EXAMINING THE ROLE OF GAMIFIED FEATURES ON USERS' CONTINUANCE INTENTION: A STUDY OF TRAVEL APPLICATIONS

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DECLARATION

I, hereby declare that the presented work in the thesis entitled "**Examining The Role of Gamified Features on Users' Continuance Intention: A Study of Travel Applications**" in fulfillment of the degree of **Doctor of Philosophy (Ph. D.)** is the outcome of research work carried out by me under the supervision of Dr. Pritpal Singh, working as a Professor, in the Mittal School of Business of Lovely Professional University, Punjab, India and under the co-supervision of Dr. Mohit Jamwal, working as an Assistant Professor, in the department of Chitkara Business school at Chitkara University, Punjab, India. In keeping with the general practice of reporting scientific observations, due acknowledgments have been made whenever the work described here has been based on the findings of other investigators. This work has not been submitted, in part or full, to any other University or Institute for the award of any degree.

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CERTIFICATE

This is to certify that the work reported in the Ph. D. thesis entitled "Examining The Role of Gamified Features on Users' Continuance Intention: A Study of Travel Applications" submitted in fulfillment of the requirement for the award of degree of Doctor of Philosophy (Ph.D.) in the Mital school of Business is a research work carried out by Navjit Kaur, with Registration No. 41900437, is bonafide record of her original work carried out under our supervision and that no part of thesis has been submitted for any other degree, diploma or equivalent course.

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Abstract

This study examines the role of gamified features-Sociality, challenges, and rewards on the continuance use intention of mobile booking app users by taking the mediation effect of user brand engagement and self-brand connections. Existing research indicates that the 'S-O-R' approach is more responsible for gauging customer brand engagement and Continued Use Intention in a gamified setting (Supotthamjaree, W., & Srinaruewan, P., 2018). So, in the present study, specifically, based on the SOR model that is Stimulus Organism Response the impact of gamified features on mobile booking app users' continuance use intention was examined. Hospitality organizations allocate substantial resources to technological solutions that are intended to improve the consumer experience. For these investments to be profitable, these technology solutions must be consistently employed, which in turn encourages post-adoptive behaviors such as continuance intention. The study collected data from 405 users of a mobile booking app that was gamified. Partial Least Squares Structural Equation Modelling (PLS-SEM) was implemented for analysis after gathering data and cleaning. The results of the structural model indicated that continuance intention was substantially influenced by gamified features. Gamified features enhance the user brand engagement and directly affect the user's happiness, which directly results in continuance use intention among mobile booking apps. The result showed that the challenge gamified feature has a more substantial influence on user brand engagement. Moreover, self-brand connection proved as a mediating construct between user happiness and the continuance use intention of mobile app users. However, the present study has not proved the moderation effect of flow experience between gamified components and user brand engagement. The research contributes to the existing body of literature on continuance use intention and SOR by including gamified features, challenges, sociality, and rewards in the hospitality and tourism context. The present study makes a valuable contribution to the scarce literature in the hospitality and tourism industry by analyzing the assessments of mobile applications by users and their continuance use intention in the hospitality industry. The study also contributes to the literature in the behavior context by taking the user brand engagement, user happiness, and self-brand connections as a construct in the present study.

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Navjit Kaur

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INTRODUCTION

1.1 Background

In the contemporary tourism industry, both online and offline travel agencies prioritize fulfilling customer needs as a fundamental objective. This focus is crucial for maintaining a competitive edge in an increasingly saturated market. With the advent of the IT revolution and widespread internet accessibility, the industry has witnessed a significant shift from traditional offline bookings to digital platforms. Online tourism services are now perceived as more reliable than in the past, contributing to the growing preference for e-tourism. The 24/7 availability of online booking platforms allows travelers to make reservations at their convenience, further enhancing their appeal. As a result, an increasing number of online travel agencies are emerging, each striving to capture a larger market share by offering various incentives, such as discounts and promotional gifts. Thus, by recognizing the evolving demands of modern consumers, leading travel websites have begun integrating gamification elements into their platforms.

The evolution of mobile technology has further transformed the tourism sector. Initially, mobile phones were primarily used for calls and text messages due to limited technological capabilities. However, the introduction of smartphones, third- and fourth generation (3G and 4G) technologies, and LTE-based wireless networks has enabled consumers to access the internet and use mobile applications for various services (Hoehle & Venkatesh, 2015; Tan et al., 2017). Recognizing this shift, hospitality and travel organizations have increasingly adopted mobile applications to facilitate reservations and enhance customer interactions (Collins, 2010). For instance, Ibibo.com, initially launched as a social networking site in 2007, transitioned into the travel sector, debuting Goibibo.com in 2009 with a dedicated travel app. Similarly, Yatra.com, India’s second-largest online travel company, introduced its mobile application in 2012 to extend its services. As smartphone adoption continues to rise, mobile apps serve as cost-effective tools for marketing and customer engagement, thus, complementing traditional websites while offering enhanced functionality (Kwon et al., 2013).

1.2 *Gamification* as a game changer in the Tourism industry

The travel and tourism sector has embraced gamification to enhance mobile applications, enrich customer experiences, and build brand loyalty. Gamification refers to the incorporation of *game-like elements*, such as badges, points, challenges, leaderboards, progress tracking, and rewards, among others, into non-gaming contexts to enhance motivation and user interaction (Huotari & Hamari, 2017). By integrating these elements, mobile apps seek to foster a more immersive and engaging user experience. Although, the incorporation of gamification elements in travel apps is still considered in the nascent stage in comparison to some other industries, however, its influence in the tourism section cannot be neglected.

Gamification harnesses both internal and external motivations to inspire user engagement. Intrinsic motivation arises from enjoyment, curiosity, and a sense of achievement, whereas extrinsic motivation comes from rewards, discounts, and incentives (Huotari & Hamari, 2017). In the realm of travel applications, these elements are also designed to enhance engagement and shape users' emotional reactions and intentions. For instance, loyalty programs that provide points for regular bookings or interactive challenges that reveal exclusive discounts are created to motivate users to remain connected with the app. Platforms such as Goibibo, Yatra, and MakeMyTrip use engaging loyalty programs to motivate repeat bookings, improve user retention, and build brand loyalty.

Feng et al. (2018) did an important study that found that users were more likely to participate when they were given reward points and feedback. Liao et al. (2020) did a study and found that gamification was linked to self-presentation, entertainment, and self-efficacy positively. They also found that entertainment and self-efficacy were linked to users' intention to continue, and they both acted as mediators between gamification and users' intention to continue. Mobile service companies say that initial adoption means getting new potential users who can become real users in the future. Thus, overall, the concept of gamification offers a very promising picture that the hotel and tourism industry can adopt to influence consumer behavior.

1.3 Problem Statement

Gamification, incorporating game-like elements such as points, badges, leaderboards, and awards into non-gaming environments, has gained considerable popularity across many sectors, including fitness applications, travel applications, shopping applications, and m-

health applications, to name a few. Although gamification has been extensively utilized to improve user engagement, motivation, and satisfaction, its long-term efficacy in maintaining user interest and continuance use intention remains a critical challenge. Research indicates that users frequently use gamified applications initially for their novelty and entertainment value; however, many ultimately discontinue usage or delete the applications (Hamari & Koivisto, 2015; Koivisto & Hamari, 2014).

According to Kemp (2018) most recent Global Digital research, over half of the global population are Internet users (54%), mobile users (66%), and active mobile social users (41%). However, based on a study, mobile applications are downloaded and saved on portable Smartphones and tablets, but they are only used once. Within 30 days of installing an app, less than 20% of consumers return to utilizing it (Perro 2018). So, researchers must shift their focus from "adoption" to "continuous usage". This occurrence raises critical inquiries on the determinants that affect users' prolonged engagement and intention to continue using gamified applications. Travel apps have included gamified elements, like reward points for reservations, progress monitoring for travel objectives, and social sharing of accomplishments, to improve user experiences. The degree to which these features enhance user satisfaction, brand engagement, and continued use is still ambiguous. Moreover, psychological dimensions like flow experience—a strong state of utilization and happiness during app interaction—and self-brand connections—the alignment of the brand with the user's self-identity—may significantly influence these outcomes. Moreover, generational differences, especially between Generation X and Generation Y, may affect users' perceptions and interactions with gamified elements, resulting in differing degrees of engagement and desire to continue.

