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# Game on: Exploring Hedonic Behavior, Social Influence, and Gamification Adoption in Tourism Through TAM

## Abstract

The application of gamification has become a transformative innovation in the tourism industry. This study explores how gamification influences tourists' attitudes and behavioural intentions, highlighting its role in driving technology adoption in the tourism sector by integrating the Technology Acceptance Model (TAM) and examining the determinants of gamification adoption, emphasising hedonic behaviour and social influence as primary motivators. Data were gathered from 418 respondents using purposive sampling through a face-to-face, structured survey administered to tourists in Gembu, Nigeria, across various demographic groups. The TAM served as the theoretical framework, while Covariance-Based Structural Equation Modelling (CB-SEM) was used to analyse data to evaluate the links among hedonic behaviour, social impact, and the adoption of gamification technology. The findings indicate that social influence has a substantial and positive effect on the adoption of gamification and further demonstrate that hedonic behavior is substantially associated with the utility of use. Attitude towards adoption exerted the most substantial influence on intention to use. These findings validate the need to integrate external factors, such as hedonic behaviour and social impact, into the TAM framework to better understand gamification adoption in tourism. The paper addresses potential research directions and constraints for future work. Based on the findings, the study authors recommend that tourism managers and destination marketers integrate social interaction and user enjoyment elements into gamified applications to enhance tourist engagement and technology adoption.

**Keywords:** gamification, technology acceptance model, social influence, hedonic behavior, Nigeria

## 1. Introduction

In recent years, the rapid evolution of modern information systems architecture has driven innovation across sectors, including tourism. Tourism organizations have embraced this technological wave by using information systems to promote, advertise, and market their destinations (Nikopoulo et al., 2024; Shen & Joppe, 2018; Lin, Chiu, & Huang, 2011).

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Over the past few years, gamification has emerged as a promising concept that spans various domains such as education, sales/marketing, customer relations, health, and tourism (Biloš, 2022; Dečman et al., 2022; Harwood & Garry, 2015; Negruša et al., 2015; Yamamoto et al., 2015; Yusuf & Akinde, 2015). In tourism, gamification presents an innovative approach to marketing and customer relations, offering a novel dimension to tourism experiences. Notably, gamified tourist experiences potently create conscious awareness (Rodrigues, Lopes, Borges, Oliveira, & Oliveira, 2021; Xu, Tian, Buhalis, Weber, & Zhang, 2021).

Gamification significantly influences brand awareness. It is often referred to as marketing-oriented innovation (Xi & Hamari, 2020). It can create remarkable and memorable experiences, owing to its potential to enrich tourists' experiences. As a result, gamification fosters a positive perception among tourists regarding modern technology used to enhance their travel experiences, whether through gamified geographical information systems, gamified e-health applications, open data platforms, or social media interactions and games (Negruša et al., 2015; Yamamoto et al., 2015; Alizadeh & Isa, 2015).

Despite its relative novelty, the literature on gamification has rapidly become the focus of numerous investigations. A preliminary Google Scholar search for 'gamification' yielded approximately 500,000 results. These results encompassed a broad spectrum, including education (Rahmi et al., 2025; Lakshmi & Majid, 2025), tourism (Choirisa et al., 2025; Klouvidaki et al., 2025), business (Kaur & Puri, 2025; Parimita et al., 2025), and healthcare (Abdulai, 2025; Grover & Arora, 2025), among others. Nevertheless, a recent study by Marcão et al. (2024) suggests that there remains potential for improvement in the gamification literature. Specifically, the incorporation of 'technology comprehension,' 'guest anticipations,' and 'wider societal and environmental concerns' into gamification literature emphasises innovation, personalisation, and sustainability.

The transformation of tourist experiences into digital gamification platforms may augment motivation and consumer engagement, provide new promotional avenues, and reinforce customer loyalty. According to Mustafa et al. (2022), gamification is an innovative and motivational tool that enthralls consumers through engaging, enjoyable experiences. Nonetheless, despite the growing interest in the impact of gamification on tourist behaviour, previous research has often neglected the essential role of user perceptions and technological acceptance models in shaping adoption. This study aims to fill this gap by analysing the adoption of gamified technology from the tourist's perspective, incorporating hedonic behaviour and social influence as antecedents to the technology acceptance model, thereby contributing to the current debate on these new phenomena (Choirisa et al., 2025; Klouvidaki et al., 2025).

Furthermore, Sigala's observations (2015; 2017) have sparked research into the adoption of gamification. Specifically, previous studies have examined how gamification affects tourists' intentions to engage with tourism-related technologies and have identified factors contributing to perceived enjoyment and motivation of gamified technologies (Melián-González et al., 2021; García et al., 2019).

This study significantly contributes to the developing field of gamification in tourism by addressing the critical gaps in literature and enhancing both theoretical and practical understanding of gamified technology adoption.

Specifically, this study uniquely examines the frequently overlooked role of user perceptions and technological acceptance models in tourism gamification, focusing on the integration of hedonic behavior and social influence as precursors in the Technology Acceptance Model (TAM) (Zhang & Li, 2025). By focusing on these aspects, the study enhances our understanding of tourists' adoption of gamified technologies, thereby augmenting the TAM theoretical framework and illustrating the impact of hedonic behaviour and social influence on the acceptance and use of gamified platforms in tourism. Moreover, the study contextualises gamification within the tourism sector, highlighting its capacity to influence attitudes towards the visitor experience and adoption and intention to use gamified technologies.

