoming challenges in Africa's gaming market*. *PocketGamer.biz*. Retrieved June 16, 2025, from PocketGamer.biz website.

Njihia, M. (2024, April – exact date unspecified). *Tech inclusion: How gaming bridges thetechnology gap for millions of African youth*. *Business Daily Africa*. Retrieved June 16, 2025, from https://www.businessdailyafrica.com/bd/corporate/technology/hoe-gaming-bridges-technology-gap-for-african-youth-4793304?utm_source=chatgpt.com

Okonkwo, C. W., Huisman, M., & Taylor, E. (2020). A framework for adoption and diffusion of mobile applications in Africa. *Advances in Science, Technology and Engineering Systems Journal*, *5*(6), 1577–1592. http://doi.org/10.25046/aj0506189

Oni, A. A., Okuboyejo, S.R., Akinbode, M., Okesola, J.O., Adebiyi, A.A., & Ayo, C. K. (2022). Impacts of trust factors and task technology fit on the use of e-payment systems in Nigeria. *International Journal of Business Information System*. *39*(1), 96–115. https://ideas.repec.org/a/ids/ijbisy/v39y2022i1p96-115.html

Onukwue, A. (2025, February 5). *African gaming revenues hit $1.8 B in new record*. *Semafor*. Retrieved June 16, 2025, from https://www.semafor.com/article/02/05/2025/african-gaming-revenues-hit-18b-in-new-record

Ouedraogo, I., Some, M. J., Benedikter, R., & Diallo, G. (2022). Using serious mobile games to improve health literacy in rural Sub-Saharan Africa: A literature review. *Studies in Health Technology and Informatics, 295*, 140–143. https://doi.org/10.3233/SHTI220681

Owiti, V. (2016). *The paradox of mobility in the Kenyan ICT ecosystem: An ethnographic case of how the youth in Kibera slum use and appropriate the mobile phone and internet. Discourse & Communication, 10*(3), 301– 319. https://doi.org/10.1080/02681102.2016.1155144

Price, D. G. (2017). *Drivers of mobile game adoption amongst Generation Y students* [Master's thesis, North-West University, South Africa]. NWU Institutional Repository.

Rafdinal, W., Qisthi, A., & Asrilsyak, S. (2020). Mobile game adoption model: Integrating technology acceptance model and game features. *Sriwijaya International Journal of Dynamic Economics and Business*, *4*(1), 43–56. http://doi.org/10.29259/sijdeb.v4i1.43-56

Raman, A., Thannimalai, R., Rathakrishnan, M., & Ismail, S. N. (2022). *Investigating the influence of intrinsic motivation on behavioral intention and actual use of technology in Moodle platforms*. *International Journal of Instruction, 15*(1), 1003–1024. https://doi.org/10.29333/iji.2022.15157a

Roldán, J. L., & Sánchez-Franco, M. J. (2012). Variance-based structural equation modeling: Guidelines for using partial least squares in information systems research. In M. S. Mora, O. Gelman, A. Steenkamp, & M. Raisinghani (Eds.), *Research methodologies, innovations and philosophies in software systems engineering and information systems* (pp. 193–221). IGI Global. https://doi.org/10.4018/978-1-4666-0179-6.ch010

Ryan, R. M., & Deci, E. L. (2020). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York, NY: Guilford Press.

Ryan, R. M., & Deci, E. L. (2000). *Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American Psychologist, 55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Santhanamery, T., & Ramayah, T. (2018). *Explaining and predicting users' continuance usage intention toward e-filing utilizing technology continuance theory.* In *Encyclopedia of Information Science and Technology* (Fourth Edition, pp. 831–846). IGI Global. https://doi.org/10.4018/978-1-5225-2255-3.ch072

Saravanos, A., Zervoudakis, S., & Zheng, D. (2022). Extending the technology acceptance model 3 to incorporate the phenomenon of warm-glow. *Information*, *13*(9), Article 429. https://doi.org/10.3390/info13090429

SCCG Management. (2025, January 9). *Gaming in Africa: A new era of digital entertainment*. SCCG Management. Retrieved June 16, 2025, from sccgmanagement.com

Tarhini, A., Hone, K., & Liu, X. (2015). A cross-cultural examination of the impact of social, organizational and individual factors on educational technology acceptance between students in Lebanon and England. *British Journal of Educational Technology, 46*(4), 739 755. https://doi.org/10.1111/bjet.12169

Taylor, S., & Todd, P. A. (2001). Understanding information technology usage: A test of competing models. *Information Systems Research, 12*(2), 144–176. https://doi.org/10.1287/isre.12.2.144.176

Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, *39*(2), 273–315. http://doi.org/10.1111/j.1540-5915.2008.00192.x

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, *46*(2), 186–204. http://doi.org/10.1287/mnsc.46.2.186.11926

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478. https://doi.org/10.2307/30036540

Verified Market Research. (2024). *Africa gaming market report – Growth trends, market share, industry analysis and forecasts*, p. 3. Retrieved June 16, 2025, from https://www.verifiedmarketresearch.com/product/africa-gaming-market/

Wang, B., Guo, W., & Zhou, C. (2021). Effects of a single bout of mobile action video game play on attentional networks. *PeerJ, 11*, e16409. https://doi.org/10.7717/peerj.16409

Wu, X., & Santana, S. (2022). *Impact of intrinsic and extrinsic gaming elements on online purchase intention. Frontiers in Psychology, 13*, Article 885619. https://doi.org/10.3389/fpsyg.2022.885619

Zhou, T. (2015). Understanding user adoption of location-based services from a dual perspective of enablers and inhibitors. *Information Systems Frontiers*, *17*(2), 413-422. https://doi.org/10.1007/s10796-013-9413-1

About the Contributor(s)

Aderonke Oni, PhD, is Professor of Information Systems in the Information Management department of Covenant University, Ota.
Email: ronke.oni@covenantuniversity.edu.ng
ORCID: https://orcid.org/0000-0002-8625-2748

Ajayi David, is a Master's Students at University of the Witwatersrand.
Email: ajayidavid335@gmail.com
ORCID: https://orcid.org/0009-0000-5150-8857

Olu Rande, is a Lecturer at the Wits School of Arts, University of the Witwatersrand, Johannesburg.
Email: rotimirandle@gmail.com
ORCID: https://orcid.org/0000-0002-7948-1681