Therefore, despite the proliferation of gamified elements in travel apps continue to happen, there is still a dearth of knowledge on how to organize the gamification elements for better engagement, generating happiness, building self-brand connections, and ultimately developing continuance intentions. In this view, the present study was deemed necessary to inform the marketers and existing literature on the topic so that directional clarity can be brought. This research aims to provide a comprehensive understanding of the factors that drive sustained user engagement and continuance intention in gamified applications, drawing on prior research in gamification (e.g., Hamari et al., 2014; Koivisto & Hamari, 2014) and user behavior (e.g., Csikszentmihalyi, 1990; Rodríguez & Trujillo, 2014). The findings will provide useful theoretical insights and practical consequences for designers and marketers

who want to develop gamified experiences that encourage long-term customer loyalty and happiness across different age groups.

1.4 Research Gaps from the past Gamification-Continuance intention research

From existing literature, it has been found that very limited studies have been done on gamification elements (Sociality, Challenge, and Rewards). Especially in the hospitality and tourism industry minimal studies were found and most of these studies are qualitative, empirical work has not been done so far in this context (Sigala, 2015).

One of the studies done by Schneider and Cornwell (2005) considered the potential impact of interaction on memory. In addition, they utilized Brand Prominence and Flow as game design features and determined their favorable effect on brand memory. According to one study conducted by Mau et al. (2008), the least familiar brands can obtain a more positive attitude, while the familiar brand's attitude declines as a result of Advergame one of the game design dimensions. Although game attitude had a favorable effect on brand attitude, repetition levels did not affect brand attitude and Memory (Cauberghe and De Pelsmacker 2010).

Waiguny et al. (2012) investigated the extent to which children's brand attitudes are influenced by how difficult an advergame is to play. Those who are maximally challenged (i.e., "in the flow") have the most positive brand attitudes, whereas those who are poorly challenged have the least positive brand attitudes. Additionally, the most significant brand sentiments were observed among individuals who were inadequately challenged and recognized the commercial material, as evidenced by substantial two-way communication of challenge and persuasion knowledge.

Waiguny et al. (2013) conducted a study on games that have positive associations, such as racing games that emphasize speed, and how these associations can impact a brand. Nevertheless, games can be associated with undesirable aspects such as combat and violence. The study's findings indicate that negative material led to less favorable evaluations of the game and unfamiliar brand attitudes. The research investigated that the relationship between content and explicit brand attitude was influenced by the person’s attitude towards the game.

In their study, Herrewijn and Poels (2013) explored how the effectiveness of in-game advertising placements affects players' psychological responses to the game content. They concluded that pleasure, arousal, and dominance mediated the development of brand memory and attitudes. Moreover, increasing game difficulty impacts the processing and

evaluation of brands featured in in-game ads, both directly and more significantly, indirectly through variations in player experiences. Lee et al. (2014) found that brand interactivity in advergames had a significant positive effect on brand attitudes. Their study revealed that when advergames incorporate brand interactivity, consumers tend to have more favorable sentiments toward the brand and higher purchase intentions.

Kuo and Rice (2015) suggested that the manipulation of affective response, perceptive fluency, and perception of difficulty can influence future preferences in advergames that include interactive branded material. Berger et al. (2018) discovered that self-brand relationships are established through affective and cognitive brand engagement only when gamified associations are both highly engaged and maximally difficult in their research.

In their study, Suh et al. (2018) discovered that gamification improves user engagement by promoting the fulfillment of psychology-related demands, such as autonomy, competence, and relatedness, through the integration of game dynamics and happiness. As, the results demonstrated that gamification should incorporate many game dynamics, including rewards, competition, empathy, and self-expression, to fulfill individuals' psychological needs. According to Xi and Hamari (2019), users are more likely to have their intrinsic demands for autonomy, competence, and relatedness fulfilled when they interact with achievement and social-related features. However, only autonomy requirement satisfaction is improved when users engage with immersion-related elements.

Table1.1- Research Gaps from the past Gamification-Continuance intention research

Author	**Year**	**Game design dimension**	**Mediator**	**Outcome variable**
Schneider and Cornwell	2005	Brand Prominence, Flow		Brand Memory
Mau et al.	2008	Playing an Advergame, Flow		Brand Attitude
Cauberghe and	2010	Game Repetition		Brand Memory

De Pelsmacker				and Attitude
Waiguny et al.	2012	Challenge		Brand Attitude
Waiguny et al.	2013	Game content, Flow	Attitude toward Game	Brand Attitude
Herrewijn and Poels	2013	Difficulty	Pleasure, Arousal, Dominance	Brand Memory and Attitude
Lee et al.	2014	Interactivity		Brand Attitude and Purchase
Kuo and Rice	2015	Valence of in-Game Stimulus	Positive Affect	Choice
Berger et al.	2018	Interactivity, Challenge	Emotional brand engagement, cognitive brand engagement	Self–Brand Connections
Suh et al.	2018	Rewards, Competition, Self Expression, Altruism	Competence Autonomy Relatedness	Enjoyment
Xi & Hamari	2019	Immersion Achievement Social		Autonomy Competence Relatedness

Current Work	2020	Sociality, Challenge, Rewards	Customer brand engagement, Self-brand connection	Continuance Intention

1.4.1 Lack of Research Linking Gamification elements to Continuance intention in Travel applications context

In the context of gamified trip booking applications, only a few studies on users' continuing use intention of the apps have been undertaken, results of these investigations demonstrate that gamification has a considerable effect on users' intent to continue using the application. The notion of ongoing usage intention has been examined in the literature on information systems (IS) (Hong et al., 2006; Bhattacherjee, 2001a), however, it has been studied infrequently in the context of travel apps, particularly with gamification features. Mouakket (2014) discovered that utilitarian and hedonic values influence satisfaction, which in turn influences continuation intent. In addition, subjective norms (i.e., other people's opinions) were discovered to affect continuation intent.

The ease of use, the subjective norm, and the ability to be new all have a positive effect on both utilitarian and hedonic values. However, both hedonic and utilitarian values are affected by the way people see risk. The desire to keep using mobile hotel booking technology is affected by both hedonic and utilitarian values (Ozturk et al., 2016). Li & Liu (2014) determined that Satisfaction and perceived usefulness have a favorable influence on the intent to continue use the online travel services. Both usefulness-perceived constructs influence WOM behavior positively.

According to research by Rouibah et al. (2016) and Hsu & Lin (2008), users' expectations of enjoyment have a substantial impact on their attitudes and behavioral intentions towards mobile applications, sites, messaging, and e-payment. User's wish to continue behavior in the setting of mobile apps may be influenced by intrinsic motivational elements, according to this theory. Additionally, there is less information available regarding the influence of conscious factors on the continuance use intention using mobile applications for smart tourism. This is although earlier studies have proposed habitual elements to predict customer continuation intention.

Choi et al. (2019) state that the functional value viewpoint consists of perceived functional advantages, usability, and financial incentives, whereas the hedonic value perspective focuses on pleasure. Both have a beneficial influence on users' inclination to persist in using travel applications.

The findings of Sthapit et al. (2019) indicate that satisfaction with the Airbnb website for reserving lodgings is mostly influenced by functional value and emotional value, with other variables being less significant. Collaborative production and a manageable amount of information also contribute to happiness with the Airbnb website for booking lodgings, and contentment influences the intention to keep using the website.

Tam et al. (2020) identified satisfaction, habit, performance expectation, and effort expectation as the key factors influencing mobile app retention intention. Gender was the only variable that affected the relationship between effort expectancy and persistence intention, with females being more inclined than males to value convenience in their decision to continue using the app (Kang, 2014). Additionally, consumer engagement (Tak & Gupta, 2021) is among the various factors that shape intentions to use travel apps, primarily through the perception of simplicity and the perception of usefulness.

Information quality, system quality, and perceived convenience all have a role in how easy a mobile tourism app is to use, which in turn affects the likelihood that people would download and continue to use it (Chen and Tsai, 2019). The greatest significant association on behavior to use mobile travel apps was determined to be performance expectancy (Iskandar and Sia, 2020). It was then followed by pleasant circumstances and routine. There is little correlation between individual differences in factors such as effort expectancy, social effect, price value, hedonic motivation, and the likelihood that a person will utilize mobile travel apps to plan a trip. Users' pleasure with travel applications is directly related to how well those apps fulfill their own goals (Eriksson, 2014).

Long and Suomi (2022) in their paper showed that the quality of theme park apps, and users' validation of theme park applications is positively impacted by information, system, and service aspects. Confirmation, along with perceptions of the theme's utilitarian and hedonic value, has a beneficial effect on user happiness and the likelihood that they'll use it continually. In their study, Guo (2022) demonstrated that consumers' perception of usefulness, enjoyment, and inertia significantly and positively influence their continuance intention of using smart travel apps. Additionally, the perception of autonomy and sense of proficiency indirectly impact the continuance intention.