## 2. Literature review

### 2.1. Gamification

Gamification integrates game elements and mechanics into non-game contexts (Ding, 2019; Zichermann & Cunningham, 2011). Creating applications for daily activities, such as travel planning and destination evaluation, facilitates the use of virtual reality experiences, making them more accessible and engaging. A contemporary tourism model emphasizes tourists' experiences and their feedback on technologies that provide unique and lasting experiences (Aebli, 2019; Almeida & Ivanov, 2024). Hvass (2014) and Li et al. (2017) support the use of gamification to provide high-quality information about tourist destinations. Hvass (2014) also highlights how gamification creates competition among tourist organizations globally. It has effectively revolutionized conventional and non-conventional bookings, reservations, accommodations, and travel methods.

As a result, many Destination Marketing Organisations (DMOs) are adopting more efficient methods to keep pace with the global evolution of tourism. Modern Information and Communication Technology plays a vital role in business operations, supported by business information systems (Nikopoulou et al., 2024). The integration of innovative technologies into tourism offers visitors multifaceted experiences. Gamified elements can create interactive motivation for users and infuse elements of fantasy, fun, social engagement, and challenges, ultimately enhancing the user experience (Manuela et al., 2018).

### 2.2. Gamification in current tourism practices

Various gamification platforms are widely used in marketing and brand awareness, as evidenced by examples like "Smileland Thailand," designed to generate brand awareness, "REXplorer," created to facilitate cultural exploration with interactive game mechanics, "Earning Wings Gamified System" by Air Canada, aimed at enhancing customer loyalty, and geo-location tools for tourism location determination (Xu et al., 2021). Traditionally, tourism and hospitality organizations have viewed game elements as a new opportunity to restructure customer loyalty programs, primarily through promotional campaigns (Negruşa et al., 2015). Consequently, the tourism and hospitality sector has seen exponential adoption of gamification for marketing, surpassing most other industries (Bravo et al., 2021; Negruşa et al., 2015). Research substantiates the use of gamification in tourism, suggesting that its reward systems serve as powerful motivators to enhance overall travel experiences (Bravo et al., 2021).

Gamification offers the tourism industry a unique opportunity to convey information through entertainment, thereby improving brand awareness, enhancing the customer experience, and increasing customer loyalty (Xu et al., 2021; Xu & Buhalis, 2021). This technology-driven approach enables DMOs to craft innovative policies and empowers local businesses with real-time information about the current needs of the tourism market (Harwood & Garry, 2015). Overall, gamification in tourism is a promising trend that benefits the industry. In recent years, gamification design elements have been increasingly popular for influencing behaviour and motivation through various methods such as challenges, scores, leaderboards, rewards, and points. These methods require tourists to submit photos of the areas they visit, share their progress on leaderboards, assign scores to completed tasks, and earn virtual rewards that unlock new challenges. An empirical study by Liu, Santhanam, and Webster (2017) demonstrated that gamification has a positive impact on psychological effects and motivational behaviour, as evidenced by a comparison of behavioural perceptions of gamified applications between non-users and users on a virtual community platform.

Although the literature addresses factors influencing the development of gamified applications in tourism, few studies have explored the hedonic aspects of gamification (Oluwajana et al., 2019). While game-related technologies have demonstrated promise in enabling tourist co-creation experiences, gamified technologies

that enhance customer motivation in tourism have received limited attention (Aebli, 2019). Despite the proliferation of online platforms and gamification research over the past decade, examining the acceptance of gamification within the hospitality and tourism sector remains a particular gap (Moro et al., 2019).

The facts above delineate the importance of focusing on the impact of hedonic behaviour and social influence on technology acceptance in the context of travel experiences. Given the competitive pressures and the need for sustainability in the global tourism industry, exploring new technologies such as gamification is essential for tourism organisations to remain competitive (Almeida & Ivanov, 2024; Anaya & Lehto, 2020; Abou-Shouk, 2018).

### 2.3. Technology adoption and gamification

Current studies continue to provide significant analysis of individual viewpoints on technology use, particularly the determinants of adoption and acceptability (Hamari & Koivisto, 2015a). The creation of TAM represents a crucial advance in this field, providing a solid framework for understanding technology adoption across diverse contexts. Numerous empirical and theoretical studies have employed and extended the TAM to evaluate the influence of perceived usefulness, perceived ease of use, attitudes, and behavioral intentions on technology adoption (Fathema et al., 2015; Yoo et al., 2017; Rodrigues et al., 2016a).

TAM has undergone several expansions and modifications to incorporate supplementary variables that reflect the complexities of specific technologies and user contexts. Abou Kamar et al. (2024) revealed that incorporating external factors can enhance the model's explanatory power in forecasting technology uptake. Wu and Chen (2017) validated an expanded TAM in e-commerce contexts, whereas Chang et al. (2017) examined its relevance in mobile learning environments. A significant application in tourism is Lacka's (2020) study, which expanded TAM to explore the impact of location-based augmented reality (AR) games on visitors' intentions to visit places. The research indicates that knowledge acquired through AR games substantially increases the intention to visit, underscoring the potential of domain-specific adaptations of TAM to provide vital insights.

Despite the widespread use of TAM across industries, few studies have examined the adoption of gamification in the tourism sector. Research examining the impact of hedonic behaviour and social influence on visitors' views and acceptance of gamified utilities is notably scarce (Dečman et al., 2022; Xu et al., 2021; Melián-González et al., 2021; Skinner et al., 2018). Hedonic behaviour, the inherent pleasure derived from technology use, and social influence, the effect of peers and community on adoption choices, are essential elements that warrant further examination. These factors are particularly pertinent in gamification, where user motivation is frequently influenced by enjoyment, social connection, and engagement. Considering the revolutionary potential of gamification in tourism, it is essential to address these research gaps to understand how such technologies can enhance visitor experiences and stimulate innovation in the industry. Integrating hedonic behaviour and social influence into the TAM framework would enable future research to provide a more comprehensive understanding of the factors influencing the adoption and acceptance of gamification in tourism. This methodology offers valuable insights for designing gamified systems that align with visitors' tastes and behaviours, thereby advancing both theoretical and practical research in this burgeoning sector.

## 3. Conceptual framework and research hypotheses

This study enhances tourist experiences through gamified examples of ease of use. It evaluates the perceived usefulness of gamification in determining attitude towards adoption and intention to use. Specifically, it measures tourists' perceptions of gamification, using hedonic behavior and social influence as precursors within the extended TAM. Figure 1 illustrates the conceptual framework utilized in this study.

**Figure 1**  
The proposed research model

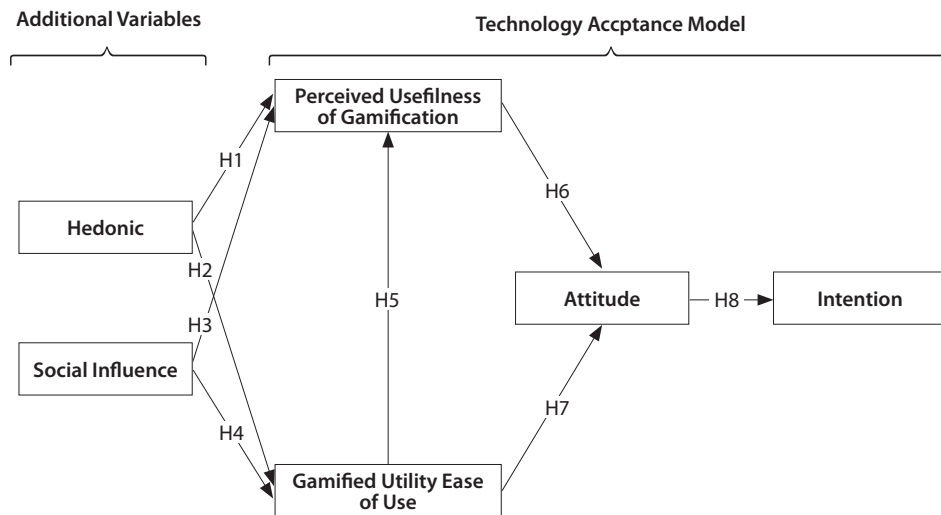


Figure 1 illustrates the interrelation between hedonic behavior, the perceived usefulness of gamification, and the ease of use of gamified utilities. It also highlights the connections among social influence, perceived effectiveness of gamification, and ease of use. Furthermore, Figure 1 illustrates the relationship between the perceived usefulness of gamification and attitude, as well as the association between the ease of use of gamified utilities and the perceived usefulness of gamification and attitudes. Finally, the figure demonstrates the association between attitude towards adoption and intention to use.

### 3.1. Hedonic behavior

Management, marketing, and behavioral research focus on hedonic behavior (van der Heijden, 2004). It emphasises and justifies the role of fun and enjoyment in intrinsic motivation models (Wang & Scheepers, 2012).

According to van der Heijden (2004), hedonic behavior refers to the enjoyment and pleasure experienced when using a system. Numerous studies on hedonic motivation have consistently highlighted the importance of enjoyment in the adoption of modern technologies (Oluwajana et al., 2019; Rosen & Sherman, 2006; Wang & Scheepers, 2012). Hedonic features are crucial in measuring behavior in entertainment and game contexts (Lowry et al., 2012). Lowry et al. (2012) have gauged the use of hedonic behavior in gamified learning environments (Lowry et al., 2012, 2015; Oluwajana et al., 2019). Adopting gamified smart tourism applications is linked to hedonic attributes (Yoo et al., 2017). The intrinsic motivations underlying hedonic behaviour corroborate the TAM model. Users engage in activities for genuine desire and the enjoyment they derive from them. Kumar Kakar (2017) states that hedonic behavior directly influences perceived usefulness. Regarding gamified use, hedonic behaviour can be interpreted as tourists' desire to explore and enjoy technology. Lacka (2020) suggests that intrinsically motivated tourists who engage in hedonic behaviours have a positive, substantial impact on the perceived usefulness of gamification in tourism.

Therefore, we propose the following hypotheses:

- H1:* Hedonic behavior (HB) positively influences the perceived usefulness of gamification (PUG).
- H2:* Hedonic behavior (HB) positively influences the ease of use of gamified utility (GUEU).

### 3.2. Social Influence (SI)

Numerous studies have demonstrated that social influence is a significant predictor of behavioural outcomes, behavioural intentions, and factors related to technology adoption, use, and attitudes toward systems (Hamari & Koivisto, 2015b; Rodrigues et al., 2021). Social influence centres on the impact of one user's behaviour on another user's perception of a system's usefulness, often evidenced through likes, comments, and feedback (Hamari & Koivisto, 2013).

Rodrigues et al. (2014) and Rodrigues et al. (2016b) both investigated the application of social cues, gamification, and technology adoption within a gamified business context, revealing a direct association between social influence and the perceived usefulness of gamification in e-banking applications. In the context of this study, social influence in gamification refers to the influence that users or tourists participating in gamification have on its usability (Khan et al., 2023).

Investigations suggest that other users' opinions about gamified technology serve as catalysts for more users to engage with gamification. Therefore, social involvement becomes an essential aspect of gamification adoption; it is a cog in the TAM model. In this study, gamification is a fun way to disseminate information about a tourist destination. Social influence generates a robust positive attraction or endorsement by influencing the determinants of the gamification technology acceptance model. With this perspective in mind, the following hypotheses are presented:

*H3:* Social influence (SI) positively influences the perceived usefulness of gamification (PUG).

*H4:* Social influence (SI) positively influences the ease of use of gamified utility (GUEU).