In a study conducted by Bouarar et al. (2022), it was shown that travelers' intentions to keep using applications for traveling during the COVID-19 outbreak were significantly influenced by their perceived behavior control (PBC), levels of contentment, trust, and attitude. The study by Rani, (2019) indicated that the perceived enjoyment and perceived utility of prolonged STIS (Smartphone based travel information system) use, followed by satisfaction with STIS use, determine users' intent to continue using the system.

In a recent study, Yang Liu et al. (2023) incorporated the ECM-ISS model into smart tourism to create a study model emphasizing user satisfaction and the intention to continue using the service. This model includes perceived trust, enjoyment, and risk as latent variables. Additionally, perceived destination image and search behavior, along with perceived reward and perceived danger (Jarrar et al., 2020; Tavitiyaman et al., 2021), are significant motivators for ongoing mobile application use.

The novelty, trendiness, and intimacy of gamification influence continuation intention via hedonic and utilitarian values in online travel brokers (Juliana et al., 2023). In task management applications, perceived usefulness, enjoyment, attitude, and habit are significant determinants of continuing intention (Foroughi et al., 2023). The Behavioural Activation System, especially in terms of reward responsiveness and fun-seeking, significantly influences user happiness and the desire to continue using gamified mobile applications (Aydinliyurt et al., 2021). The correlation between gamification components and continuation intention in travel applications is inadequately explored since existing research predominantly emphasizes initial adoption rather than post-adoption behavior (Foroughi et al., 2023).

Despite the increased interest in gamification in the travel and tourism industry, Table 1.2 shows a considerable study gap linking gamified elements—such as rewards, challenges, and sociality—to users' intention to continue using mobile applications. Existing research, primarily undertaken in countries other than India, does not thoroughly examine this link, particularly from a theoretical standpoint. Notably, the Stimulus-Organism-Response (SOR) paradigm and flow theory, critical for understanding user engagement and behavioral results, have received little attention in previous research. The current study intends to solve this gap by merging these theoretical frameworks, providing a more comprehensive view of how gamification promotes continuation intention among Indian users. This method not only addresses a geographical and theoretical need, but it also establishes a solid platform for future research in this area.

Table-1.2 Lack of Research Linking Gamification elements to Continuance intention

Author	Year	Antecedents	Context	Outcome variable	Country of study	Theory implied
Hong & Tam, Bhattacherjee,	2006 2001a	Users' attitudes and behavioral intentions	Information system	Continuance intention	China (Hong-Kong)	Technology Acceptance Model (TAM)
Hsu & Lin,	2008	Users' attitudes and behavioral intentions	Mobile Applications, sites, messaging and epayments	Continuance intention	Taiwan	(TAM & UTAUT)
Rouibah et al.	2016	Users' attitudes and behavioral intentions	Online Payment System	Trust and behavioral Continuance intention	Kuwait	Trust theory and Technology acceptance concepts.
Kang	2014	Expectancy and persistence intent	Mobile Application	Continuance Intention	South Korea	TAM
Li & Liu,	2014	Confirmation Satisfaction Perceived usefulness	Internet/ Online (online travel services)	Post Adoption Behavior	China	Expectation-Confirmation Model (ECM)
Mouakket al	2014	Hedonic value	online reservati	Continuance	United Arab	Expectation-

		Subjective norm Perceived usefulness e-service quality dimensions.	ons systems	intention	Emirates	Confirmation Model (ECM)
Zhong, Lou & Zhang,	2015	Perceived usefulness Satisfaction Subjective norm Perceived behavioral control	Mobile travel booking services	Continuance intention	China	Expectation-Confirmation Model (ECM)
Ozturk, Nusair et al	2016	Perceived risk Perceived ease of use Subjective norm Innovativeness Utilitarian value Hedonic value	Mobile hotel booking applications	Continuance intention	United States	Technology Acceptance Model (TAM)
Choi et al	2019	Perceived functional benefits, ease of use, financial	Travel Application	Continuance intention	South Korea	Value-based adoption and trust-based theories

		rewards, enjoyment				
Rani	2019	Satisfaction, perceived usefulness and perceived enjoyment	Smartphone-based traveler information systems (STIS)	Continuance intention	Malaysia	Expectation-Confirmation Model (ECM)
Sthapit et al	2019	Functional value and emotional value lead to Satisfaction and Continuance intention	Airbnb Website	Continuance intention	Italy	Consumption value theory and Co-creation theory
Iskandar and Sia	2020	Performance expectancy followed by pleasant circumstances and routine	Mobile Travel App	Continuance Intention	Malaysia	Unified Theory of Acceptance and Use of Technology (UTAUT)
Jarrar et al	2020	Perceived reward and perceived danger	Mobile Tourism Application	Continuance intention	Dubai	Technological Readiness Index

						(TRI)
Tam et al.	2020	Satisfaction, habit, performance expectation, and effort expectation	Mobile Application	Continuance Intention	Portugal	Expectation-Confirmation Model (ECM)
Tak & Gupta	2021	Customer Engagement	Travel Application	Continuance Intention	India	Stimulus-Organism-Response (SOR) framework
Tavitiyaman et al	2021	Perceived destination image and search behavior	Mobile Application	Continuance intention	China	Technology adoption theories and destination image theory
Aydinliyurt et al	2021	Reward responsiveness and fun-seeking	Behavioural Activation System	Continuance intention	Turkey	Behavioral Inhibition System (BIS) and Behavioral Activation System (BAS)
Bouarar et al	2022	Attitude, perceived behavior control	Travel applications	Continuance intention	Algeria	Technology Acceptance Model

		(PBC), degree of satisfaction, and trust				(TAM)
Guo	2022	Perceived usefulness, Perceived enjoyment, and Inertia affects	Travel booking app	Continuance Intention	United Kingdom	Self-Determination Theory (SDT)
Long and Suomi	2022	Quality of theme park app consisting utilitarian and hedonic value	Theme Park app	Continuance intention	China	Expectation-Confirmation Theory (ECT)
Albayrak et al	2023	Through perceived simplicity of use and perceived usefulness	Travel Mobile Application	Continuance Intention	Turkey	Service quality theory and brand trust theory
Yang Liu et al	2023	Perceived trust, enjoyment, and risk	Travel Application	Continuance intention	China	Expectation-Confirmation Model (ECM).
Juliana et al	2023	Novelty, trendiness, and intimacy	Online Travel Brokers	Continuance intention	Indonesia	Expectation-Confirmation Model

						(ECM)
Foroughi et al	2023	Perceived usefulness, enjoyment, attitude, and habit	Task Management Application	Continuance intention	Malaysia	Technology Continuance Theory (TCT)
Current Study	2024	Rewards, Challenges and Sociality	Mobile Travel Applications	Continuance intention	India	Stimulus organism response theory and Flow Theory

1.4.2 Possibility of Mediated Relationships between Gamification elements and Continuance intention

Gamification is an effective method for increasing user engagement. To make things easier for people to use**,** a growing number of developers of mobile applications are incorporating gamification into their apps (Hofacker et al., 2016). Despite the widespread usage of mobile apps in people's daily lives, there is still a scarcity of scientific research on the impact of gamification on user engagement. This topic has only been explored to a limited extent, with a few exceptions (Featherstone & Habgood, 2019; Kamboj et al., 2020) Consumer engagement, pupil engagement, worker engagement, brand engagement, and user engagement are just a few of the terminology used to define subjects and objects of engagement in a wide range of research projects (Pansari & Kumar, 2017). Gamification can influence four different levels: within the game, within the organization, among consumers, and in a transformative manner (Wünderlich et al., 2020). Gamification is linked to engagement at every level, according to Syrjala et al. (2020).

A great deal of study has examined how gamification relates to different kinds of engagement over the past several years. Researchers have paid considerable attention to student participation in academic activities (Bouchrika et al., 2019; Çakıroˇglu et al., 2017). Nevertheless, the utilization of gamification and the study of engagement in non-educational settings is becoming increasingly popular. Previous research conducted by

Featherstone and Habgood (2019), Suh et al. (2018), and Ibrahim et al. (2017) have investigated the correlation between gamification and user engagement. Customer satisfaction is enhanced through both active and passive consumer participation. The German automotive brand community proposed that companies might get a competitive edge by prioritizing customer interaction initiatives that enhance customer satisfaction with a brand. Moreover, contented consumers are more inclined to buy a brand's items and endorse it positively. Therefore, organisations gain advantages from contented consumers, who contribute significant brand worth (Niedermeier et al., 2019). According to Khan and Hussain (2012), rationality, circumstance, and culture are the primary elements that have the greatest impact on consumer satisfaction. The three constructs – a pleasurable life, an engaged life, and an effective life – were defined by Seligman (2002), Peterson et al. (2005), and Filep and Filep (2010) as antecedents to customer happiness in the tourism industry.