### 3.3. Gamified Utility Ease of Use (GUEU)

Gamified Ease of Use (GUEU) is a critical factor affecting a user's attitude and intention to adopt a technology. Numerous studies have consistently shown that a technology's ease of use significantly affects users' attitudes and intentions to adopt it (Abou-Shouk & Soliman, 2021; Khan et al., 2024; Pizło & Mazurkiewicz-Pizło, 2023; Uk & Gultekin, 2021). A positive GUEU can lead to a more favourable perception of technology's usefulness. In this study, Gamified Utility Ease of Use (GUEU) refers to the extent to which users believe that gamification is suitable for tourist experiences and can be employed with minimal effort. Just as PUG positively influences perceived usefulness and attitude towards adopting a specific technology (Müller et al., 2020; Granić, 2024), GUEU directly influences perceived usefulness, attitude, and the intention to use gamification. Thus, TAM asserts that the perceived ease of use of gamified utilities positively impacts their perceived effectiveness. Therefore, the following hypotheses are proposed:

*H5:* GUEU positively influences the perceived usefulness of gamification for use (PUG).

### 3.4. Perceived Usefulness of Gamification (PUG)

In the context of TAM, perceived usefulness (PU) is a crucial factor in determining technology adoption (Raza et al., 2017). Previous studies have consistently shown that PUG has a direct and positive impact on users' attitudes towards technology (Rodrigues et al., 2021; Kumar Kakar, 2017; Müller et al., 2020; Chang et al., 2017). In the context of gamification in tourist experiences, Perceived Usefulness of Gamification (PUG) represents users' perceived utility of gamified technology for promoting specific locations. This point indicates that users consider gamification to be an effective tool, viewing it as a driving force in fostering particular locations. Therefore, PUG stands as a powerful and direct personal determinant in evaluating users' inclination to use gamification to market a particular destination. Based on this perspective, the following hypothesis is proposed:

*H6:* Perceived usefulness of gamification (PUG) positively influences attitudes towards using gamification (ATT).

*H7:* GUEU positively influences attitudes toward continued gamification use (ATT).

### 3.5. Attitude (ATT) and Intention to Use (ITU)

The relationship between attitude and behavioral intention is a well-established construct in the TAM, initially proposed by Davis (1989). Numerous empirical studies have reaffirmed that a favourable attitude toward a technology significantly predicts an individual's intention to adopt or use it (Fathema et al., 2015; Müller et al., 2020; Chang et al., 2017).

In the context of tourism, gamification's experiential and interactive nature enhances attitudes, which, in turn, can influence tourists' intentions to engage with such technologies (Rodrigues et al., 2021; Yoo et al., 2017; Abou-Shouk & Soliman, 2021). For instance, Samar and Mazuri (2019) found that positive attitudes significantly affected users' intentions to adopt gamified banking systems, a finding consistent with those in tourism-related studies.

Therefore, the following hypothesis is proposed, aligning with TAM and these empirical validations,

*H8:* Attitude (ATT) positively influences the intention to use gamification (ITU).

## 4. Methodology

The study proposes a model that applies the extended TAM to examine gamification use. The research incorporates two novel and significant motivational factors — hedonic behaviour and social influence, combined with technology adoption — to clarify the intentions behind behaviour and attitudes towards the acceptance of and intention to use gamification.

### 4.1. Surveys

The study employed a structured questionnaire consisting of three sections to evaluate the proposed model. The first section gathered demographic information from the respondents. The second section focused on the extended TAM, specifically addressing constructs related to hedonic behavior and social influence. The final section incorporated the traditional TAM components, including perceived usefulness, perceived ease of use, attitude, and intention to adopt gamification.

### 4.2. Data collection

The participants in this study, at the time of data collection, were tourists from various countries, including the USA, Asia, Europe, and Russia. The questionnaires were distributed in hard-copy formats for respondents' convenience. The demographic data responses are presented in Table 1.

### 4.3. Research design

The questionnaire used in this study explored the acceptance of gamification. It was adapted from previous studies that utilised TAM to assess the acceptance of gamification for enhancing tourist experiences. To achieve this goal, sources of items have been adopted from the extant literature (Adukaite et al., 2017; Padilla-Meléndez et al., 2013; Lin & Bhattacharjee, 2010). Notably, this study incorporated novel variables into TAM, specifically hedonic behavior and social influence. The study employed a 5-point Likert scale, ranging from "strongly agree" to "strongly disagree." Questionnaire items and sources are presented in Appendix A.

## 4.4. Participants and Procedure

### 4.4.1. Setting

The study was conducted in Gembu, a town in Taraba State, Nigeria. A popular tourist destination, Gembu is renowned for its distinctive blend of historical, natural, and cultural attractions. The Pre-Colonial Executive Pit, the Mambilla Plateau -known for its mild temperature - Barup Waterfalls, and Chappal Waddi, sometimes referred to as the "Mountain of Death. The area is praised for its rich ecological and cultural attractions, which draw large numbers of local and international visitors each year.

Gembu was chosen as the research location specifically because it is one of Nigeria's most well-known tourist destinations. Due to its bustling tourist atmosphere, the location provided a perfect setting to examine the acceptance of gamification technology in tourist experiences. Gembu's developed infrastructure for welcoming visitors, including tour services, guides, and promotional activities, made it a suitable site for evaluating (Oruonye et al., 2016) how gamified tools improve visitors' experiences and interactions with the location.

Participants in the research were diverse visitors to Gembu throughout the data collection period. This variety aligns with the study's aim to investigate behavioural intention and the acceptance of gamification across diverse demographic groups within a defined population of tourists familiar with or exposed to tourism-related gamified systems.

### 4.4.2. Population and sample

In this study, the research population comprises all tourists who have engaged with or have knowledge of gamified systems and digital tourist technologies. This population includes both domestic and international tourists who are familiar with or have previously used other gamified applications for tourists, regardless of destination. The sampling framework represents a subset of the general research population. It consists of tourists visiting Gembu, Taraba State, Nigeria, during the data collection period, who demonstrated engagement with or awareness of gamified tourism technologies. This group was selected because of its accessibility and relevance, given Gembu's status as a prominent tourist destination with increasing exposure to technology-based tourism enhancements.

Participants comprised individuals from diverse age groups (18-50+ years), genders, and geographical backgrounds. The participants were predominantly from various countries, including the United States, Europe, Asia, and Africa, ensuring that the study encompassed a spectrum of viewpoints on gamified technology adoption models in shaping attitudinal and behavioural intentions.

The research utilised a purposive sampling technique. This method intentionally selected people who had either engaged with or possessed knowledge of tourist technology, namely, gamified systems. This strategy was employed to ensure significant responses directly relevant to the study's aims (Uludag et al., 2023). Purposive sampling is ideal for investigations focused on specific phenomena, allowing researchers to select individuals who can provide comprehensive insights. This research selected participants based on their location at a prominent tourist site and their propensity to interact with gamified technology. This methodology aligns with the study's objective of understanding behavioral intention and technological acceptability in the tourism sector.

The sample's significance is intricately linked to its environment. Gembu's status as a dynamic tourist locale, with cultural and natural features, rendered it an appropriate site for collecting data on perceptions of gamification. The inclusion of overseas tourists expanded the study's reach, ensuring that the findings could transcend a purely local environment.

Since the study population was estimated to exceed 10,000 visitors, Yamane's sample size formula was used to determine a sample size appropriate for a 95% confidence level and a 5% margin of error. This calculation yielded a minimum required sample size of 400 respondents.

Participants were screened to confirm their familiarity with tourism-related technologies, ensuring that responses were relevant to the study objectives. This approach enabled the study to yield findings that can be meaningfully generalized to the broader population of technology-aware tourists. As mentioned earlier, the questionnaire included predefined indices to gauge tourists in the sample's current use of gamified applications. To confirm the relevance of participants' responses to the research objectives. Subsequently, the participants were invited to complete a questionnaire, accompanied by a cover letter from the research team.

The research team distributed 800 surveys to the targeted participants. A total of 450 questionnaires were collected. Of that number, 32 responses were incomplete. The actual sample comprised 418 valid responses. The respondents' demographics, as shown in Table 1, were as follows: 62.0% were women, and 38.0% were men. More than half of the participants were between 26 and 40 years (53%). Most respondents were from the United Kingdom (32.77%), followed by the United States (24.40%), which are associated with tourism destinations.

**Table 1**  
*Demographic breakdown of the respondents*

	Frequency	Percentage
<b>Gender</b>		
Female	259	62.0%
Male	159	38.0%
<b>Age</b>		
18-25	45	10.76%
26-30	100	23.92%
31-40	121	28.94%
41-50	82	19.62%
>50	70	16.74%
<b>Tourist' country of origin</b>		
United Kingdom	137	32.77%
Russia	72	17.22%
American	102	24.40%
Asian	46	11.00%
Other countries	59	14.11%
<b>How did you hear about Gembu as a tourist destination</b>		
Website	130	31.10%
Tourist advertisement	135	32.29%
Social media	70	16.74%
Others	83	19.85%

## 5. Data analysis

This study employed covariance-based least-squares structural equation modelling (CB-SEM) to investigate the relationships between the variables. CB-SEM is a widely used approach (Anderson & Gerbing, 1988; Hair et al., 2014; Hair et al., 2011) that relies on a covariance-based maximum likelihood procedure to confirm theoretical frameworks and replicate covariance-based matrices while placing less emphasis on explained variance (Hair et al., 2011; Kline, 2015). To conduct this data analysis, we employed JASP 0.16.1, consistent with the recommendations of Anderson and Gerbing (1988).

### 5.1. Measurement model

The measurement model in data analysis evaluates unobserved variables and the relationships between constructs (Anderson & Gerbing, 1988; Fornell & Larcker, 1981). It assesses the model's reliability and

convergence. To ensure reliability, Cronbach's alpha values should exceed 0.7. Additionally, each item's factor loading (k) should be greater than 0.5. Therefore, in this study, all factor loadings exceed 0.5 (Saydam et al., 2025), indicating that all constructs meet the reliability requirements, as shown in Table 2.

Discriminant validity refers to the extent to which a construct is truly distinct from other constructs in the model. Following Fornell and Larcker (1981), discriminant validity is established when the square root of the AVE for each construct is greater than the inter-construct correlations. In addition, this study computed Maximum Shared Variance (MSV) and Average Shared Variance (ASV) to assess discriminant validity. For adequate discriminant validity, the following condition must hold:  $CR > AVE > MSV > ASV$  (Hair et al., 2011). These conditions were verified for all constructs except Perceived Usefulness of Gamification (PUG), where the AVE was below the recommended threshold of 0.50. While this is slightly below the standard threshold, AVE values as low as 0.40 are considered acceptable when composite reliability (CR) exceeds 0.60, indicating adequate internal consistency and convergent validity (Fornell & Larcker, 1981; Lam, 2012).

**Table 2**  
*Construct reliability and convergent validity*

Construct	Construct code	Factor loading (k)	CR	AVE	Cronbach's $\alpha$
Hedonic behavior	H1	0.883	0.879	0.710	0.842
	H2	0.892			
	H3	0.744			
Social influence	SI1	0.863	0.879	0.709	0.864
	SI2	0.882			
	SI3	0.777			
Perceived usefulness of gamification	PUG1	0.847	0.889	0.443	0.822
	PUG2	0.845			
	PUG3	0.885			
Gamified utility ease of use	PEU1	0.877	0.894	0.738	0.875
	PEU2	0.863			
	PEU3	0.854			
Attitude towards adoption	A1	0.892	0.882	0.715	0.785
	A2	0.793			
	A3	0.848			
Intention to use	ITU1	0.876	0.891	0.733	0.851
	ITU2	0.805			
	ITU3	0.885			

To ensure the study's convergent validity, all Composite Reliability (CR) values exceeded the recommended minimum threshold of 0.70, as suggested by Fornell and Larcker (1981). A correlation analysis was performed in Table 3 to evaluate relationships among the constructs, which showed strong correlations that met the standard requirements. The results demonstrated moderate to high correlations among the study constructs.