Customer happiness is an effective link between gamification and consumers' intention to repurchase. Gamification may be considered one of the most effective strategies for increasing consumers' intent to repurchase (Sitthipon et al., 2022). As stated by Ali et al. (2021), the system, information, and service quality all have a favourable impact on user engagement with smartphone transportation apps. In the context of website features, Naqvi et al. (2021) studied the antecedents and consequences of user experience. It has been established that gamification features have a significant impact on user contentment. Chiu and Cho (2021) investigated the impact of an e-commerce website's perceived brand leadership on customer satisfaction and repurchase intent among Chinese consumers. Customer happiness significantly affects the likelihood of a repeat purchase. The effect of satisfaction, trust, and fulfilment on the intention to repurchase from online retailers was studied by Rini et al. (2021). Customer happiness, gamification, and the likelihood of a repeat purchase were all significantly correlated. Matthew et al. (2021) found evidence of a connection between gamification, user pleasure, and the likelihood of a repeat purchase. The research found that repurchase intent was affected by sales advertising, gamification, and user interface. The user interface is the single most important factor. Therefore, the user interface can be a crucial factor in the growth of e-commerce by attracting more customers and encouraging them to make purchases.

Aghdaie et al. (2022) found evidence supporting the hypothesis that gamification increases consumer happiness and repeat purchases. Unintentional purchases are made by shoppers who wander into stores without a specific product in mind, and five elements of gamification—including perceived usefulness, PEU, attitude towards usage, social norms, and behavioral intention—play a part in this phenomenon. In ecommerce, gamification positively impacts the user experience. This gamified user experience generates pleased users and improves their purchasing disposition. Users also contribute to the development of a business by spreading positive word of mouth. Mominzada et al. (2021) demonstrated that gamification in e-commerce positively influenced user satisfaction, which in turn significantly enhanced customer purchasing attitudes. The positive effects of user experience on user satisfaction in e-commerce have been confirmed by Badran and Al-Haddad (2018). In addition, repeat purchases of an item are an indicator of brand loyalty driven by customer satisfaction. Typically, game components serve as stimuli. The term "game dynamics" refers to a specific consumer state that leads to continued participation in gamified activities. A unique blend of game elements acts as novel stimulation for the retention of clients in gamified business operations, as per this interplay between action game mechanics (Gatautis et al., 2016). Implementing game elements has a direct impact on consumer engagement, according to Kavaliova et al. (2016). In addition, it is recognized that intrinsic factors are essential for sustaining consumers' sustained engagement. Flow theory, proposed by Csikszentmihalyi in 1990, highlights that happiness may be achieved through engagement. Flow refers to a state of high engagement where time appears to pass quickly, and attention remains concentrated on the action. Employee engagement has a significant impact on attitudes, intentions, and actions (Saks, 2006). This leads to a direct relationship between employee engagement and job satisfaction, as found by Harter et al. (2002). Advocates of gamified experiences argue that they allow for a deep understanding of player preferences and consequential customer engagement behavior, hence optimizing the overall engagement experience for all parties involved (Verleye et al., 2014).

Gamification enhances user engagement by satisfying the fundamental demands for independence, competence, and relatedness. User engagement, in turn, increases intent to use, spread word of mouth about, and positively rate the app (Bitrián et al., 2021). Gamification can promote customer and employee engagement, thereby enhancing how consumers interact with a brand or company and boosting employee productivity (Robson et al., 2016). The elements of games improve Customer Engagement behaviors and

emotions (Harwood et al., 2015). Using hedonic value and reward gratification, gamification fosters a desire for continued engagement. Brand engagement is associated with continued engagement intent (Högberg et al., 2019). Online health communities (OHCs) are reliant on the participation of physicians to continue their growth. Gamification design can be utilized to stimulate the gaming experience of physicians, thereby enhancing their motivation to participate in OHCs (Liu et al., 2020). Multiple studies have found that the impact of games on entertainment is a significant factor in determining players' ongoing intentions to use them (Yang et al., 2017; Choi et al., 2014). Researchers argue that once a player attains a comprehensive immersive experience, encompassing both enjoyment and entertainment benefits derived from the game, this experience will foster the development of the intention to persist in playing the game. Gamification facilitates the creation of novel marketing tactics, wherein users actively engage with their peers to enhance their knowledge of a brand and foster a sense of community within the business's audience. This establishes a reliance on the product, leading to enhanced consumer contentment (Huotari et al., 2016; Hamari et al., 2014; Yang et al., 2017).

Self-brand connections are customers' associations between a product or service and their sense of self. The more closely a brand is linked to a consumer's identity, the more significant it is thought to be (Escalas, 2004). CBE expects the relationship between self-brand and tourism-related social media sites. Individuals who have a greater degree of involvement with tourist sites are also more like to associate themselves with the tourism brand, whereas those with a lower degree of involvement are less inclined to associate themselves with the brand (Harrigan et al., 2018). The customer engagement process includes multiple processes that reflect the participatory nature of consumers in online brand communities and the cooperative development of value among community members.

Engaged consumers have elevated levels of loyalty, contentment, and a profound affiliation with the brand they are affiliated with (Brodie et al., 2013). When a customer uses the brand in the creation of their self or in the communication of their self to others, a profound connection is developed between the brand and the consumer. For a consumer to have an emotional connection to a brand, both their individual experience and the brand's ability to meet their psychological requirements must be strong (Moore & Homer, 2008). Self-brand connection concept is associated with the self-identity theory. The key idea of this theory is that consumers use brands as instruments to develop and sustain their self-

identity (Belk, 1988). Consumers' purchase intentions are influenced by consumers' self-brand connections and attitudes towards the brand, according to an analysis of smartphone users (Kırcova et al., 2015). Self-brand connection is positively mediated by conspicuous consumption and emotional attachment, and negatively mediated by perceived counterfeit detection (Chand and Fei., 2021). An individual's sense of self can show up in the real world in the form of reactions to in groups (those to which one already belongs), aspiration groups (those to which one aspires to belong), and dissociate groups (those from which one wishes to disassociate) (Berger & Heath 2008; White & Argo 2012).

The effect of the self-brand link on word-of-mouth behavior is different for each person. To put it another way, people who had an independent self-construal were more likely to spread good word-of-mouth than people who had an interdependent self-construal. It was found in another study (Thanh et al., 2020) that self-brand link had the biggest effect on brand loyalty when the two factors were looked at together. When customers view a brand as helping them define themselves, they are more likely to form lasting attachments to that brand (Sheth and Parvatiyar 1995). A self-brand connection is unique to the individual. Consumers use brand symbols to influence their self-perceptions and actions (Cutright et al., 2013). Dwivedi et al. (2016) discovered that happy customers are more likely to stick with the SBC. There is a direct correlation between a brand's success and the growth of SBC. Consumers who are satisfied with the products are more likely to stick with those products over time (Dolich, 1969).

One of the conditional indirect linkages between Gamification features and the intent to continue is the sensation of flow. Csikszentmihalyi (1975) defined "flow," or "the experience of optimal functioning," as "the mental state of full involvement in the present moment, with no awareness of or desire to change the activity at hand." When someone is in this state, they are only thinking about the positive emotions they are experiencing as a result of the act itself, rather than any potential physical or social consequences. Improvements in performance and positive feelings like satisfaction are just the beginning of what users can achieve while immersed in a virtual world (Andrade et al., 2016). Because of this impact, flow is now recognized as a critical factor in analyzing customer actions (Hsu and Lu, 2004). Brand perception was not altered by the flow experience. However, one's state of "flow" while playing does affect their opinion of the game. As a result, we were able to determine that flow had an indirect effect on brand attitude, via the attitude towards the game as a mediator (Mau et al., 2008). Research on games and entertainment has found that flow is one of the most frequently used characteristics

(Boniface, 2000). Previously performed research on the effects of rewards on flow has primarily been conducted in the gaming industry, with positive results identified in a study of online gamers (Laffan et al., 2016). The primary purpose for playing a game is the element of difficulty (Griffith and Hunt 1995).