**Table 3**  
*Correlation analysis*

Construct	Mean	SD	ATT	ITU	PUG	GUEU	HB	SI
Attitude (ATT)	3.421	.140	-					
Intention to use (ITU)	3.367	.123	.452	-				
Perceived usefulness (PUG)	3.188	.145	.491	.505	-			
Gamified utility ease of use (GUEU)	3.278	1.345	.491	.282	.542	-		
Hedonic behavior (HB)	3.668	.218	.283	.202	.319	.571	-	
Social influence (SI)	3.429	.231	.294	.315	.327	.593	.466	-

## 5.2. Model fit measurement

The study used Confirmatory Factor Analysis (CFA) to validate the constructs and assess the fit of the model. The Goodness-of-Fit Index (GFI), Normed Fit Index (NFI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA) were used to evaluate model fit. These estimates should exceed the cut-off values (Henseler et al., 2016) to indicate that the current research model is acceptable and that further hypotheses can be tested. Table 4 shows the fit indices for the research model:

**Table 4**  
*Research model fit index*

Chi square/degree of freedom ( $\chi^2/df$ )	NFI	TLI	CFI	RMSEA	SRMR
2.25	0.852	0.902	0.941	0.059	0.037

The coefficient of determination ( $R^2$ ) was used to evaluate the squared multiple correlation coefficients for the underlying variables in the hypothesised statistical model, as shown in Table 5. The  $R^2$  values for Attitude (0.582), Intention to use (0.431), Perceived usefulness of gamification (0.603), and Gamified utility ease of use (0.470) are all strong.

**Table 5**  
*Coefficient of determination*

Construct	Coefficient of determination ( $R^2$ )	Power
Attitude (ATT)	0.582	strong
Intention to use (ITU)	0.431	strong
Perceived usefulness of gamification (PUG)	0.603	strong
Gamified utility ease of use (GUEU)	0.470	strong

The predictive power of these variables is further explained in Table 5, where  $R^2$  values of 58% for Attitude, 43% for Intention to use, 60% for Perceived usefulness of gamification, and 47% for Gamified utility ease of use are considered highly significant. The model relationships were then confirmed by assessing the data's reliability and fitness, ensuring it met all the requirements for analysis. A bootstrap algorithm was used to generate 95% percentile confidence intervals (CI) for all indices, including the direct effects, based on 2000 resamples. The results, presented in Table 6, provide the path coefficients and p-values to confirm these relationships.

**Table 6**  
*Standard bootstrap results*

Hypothesis	Path coefficient	p-value	Support
H1: Hedonic behavior (HB) → Perceived usefulness of gamification (PUG)	.096	.0560	No
H2: Hedonic behavior (HB) → Gamification utility ease of use (GUEU)	.274	.0000	Yes
H3: Social influence (SI) → Perceived usefulness of gamification (PUG)	.446	.0000	Yes
H4: Social influence (SI) → Gamification utility ease of use (GUEU)	.645	.0000	Yes
H5: Gamification utility ease of use (GUEU) → Perceived Usefulness of gamification (PUG)	.153	.0000	Yes
H6: Perceived usefulness of gamification (PUG) → Attitude (ATT)	.607	.0000	Yes
H7: Gamification utility ease of use (GUEU) → Attitude (ATT)	.428	.0000	Yes
H8: Attitude (ATT) → Intention to use (ITU)	.682	.0000	Yes

As shown in Table 6, all factors influencing the relationship between hedonic behaviour and perceived usefulness of gamification ( $\beta = 0.096$ ) have positive, significant coefficients, except for H1. This result suggests that hedonic behaviour, or enjoyment, does not affect the perceived usefulness of gamification (PUG). Furthermore, among the factors that influence the relationship between hedonic behavior and ease of use ( $\beta = 0.274$ ;  $p < 0.01$ ), the results indicate that hedonic behavior has a positive effect on the ease of use of gamification utility. Moreover, the results of the factors influencing the relationship between social influence and the perceived usefulness of gamification ( $\beta = 0.446$ ,  $p < 0.01$ ) indicate that social influence positively affects perceived usefulness of gamification. Similarly, the results of the factors that influence the relationship between social influence and gamification utility ease of use ( $\beta = 0.645$ ,  $p < 0.01$ ) indicate that social influence positively impacts the ease of use of gamification utility. The results of the study suggest that the perceived usefulness of gamification ( $\beta = 0.153$ ,  $p < 0.01$ ) positively affects its ease of use. Furthermore, the ease of use of gamification ( $\beta = 0.428$ ,  $p < 0.01$ ) positively impacts attitude towards gamification. Additionally, the attitude towards using gamification ( $\beta = 0.682$ ,  $p < 0.01$ ) significantly influences the intention to use gamification.

## 6. Discussion

This research uses the extended TAM to examine tourists' interactions with gamification components. The expanded TAM framework incorporates two further variables, namely hedonic behaviour and social influence, to analyse their impact on behavioural intention and the adoption of gamification as a mechanism for enhancing tourist experiences.