According to Kiili (2005), the user's flow experience increased as the sense of challenge increased. Users' flow has a good effect on their intent to keep using the app, and the flow experience has a favorable effect on their intent to keep using the app and their intent to suggest the app to others, all of which leads to greater app loyalty (Su et al., 2016). Users' motivation to keep using a fitness app was increased when they were in a state of flow (Yu et al. 2021). Furthermore, in a study conducted on smartphone apps, flow in-app use was found to have a favorable effect on the intention to continue using the app (Bolen and Ozen 2020). In another study, the effect of the challenge, reward, and adaptation features on the user's flow and intent to continue using the application was positive (Kim et al., 2022). The relationship between gamification and behavior intention is mediated by flow. The incorporation of gamification elements enhances the flow state, thereby enhancing the enjoyment generated by the website itself (García-Jurado et al., 2018).

1.5 The Curious case of Gen 'X' and Gen 'Y' cohorts in Gamification Elements-Continuance intention relationship

Particularly in the acceptance of digital technology, generational cohorts—defined by common experiences and values—play a major influence on consumer behavior. Usually classified as those born between 1961 and 1979, Gen X is distinguished by their practicality, technical flexibility, and tendency for deep research before making decisions (Jackson et al., 2011; Littrell et al., 2005). Conversely, born between 1980 and 1999, Gen Y, often known as Millennials, are the first generation to have grown up surrounded in digital technology. They are known for their tech-savviness, preference for experiential activities, and reliance on online platforms for decision-making (Norum, 2003; Bakewell & Mitchell, 2003).

Previous research conducted in India indicates that compared to Gen Z, Gen X, and Gen Y are the main consumers of online travel websites. This is mostly due to Gen Z, born after 1996, who is still mostly composed of students and young people with little accessible cash and fewer chances to travel frequently. Being more established in their employment and personal life, Gen X and Gen Y are more likely to utilise travel applications and platforms for

trip planning and booking (Hamed, 2017; Attallah & El-Mawardy, 2018). For trip planning, for example, Millennials in India mostly rely on Google Maps, Expedia, and airline applications; Gen X commonly uses similar platforms for research and booking, therefore valuing dependability and convenience (Peralta, 2015).

Gamified features have been extensively investigated in many different sectors among these two generations, exposing different preferences and behaviors. Gamification components like perceived worth and recognition are especially important for Gen X as they prioritize practicality and functionality in their contacts with digital platforms (Sukmaningsih et al., 2020). Reflecting their inclination for experienced and interactive interfaces, Millennials are more drawn to gamification elements that highlight fun, social connection, and enjoyment (García-Jurado et al., 2018). These variations show how important customised gamification techniques are for properly involving every generation.

In the e-commerce industry, for instance, research has found that Gen X likes simpler, more straightforward gamified interfaces that support decision-making while Millennials react better to dynamic and interactive elements that improve their whole experience (García-Jurado et al., 2018; Lissitsa and Kol., 2016). In the banking sector, gamification has also been shown to have a major impact on the behavioural intentions of Millennials, who are more likely to use mobile banking apps with gamified elements than Gen X, who typically support conventional banking methods (Venkatesh et al., 2012; çera et al., 2020). In their study, Lodes and Buff (2009) argue that Millennials are more likely to exhibit brand loyalty toward expensive commodities like laptops, and computers while being less devoted to inexpensive products like gum or candy bars. These results imply that even though gamification might improve user involvement across generations, its design and use should be tailored to fit the tastes of every cohort.

In the context of travel and tourism, the differing impacts of gamification on Gen X and Gen Y are particularly relevant. Millennials, for example, are more inclined to connect with gamified travel apps that provide prizes, social sharing choices, and interactive elements as they fit their need for immersive and shared travel experiences (Hamed, 2017; Iskandar et al.,2020). Conversely, Gen X appreciates gamification components that streamline the booking process, offer obvious advantages, and improve the general ease of trip preparation (Peralta, 2015). These realizations highlight the need-to-know age variations while creating gamified travel apps.

In summary, while Gen X and Gen Y exhibit distinct preferences and behaviors in their engagement with gamified elements, they remain the primary users of online travel platforms in India, as compared to Gen Z. Emphasising the requirement of customized tactics to maximize engagement and satisfaction, past research across several sectors have repeatedly proven that gamification has a varied effect on these two generations. By concentrating on the demands of Gen X and Gen Y, companies may create more successful gamification strategies that fit their tastes, therefore improving the user experience in the travel and tourist industry.

1.6 Research Questions

- Do gamified features of travel applications influence user happiness? If yes, does user brand engagement mediate this relationship?
- What role does flow experience exert on users' interaction with gamified features and their user brand engagement?
- Does user happiness influence the user's continuance intention towards travel applications? Do self-brand connections mediate this relationship?
- How do above mentioned relationships vary between Gen X and Gen Y?

1.7 Research Objectives

The study broadly has the following research aims:

1. To examine the effect of travel applications' gamified features on user brand engagement and happiness.
2. To investigate the mediating effect of user brand engagement on the relationship between travel applications' gamified features and user happiness.
3. To investigate the mediating effect of self-brand connection on the relationship between user happiness and continuance intention of gamified travel applications.
4. To examine the moderating role of flow experience on the relationship between travel applications' gamified features and user happiness.
5. To compare the hypothesized relationships of the proposed conceptual framework between age cohorts of 'Gen X' and 'Gen Y'.

Chapter- 2

CHAPTER 2

LITERATURE REVIEW

Conducting a literature review allows the researcher to critically synthesize existing information in the field of study, highlighting strengths and limitations in prior research. This technique identifies possible flaws to be addressed in the study and emphasizes the strengths that may be enhanced. A thorough literature evaluation offers the essential context for framing the investigation.

For this study, a review of related literature was conducted using exclusively online sources. The principal platforms employed for research included Emerald, Elsevier, Springer, Wily, and Sage Publications. Moreover, studies were also searched on Google Scholar. During the search process, particular keywords were employed to get appropriate literature, including Gamification, Gamification elements, Gamification in the Tourism or Travel Industry, Gamification in Marketing, and Gamified mobile applications in the Tourism or Travel Industry. Upon acquiring the preliminary results, filters were used to isolate journals and articles pertinent to the domains of marketing, travel, and tourism, therefore guaranteeing the obtained data's direct relevance to the study topic. Efforts were made to access full-text articles and reports through these platforms, and emails were sent to several authors to request copies of their research. Priority was assigned to Scopus-indexed publications for inclusion in the review, to ensure the legitimacy and relevance of the sources. Springer Journals and other prominent online academic resources were also referenced for supplementary materials.

2.1. INTRODUCTION

The primary goal of this chapter is to analyze and evaluate the significant literature that has influenced the conceptual framework. A literature review is quite helpful for comprehending the fundamental nature and role of brand continuance intention, as well as its antecedents and impact on each other, in the context of advergame, which is one of the initiatives of gamification. The objective of a literature review is to offer the reader a comprehensive examination and a high level of expertise in a specific subject or field. It emphasizes the future growth opportunities in a topic of study. The publication of these

reviews is difficult, and many of them require additional manpower based on experience and manual methods. . Furthermore, this chapter aims to identify key theoretical gaps and methodological limitations in existing studies, providing a foundation for current research. By synthesizing prior findings, it also sets the stage for exploring the role of gamification elements in enhancing continuance intention within the travel and tourism industry.

2.1.1 Travel Apps Industry

ICTs, which were first introduced in the early 1990s, have had a substantial influence on the hotel and tourism industry (Buhalis & Law, 2008). The sharing economy had significant growth throughout the mid-2010s, resulting in a substantial impact on travel applications (Graham & Zook, 2013). Euromonitor International (Shoutern, 2016) anticipated that mobile travel sales will represent 25% of global internet travel reservations by 2019. The ability to make this estimation was facilitated by the profound influence of mobile applications on the tourism sector. These applications have optimized processes, promoted corporate partnerships, enhanced data protection, and improved customer relationship management systems. As a result, they have become a comprehensive solution for all travel-related activities. As a result of the impact of ICTs, Leung et al. (2013) and Sotiriadis (2017) have reported that the most significant channels for industry practitioners to reach their customers are websites, social media, and mobile technologies. Users have become dependent on mobile technologies, such as smartphones, tablets, and mobile applications (apps), to access the Internet, and they are now an indispensable part of their daily routines. The reason for this is the convergence of the benefits of information and communication technologies and mobility (ICTs) (Wang et al., 2012). The utilization of mobile devices significantly affects the services provided by hospitality and tourism enterprises to their travelers, leading to a rise in income (Jung et al., 2014; Lee et al., 2010). Latest technologies have the potential to simplify the delivery of goods and services (Car et al., 2014). Mobile technologies are expected to change the way travelers utilize the Internet for planning and decision-making around their travels (Wang et al., 2012).