This study advances the understanding of factors influencing the adoption of gamified technology in the tourism industry, aligning with the recommendations of prior research by Choirisa et al. (2025), Nikopoulou et al. (2024), Granić (2024), and Mustafa et al. (2022). The research emphasises the essential aspects of hedonic behaviour in the context of gamified technology adoption. Hedonic behavior, defined by consumers' inner urge to seek pleasure, serves as a crucial factor in perceived utility. The enjoyment of gamified experiences by tourists was positively correlated with their perceived effectiveness of gamification. This point aligns with the path model proposed by Yoo et al. (2017), which emphasises the role of hedonic behaviour in enhancing perceived usefulness when users derive enjoyment from technology. This discovery underscores the importance of incorporating gamified elements that prioritise user delight to foster acceptance and engagement. This finding is also consistent with the observations of Abou Kamar et al. (2024), Zhang et al. (2024), and Oluwajana et al. (2019) regarding user involvement and acceptance.

Despite the lack of confirmation for H1, the study does not imply that hedonic experiences are insignificant. Our findings suggest that hedonic experiences did not directly influence visitors' perceived usefulness of gamification (Chan, 2024; Wei et al., 2023; Gupta et al., 2018). This result corresponds with the potential for a more intricate link, possibly mediated or controlled by additional variables, as discussed (e.g., mediating factors such as personal preferences or contextual elements like cultural variations).

The study highlights the substantial impact of social influence on tourists' desire to engage with gamification. Social influence refers to the impact of peers, community, and social networks on an individual's behavior and attitudes. The results indicate that tourists are considerably affected by their social networks in their decision to interact with gamified technologies. This outcome not only corroborates current work (Malik et al., 2024; Mohanty et al., 2023; Lacka, 2020; Meng et al., 2019) but also underscores the increasing significance of social factors in technology adoption in the tourism and hospitality sectors, like findings of Khan et al. (2024), Lee (2023), and Paixão and Cordeiro (2021). The research asserts that social influence operates through mechanisms such as knowledge exchange, peer endorsements, and shared experiences, which together enhance the perceived value of gamification (Hiererra et al., 2022; Pasca et al., 2021; Egger & Bulencea, 2015).

The research further explores how social influence amplifies the perceived utility of gamification. Tourists frequently depend on reviews, comments, and recommendations disseminated through their social networks to assess the effectiveness of gamified applications (Roinioti et al., 2022). Social interactions provide essential information about destinations and foster a sense of community and trust, thereby enhancing the efficacy of gamified marketing methods. These findings corroborate other research (Marcão et al., 2024; Pradhan et al., 2023; Sukmaningsih et al., 2020) and emphasize the imperative for destination marketers to integrate socially interactive elements into their gamified platforms (Samar & Mazuri, 2019; Hamari & Koivisto, 2015a, 2015b). Incorporating leaderboards, user-generated content, and collaborative challenges can augment the social allure of gamified applications, hence enhancing their adoption (Xu et al., 2021).

This study provides significant insights into the implementation of gamification via the extended TAM. It underscores the critical roles of hedonic behavior and social influence in determining tourists' behavioural intentions and perceived utility. The findings highlight the necessity for a balanced strategy that combines pleasurable user experiences with socially interactive elements to enhance the utility and ease of use of gamification techniques in tourist experiences. These findings complement previous research, such as that of Marcão et al. (2024), which concluded that gamification caters to the desires of travellers seeking pleasurable, immersive, and memorable experiences. Thus, integrating enjoyable user experiences with social interaction to enhance the effectiveness of gamification methods is imperative. Furthermore, according to Tabaeian et al. (2024), gamification characteristics can enhance advertising effectiveness by increasing brand attention, liking, and recall, ultimately improving efficacy.

## 6.1. Implications

There are two key theoretical implications for the tourism industry and its use of gamification technology. Our model combines the TAM with various factors influencing tourists' adoption of gamification technology. Secondly, the model validates a part of our research focusing on the extended TAM model. This validation is based on social influence and hedonic behaviour, which affect tourists' perceived utility of gamification. The goal is to create a robust model in a contemporary context, focusing primarily on factors such as hedonic behaviour and social influence that influence technology adoption and determine behavioural intent and the acceptance of gamification. This analysis can make a significant contribution to the tourism industry. The practical implications of our research suggest that tourism firms and destination management organisations (DMOs) should engage extensively in gamification to foster social collaboration and enhance hedonic experiences within communities. This approach will impact tourists' experiences and enable the adoption of innovative concepts. This point also facilitates the assimilation and proliferation of trending features within the expanded Total Addressable Market (TAM) model in the tourism sector.

## 6.2. Contributions and recommendations

The study makes several key contributions and recommendations. The study employs a comprehensive framework of constructs that accurately captures the dynamics of hedonic behaviour, social influence, and gamification adoption in tourism. The findings emphasise the pivotal role of social influence—specifically, how peer evaluations, social norms, and group dynamics profoundly shape visitors' participation in gamified experiences. This point offers pragmatic insights for destination marketers, highlighting the need to integrate social engagement into gamification initiatives, such as collaborative tasks, social sharing, and competitive elements. These findings provide strong evidence of the influence of social factors on the adoption of gamification in tourist experiences. The study's implications extend beyond the tourism sector to encompass broader economic development, emphasising gamification as a transformative tool for advancing destinations. Destinations are progressively implementing gamification to distinguish themselves, intensifying competition to attract foreign investors and key stakeholders, including event planners, consumers, politicians, and DMOs

(Khan et al., 2023). This strategic emphasis enhances the prominence and attractiveness of destinations, thereby fostering economic growth and investment opportunities. Moreover, the study corroborates Getz's (1994) assertion that Nigeria's tourism sector has significant potential for swift expansion, highlighting that the deliberate use of gamification in tourism enterprises may act as a catalyst for realizing this potential. Considering the critical role of the tourism industry in nation-building, this study highlights the importance of integrating gamification technologies into tourism enterprises to enhance engagement, drive innovation, and support sustainable growth in the sector. Gamification provides real-time user feedback, offering insights into user activity and tangible data for the industry. The study strongly encourages Destination Management Organisations (DMOs) to adopt gamification as an innovative, cost-effective marketing strategy that drives efficiency and engagement while effectively motivating tourists. Future research should explore additional variables, incorporate additive constructs into the existing model, and examine contextual factors to provide deeper and more comprehensive insights, such as cultural differences (Guhl & Cordeiro, 2017), broader geographic studies (Marques et al., 2023) and technological literacy (Campione, 2021), to build a more comprehensive understanding of gamification adoption in diverse tourism markets (Gheitasi et al., 2023; Pizło & Mazurkiewicz-Pizło, 2023).