Tourists frequently employ their smartphones as a form of travel companion or guide, which enhances their enjoyment of their journeys, as indicated by Tussyadiah and Wang (2016)'s research. They worry that if they rely too much on the push recommendations on their gadgets, they will lose control of their own travel experiences, even though they usually follow them. Additionally, travelers perceive smartphone ads as sources of information (Erawan, 2016). Bertan et al. (2016) assert that mobile technologies greatly enhance

competitiveness by facilitating managers' ability to stay in touch with existing and potential consumers, which in turn speeds up the entire service delivery process. It summarises five variables that customers consider when deciding whether to use mobile devices for travel. Utilitarian, hedonistic, dispositional, behavioral, and an environmental perspective are the five main schools of thought (Law et al., 2018).

By allowing customers to use technology to choose and customize their products as well as to personalize their experience, Niininen et al., (2007) showed how IT helps consumer centricity. Travelers can make reservations for hotels, flights, rental vehicles, etc., at any time and in any location using mobile internet (Wang and Wang, 2010). Hotel visitors have access to the guest loyalty program and may book a room (Collins, 2010). Mo Kwon et al., (2013) revealed that consumers are more likely to acquire mobile applications if they love using their cell phones and feel confident about themselves rather than just for the sake of receiving promotional material. The advantages of the Internet and social media are being fully utilized by mobile technology, which is also offering travelers extensive support for their lodging needs (Wang et al., 2016). Tourists use hotel applications on their mobile devices to complete the reservation and payment processes. As a result of their numerous advantages, these mobile applications are gaining rapid acceptance and popularity among travelers (Ozturk et al., 2016). The loyalty intentions of mobile hotel booking users were significantly influenced by the application of technology, and the convenience of use, compatibility, and performance expectations were all significant factors (Tao et al., 2018). The usage of mobile travel applications by visitors is significantly influenced by performance expectations, social influences, and enabling conditions (Bakar et al., 2020). Mo Kwon et al. (2013) demonstrated that promotional information is not the only motive for downloading mobile applications. (Rivera et al., 2016) found that content information has a significant impact on consumers' propensity to utilize mobile applications.

According to a study conducted by Im and Hancer (2017), the main motives for installing smartphone applications in the hospitality industry are gaining access to company information and conducting transactions via mobile phones. The study by Seigneur (2011) is founded on a blockchain application in the tourism industry. In Geneva, the author presented an approach to clever tourism that is crypto-friendly. He has argued that new technologies like blockchain and cryptocurrencies can be utilized to enhance the tourism experience. He

has also argued that such integration will increase the overall income and affluence of locals who provide tourism-related services.

Navigation and tracking apps, like Google Maps, have changed the way people find their way around and discover new places. These apps made traveling easier and more accessible by giving real-time directions, information about interesting places in the area, and step-by-step instructions (Graham & Zook., 2013). Researchers are interested in understanding the elements that influence app adoption and retention rates. This includes researching the role of app features, user experience, and customer service in motivating consumers to keep using the app. Travel apps actively gather user feedback and reviews to understand consumer perspectives. Analyzing reviews allows developers to identify areas for development and address consumer issues (Law et al., (2014); Xiang et al., (2017). The readiness of consumers to provide their data through hotel applications in exchange for personalized services was studied by DeFranco & Morosan (2015) about perceived risks and advantages. Consumers' risk-benefit assessments when linking mobile devices to a hotel's network were examined in a subsequent study by DeFranco and Morosan (2017).

Travelers are rapidly incorporating intelligent travel planning applications to streamline their travel-related duties, obtain their desired tour schedules, and determine their vacation destinations (Ho et al., 2021). There are around 35+ categories of mobile apps on the Google Play Store and 25+ categories on the Apple App Store. Utilities, entertainment, gaming, news, and lifestyle applications are divided into numerous areas, such as social networking, business, events, communication, parenting, productivity, and sports. Travel is one of these categories of mobile applications. There are around 60,000 active travel-related apps, accounting for 4.65% of all categories. The global travel and tourism business is worth more than $8 trillion. Mobile apps have contributed significantly to this accomplishment. Based on demographic data, tourism and travel. rank as the sixth most popular category of downloaded apps. Approximately 60% of smartphone users worldwide have installed a travel application on their mobile devices. 45% of individuals in this specific group use these applications regularly to organize and prepare for vacations and travels. Presently, around 80% of travelers utilize mobile applications to oversee their trips. India's growing smartphone penetration has resulted in increased use of mobile apps, particularly travel apps. India's most popular travel apps include MakeMyTrip, Cleartrip, Goibibo, Yatrra, IRCTC, OYO, Trivago,

TripAdvisor, RedBus, and Airbnb (Patwardhan, 2023). As of 2022, travel apps had a considerable user base in India with 409 million downloads (Statista, 2023).

2.2 **Gamification**

The term ‘gamification’ could be misinterpreted by people like introducing the real game, real-world simulation, etc. but it is simply the introduction of gaming features like- Fun, excitement, challenges, rewards, etc into the targeted area (Zichermann & Cunningham, 2011). Gamification starts exactly with the concept of engagement. Engagement refers to the connection between a consumer and a product or a service. It was the opinion that “gamification ‘is distinguished from other phenomena namely gameful design, gameful interaction, and complex game fullness. It must be considered that it involves the game design elements rather than playful design, which does not have structure, goals, or both (Deterding et al., 2011). The objective of gamification is to provide total value for consumers, provided that game-like experiences are created (Hamari & Koivisto, 2013).

‘Gamification’ is the latest marketing strategy in e-commerce and presumably, the gamification term used in 2002 for the first time. However, until 2010 this concept did not gain much popularity (Gatautis et al., 2016). No doubt at this time, this gamification feature got more attention from game creators who aimed to increase the player’s engagement by using this element. This results in tremendous changes in the behavior of players, suddenly they are attached more deeply to games. It attracted marketing gurus and they took the initiative to apply this gamification feature to the business. Hamari and Lehdonvirta (2010) defined in their theories gamification as the concept of introduction of gamification elements into ‘non-game contexts’. The root cause of the emergence of this gamification is its spatiality of engaging people psychologically. Hence, companies started executing gamification in their marketing activities to gain more fruitful results like better company’s performance, strong bond with customers, favorable behavioral change etc. along with marketing, the tourism industry is another area where gamification gaining the attraction.

Numerous articles and research papers on gamification have been written, highlighting its significance in tourism, commerce, health care, academia, and public policies. Numerous authors view gamification as an innovative and promising concept that might be implemented in a variety of settings (Werbach & Hunter, 2012; Zicherman & Cunningham, 2011; Hallifax et al. (2019) outlined the primary considerations for customized gamification.

Gamification designs prioritize game components that make sense to users by establishing explicit connections between diverse activities (Deterding, 2015; Hallifax et al., 2018; Nicholson, 2015). The purpose of this work was to identify the connections between user type and stimulating game components. They conducted the study with three hundred volunteers for this reason. Two primary determinants of user motivation in customized gamification were presented in the paper: 1) the implementation of a given motivational technique, and 2) the selection of the user type. On this basis, they advised designers of personalized gamification to consider the needs of multiple users rather than focusing primarily on one.

Gatautis et al., (2016) took a consumer-centric approach to gamification. To achieve this objective, they investigated the roots of the gamification concept, compared it to other similar concepts, and present an overview of gamification aspects. In addition, the authors presented several models relating to online consumer behavior, with a focus on the implementation of the SOR model, or Stimulus-Organism-Reaction, in gamification. In their investigation, they determined that gamification is the application of game characteristics to non-game circumstances. Ibhadode et al., (2019) discussed gamification as a cost-effective strategy for bridging the academe and industrial sector. However, the incorporation of gamification into academia made it more engaging. In addition, it prepared students for the real-world issues they may face after graduation and when seeking employment in the business. As a result of gamification in academia, students were given opportunity to solve industrial-related problems during course work, as opposed to focusing simply on theoretical study (Insley & Nunan, 2014).

Rodrigues et al. (2019) conducted a mixed quasi-experimental study to demonstrate the efficacy of gamification in Massive Open Online Courses. The level of student involvement as measured by the completion rate of activities was much higher on the gamified platform (28.032%) than it was on the traditional platform (13.252%). Most marketers were interested in gamification implementation in marketing, although their outlook was modern in this regard. As they decided to adopt the game features but did not view it as their primary objective, they merely viewed it as a sub domain (Lucassen & Jansen, 2014).

The gamification demonstrated significant social and environmental viability benefits. Gamification increases brand loyalty and strengthens the link between travelers and service

providers. A direct contact has been established between local communities and tourists, allowing them to provide services that are tailored to the needs of the latter (Negruşa et al., 2015). Researchers identified seven major characteristics of gamification, including social, escape, competition, copying, skill development, recreation, and imagination, which may be used to design a questionnaire on the motivations for online gaming. They also discover the drawbacks of gamification (Demetrovics et al., 2011).

Millennials are more receptive to tourism, and they spend the majority of their time playing video games; therefore, with the introduction of gamification in tourism, tourist management can increase customer engagement. The majority of tourism websites have implemented a points-based incentive system that encourages users to spend more time on their websites (Alčaković et al., 2017). Yang et al., (2017) demonstrated that using gamification mechanics, marketers could use gamification to enhance customers' intentions to purchase their items. Robson et al., (2016) categorized players in gamified experiences. The effectiveness of gamification depends on the appropriate balance of gamification principles such as mechanics, dynamics, and player emotions. Observers claimed in their study that the MDE (Mechanics, Dynamics, and Emotions) framework is quite useful when designing a gamification experience for the real world (Robson et al., 2016).

Gamification Elements

Gamification elements provide the core of gamification principles that can be expressed in a variety of ways. Gamification elements (conversely, game design elements) are a representation of all the components and facets required for building and comprehending a gamification concept. Hunicke et al., (2004) and Werbach and Hunter, (2012) both identify three game components-**Mechanics, Dynamics, and Aesthetics**. These are the three most crucial aspects of game design for establishing gamification in the intended location. **Game mechanics** are the fundamental elements of a gamification concept; they are the fundamental bricks used to form a gamification concept and are picked and combined to produce a game-like experience. Mechanics are the rules of the game, and they are what game designers have the most impact and interaction with. Game **mechanics** are instruments, strategies, and tools utilized to gamify a website or application. (Reeves and Read, 2009) recognized 10 game elements Self-representation with avatars; three-dimensional surroundings; storytelling context; feedback; reputations, ranks, and levels; marketplaces and

economics; competitiveness governed by explicit, rigid rules; teams; and configurable parallel communication systems.

Dynamics define how users interact with building parts (Hunicke et al., 2004). (Zichermann & Cunningham, 2011). The game's system-level behavior is reflected by its dynamics. It anticipates and describes how the rules react to player input and interact with other rules. The game's dynamics fulfill desires. People have basic needs and goals, including the need for reward, prestige, accomplishment, self-expression, competition, and compassion. These requirements transcend years, demographics, religions, and genders. Game designers have been addressing these demands within gaming contexts for years, and gamification now enables these principles to be applied more broadly. A point is a collectible construction element (Thiebes et al., 2014) concerning the collection dynamic (Blohm & Leimeister, 2013).

Aesthetics are typically things that players can alter during the course of a game. Motives are also known as aesthetics. It describes an underlying psychological disposition and is closely tied to dynamics (Leimeister et al., 2009). For instance, collecting awards might contribute to the achievement incentive (Davis & Singh, 2015). Nevertheless, based on the basic design, structural elements may result in distinct dynamics that correlate to diverse reasons (Blohm & Leimeister, 2013). Levels are utilized as an incentive for customers to better their position by reaching a level up, for as by transitioning from a basic customer to a premier customer. When a user enjoys completing tough tasks, they are motivated to do so in order to be acknowledged for their accomplishments. Leaderboards are widely used in gamification because then users may compare their scores with those of their peers and feel motivated to do better (Gupta & Gomathi, 2017).

Gamification is a way of thinking so with the help of this we can improve the solution to a particular problem. It can be used to modify the customer behavior, towards buying or selling something. Gamification has four different dimensions- Game, design, elements, and non-game context. In-game design Mechanics, Dynamics, and aesthetics are the three main elements, which help to introduce gamification in the intended area (given in table 2.1). Here, mechanics are the rules of the game and are what the game designers have the most control over and interact with most often. Dynamics shows the behavior of the game as a system. It is about predicting and explaining it defines how the rules act in motion, responding to players' input, and working in concert with other rules. Aesthetics are usually objects that players can

manipulate in the course of the games. Gamification designs favor the game elements that make sense to the users by creating an explicit connection with various activities (Sebastian, 2015; Hallifax et al., 2018).

Table 2.1: Mechanics, Dynamics, and Aesthetics

Mechanics	**Dynamics**	**Aesthetics**
Challenges	Constraints	Achievements
Chance	Emotions	Avatars
Competition	Narrative	Badges
Co-operation	Progression	Content unlocking
Feedback	Relationship	Collections
Resource Acquisition		Points
Rewards		Team
Transactions		Gifting
Win state		Levels

2.2.1 Gamification in Travel Industry

The adoption of gamification in the tourism industry is considered as most sustainable approach as it offers rewards for specific activities to evoke specific behaviors of stakeholders. Gaming, as a cutting-edge concept, is emerging as a helpful tool, and some tourism organizations have utilized it for marketing and dynamic user involvement. As a novel method for promoting tourism destinations, gaming affords tourism organizations and destination marketers the chance to develop engaging and instructive settings for effective brand awareness, interaction, and communication (Xu, F. et al., 2016). Games with an advertising objective, often known as advergames, are essential new sorts of marketing tools that could offer game players entertainment to create an emotional connection between the game and the brand.

The usage of games in the tourism business may provide excellent marketing possibilities. New technologies, such as social media, smartphones, and video games, offer technological instruments for creating such experiences. However, the tourism industry has always been among the first to adopt innovative initiatives (Buhalis & Law, 2008). With the rapid development of new technologies, tourists now expect more personal, distinctive, and unforgettable experiences, which require deeper involvement and multisensory stimulation. According to research, gamification can influence user experiences in the following ways: socially, emotionally, and by creating an immersive experience for the user (Xu, 2011; Hamari et al., 2013). Sigala, (2015) verifies these functionalities through a recent questionnaire study with Trip Adviser users, demonstrating that gamification can enhance visitors' experiences by "immersing tourists in a virtual travel environment" that is imaginative and entertaining.

Gamification of tourism can contribute to more rewarding interactions and a better degree of satisfaction, as well as boost brand recognition and destination loyalty. The gamified system creates fun, engaging, and rewarding tourist experiences, contributes to deeper engagement, understanding, and learning, greater satisfaction with the tourism company, and establishes a fun and personal experience, all of which contribute to increased brand awareness, strengthened customer loyalty, and increased profit for the tourism company (Xu et al., 2017).

New empirical findings suggest that gamification can significantly boost user happiness and involvement in travel apps. According to Hamari et al. (2014) meta-analysis of several fields, gamification treatments typically boost user engagement by 20-30%. In tourism-specific contexts, Xu et al. (2017) found that gamified components included in travel platforms increased user interaction metrics such as app usage frequency and time spent interacting with travel-related content by up to 25%. In a similar vein, research by Sigala (2015) of TripAdvisor consumers found that introducing game components—such as points, badges, and challenges—increased interactive involvement by approximately 25%, meaning that these elements aid in the development of stronger emotional and social bonds with travel firms. According to market research estimates, the global gamification market will develop at a compound annual growth rate (CAGR) of about 30% between 2018 and 2023, reflecting a greater industry trend towards digital engagement strategies. Furthermore, polls of millennial travelers suggest that approximately 60% of them interact with travel apps that offer gamified experiences, citing benefits such as customization and interaction (Research2Guidance,