### 6.3. Limitations of the study

This study has several limitations. Firstly, the data collection is limited by the quantity and quality of available data, particularly regarding the study's location in Gembu, Taraba State, Nigeria. The study's validation relies heavily on tourists' perceptions regarding the gamified utility of use, adoption, and intention. The research was conducted exclusively in one Nigerian tourism center, providing an overview of the current situation and key issues related to the adoption of gamification within Nigeria. A significant limitation of the study is its cross-sectional design, which captures only a single point in time. This limitation underscores the need for future research to expand the study's scope through time-lagged or longitudinal designs. Furthermore, purposive sampling inevitably limits the generalizability of the study's conclusions due to the non-random nature of the sample. This strategy ensures the acquisition of targeted, relevant data, but it may overlook individuals less familiar with gamification technology, thereby limiting its application. Despite the study's focus on the generic dimension of hedonic behaviour, which includes adventure, gratification, role, value, social, and idea shopping, it examines only the "enjoyment" dimension. Future research should investigate the impact of various aspects of hedonic motivation, including Eudaimonic Motives that focus on personal growth and development. While the study explores factors influencing the adoption of gamification technology, we must acknowledge the potential incorporation of other additive constructs, such as perceived benefits, into this research domain.

The final limitation of this study is the absence of a formal content validity evaluation for the questionnaire items used to measure the six constructs. While all items were adapted from validated instruments in previous studies and referenced accordingly, no expert panel or Delphi method was used to assess their appropriateness for the specific context of gamification in tourism in Nigeria. This situation may limit the extent to which the items fully capture the intended constructs in this setting.

## 7. Conclusion

This work extends the TAM by incorporating hedonic and social impact factors to examine acceptance of gamification technology. The findings provide strong evidence that social influence and perceived simplicity of use significantly increase the perceived value of gamified utilities, thereby influencing user attitudes and intentions to apply gamification to tourist experiences. However, the minimal influence of hedonic behaviour on perceived usefulness reveals a complex aspect of user acceptance and adoption within the expanded TAM model, warranting further study.

Gamification can potentially transform destinations, enhance user engagement, foster loyalty, and deliver unforgettable travel experiences. DMOs can effectively attract and retain visitors by incorporating interactive elements, such as leaderboards, real-time feedback, and reward systems. The favourable link between social impact and technological acceptance underscores the importance of cooperative and socially engaging gamification techniques.

The theoretical contributions of this study stress the importance of hedonic behaviour and social influence in technology adoption and validate the expanded TAM model in the context of tourist experiences. In practice, the results highlight the need to create gamified programs that enhance engagement by incorporating social influence and hedonic behaviour to suit both.

Future studies could investigate additional variables, including perceived advantages and cultural influences on gamification adoption, while addressing the limitations of this study, including its geographical breadth and cross-sectional design. Furthering this line of research will help to clarify the role of gamification in changing destination strategies and its influence on sustainable tourism development.

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Submitted: April 28, 2025

Revised: June 16, 2025

Accepted: August 22, 2025

# Appendix A

Questionnaire items and sources

Constructs	Items	Source
Hedonic behavior	<ol style="list-style-type: none"> <li>Using gamification provide a refreshing experience to help get information about tourist destination without stress.</li> <li>I enjoy getting to know tourist destination through a gamified system.</li> <li>I feel powerful when I accomplish certain tasks on gamified system about tourist destination.</li> </ol>	Lin, and Bhattacharjee, 2010; Padilla-Meléndez et al. 2013
Social influence	<ol style="list-style-type: none"> <li>Those I like and are close to me thinks one should use gamified tourist system.</li> <li>Those important to me are already use gamification.</li> <li>Most people who are important to me, thinks I should get information about a tourist destination in a smart way by using a smart electronic device.</li> </ol>	Adukaite et al., 2017; Padilla-Meléndez et al. 2013; Lin, and Bhattacharjee, 2010
Gamified utility ease of use	<ol style="list-style-type: none"> <li>Learning to use gamification will be easy for me.</li> <li>I will be skillful in using gamification.</li> <li>I can control the information and customize the display format as well as the conditions of using the gamification system.</li> </ol>	Lin, and Bhattacharjee, 2010; Padilla-Meléndez et al. 2013
Perceived usefulness of gamification	<ol style="list-style-type: none"> <li>I will be able to obtain a good information about a destination with Gamification</li> <li>Gamification is compatible with existing technology.</li> <li>Gamification has the ability to respond to my specific questions quickly.</li> </ol>	Lin, and Bhattacharjee, 2010; Padilla-Meléndez et al. 2013
Attitude towards adoption	<ol style="list-style-type: none"> <li>The use of gamification in tourism is a good idea</li> <li>The use of gamification in tourism is interesting</li> <li>Gamification make tourism to be fun</li> </ol>	Lin, and Bhattacharjee, 2010; Lin, et al., 2010; Padilla-Meléndez et al. 2013;
Intention to use	<ol style="list-style-type: none"> <li>I will participate in using gamification</li> <li>If I have access to a gamified tourist system, I get to have more information tourist destination around the world locally.</li> <li>Given the opportunity, I would continue to use gamification for tourism in the future I would recommend others to use gamification</li> </ol>	Lin, and Bhattacharjee, 2010; Padilla-Meléndez et al. 2013

# Appendix B

Figure 2  
Mahalanobis distance for multivariate normality