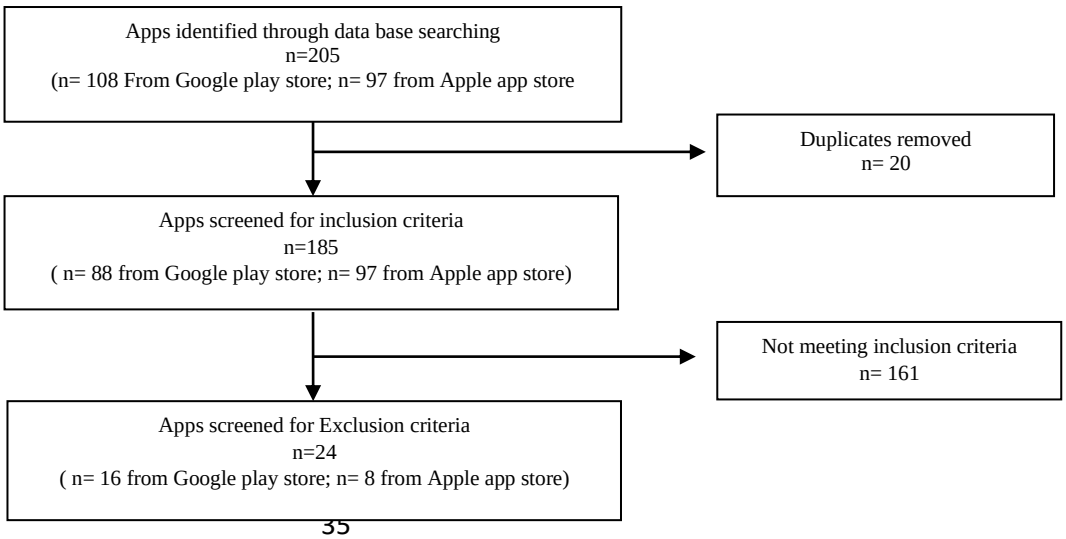
2019). These statistics demonstrate gamification's transformative capacity to boost the immersive quality of travel experiences while also creating quantitative boosts in brand loyalty and business performance.

2.2.1.2 **The Gamified Travel Apps in the Indian Context**

In India, numerous companies provide online trip booking services to customers. This section examines the top companies in this business within the Indian setting that are considered for the present study on the basis of gamified features they incorporated in their mobile applications. The following is the app search strategy for the present study:

This study focused on the applications offered by the two major mobile app repositories, namely the Apple App Store and Google Play Store, which collectively account for almost 80% of all mobile apps. The process began by identifying the core focus areas of the study, which included Indian travel apps and their smart, user-friendly features. Keywords such as “travel app India,” “Indian mobile travel app,” and “Indian smart travel app” were selected to ensure that the search would yield results that aligned with these criteria. These terms were designed to capture a wide range of apps related to the Indian travel and tourism industry, ensuring comprehensive coverage for the research. For Finalizing the keywords expert advice was also taken from two field experts. The Apple App Store gave 97 apps, while the Google Play Store yielded 108 apps. Afterwards, the applications were selected, evaluated, and recorded in an Excel spreadsheet. A total of 20 redundant applications were eliminated, resulting in a final count of 185 *applications.* The 185 apps were filtered using the PRISMA flowchart's inclusion and exclusion criteria before being evaluated.

PRISMA FLOW CHART



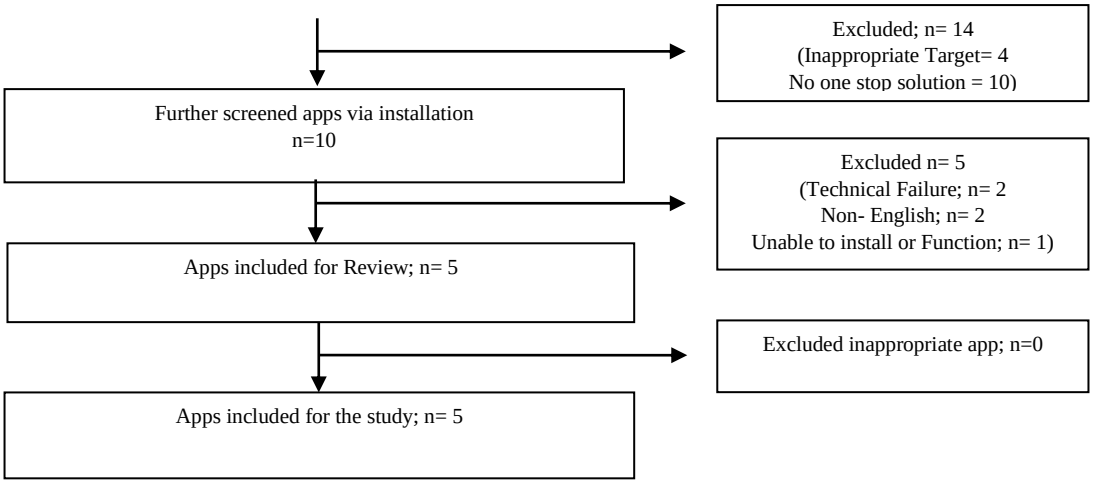


Figure 2.1 : App selection process (Author's Own)

Eligibility criteria

The following were the criteria for app inclusion: (1) mobile-oriented and mainly utilized for travel-related activities: Booking Tickets for (flights, buses, and trains), hotel booking, and cab booking at one platform (2) accessible in English, with app eligibility assessed through study of the app's about page, detailed description, and advertisements displayed in presentations or videos; and (3) available without charge or through in-app purchases accompanied by user reviews or ratings. The exclusion of 161 applications deemed ineligible by the inclusion criteria resulted in 24 applications remaining.

The 24 applications underwent a screening process utilizing exclusion criteria predicated on their one-stop solution attributes. These attributes comprised the subsequent features intended for travel applications: geolocation, trip planning, service booking or purchasing, entertainment, attractions, and payment gateways (Stopka et al., 2018; Matyunina, 2020; Sia et al., 2023). Furthermore, only applications that incorporated gamified elements, including rewards, challenges, and sociality components, were chosen. This stage involved the removal of 14 apps that lacked a one-stop solution and 3 apps that were deemed inappropriate targets, leaving only seven apps. Two of the seven apps encountered technical difficulties contained content in a language other than English, or were uninstallable or malfunctioning, leaving five applications. The final decision was reached through an evaluation of the application's features. Due to the absence of inappropriate apps identified during the assessment, the five apps namely Goibibo.com, Hotels.com, Make My Trip, Expedia.com and Yatra.com were retained for the purpose of analysis and evaluation.

Goibibo.com, Hotels.com, Make My Trip, Expedia.com, and Yatra.com have gamified various app tasks by using several game elements (Table 2). For instance, users are motivated to write reviews (play task), so that they can earn points and cash with the condition that the review should be found useful for other users. By referring the app to the user can get points. Along with it, User can also earn cash by uploading their profile. This will guide the apps to send you personalized notifications. All the gamified apps provide an interactive platform; their travelers can guide each other by giving valuable advice on a particular place, hotel, or other sites. In this way, these apps not only provide motivational potential that persuades the users to use the apps, but they also enhance the engagement and gameful user experience by providing several benefits to the sight seekers (like competence, competition, achievement, and relationship). Consequently, it locks the users into a gameful experience, so that they should continue to use the application and continuously strive to improve their travel profile, ego, and self-esteem. Table 2 depicts the chain of effects of desired application tasks, which all gamified applications used to get travelers engaged with their apps.

Table 2.2: Gamification Design Elements Incorporated by Gamified Travel Apps

Gamified Elements	How are these elements incorporated into selected mobile travel applications	Names of mobile travel applications
1) Rewards Users have to accomplish a specific task to gain points/ rewards like- referring to others, booking, inviting friends, and helping others in Gamified travel Apps.	Gain Points: - Whenever Gamified travel booking app users refer this app to others they gain points. ❖ On every new booking user gets points. ❖ By sending invitations to friends' user-added points to its leaderboard	Goibibo.com, Make My Trip, Yatra.com, Expedia.com, Hotels.com and Expedia.com

2) Challenges– win state	Badges: - various levels have been set by the app. As the number of points increases users get different level of badges on his/her name. such as : ➢ Browns Level ➢ Gold Level ➢ Platinum Level If users provide his/her personal information such as- his/her likings, desired destination, vegetarian or non-vegetarian etc. this leads to help application to send customized messages to them.	Goibibo.com, Make My Trip, Yatra.com, Expedia.com and Hotels.com
3) Sociality - Sending messages to other users to get feedback provides personal detail towards application to get customized notification. (Goibibo.com, Make My Trip, Yatra.com, Expedia.com and Hotels.com)	Message/chat: - Users can get travel advice from other users with the help of chat box provided by app. It creates a teamwork Social points: -user gets social points on his/her every valid review about particular place which proves helpful to others and they give likes and comments on it. These social points added to his/her existing points.	Goibibo.com, Make My Trip, Yatra.com, Expedia.com and Hotels.com

2.2.2 Consumer Behavior of Gamified Travel applications

Tourism has not undergone a sudden digital transformation; rather, it has undergone a continuous transformation. The tourism industry rapidly adopted information and communication technology because its primary business entails linking a vast array of information and intangible values to a specific physical location (Cho, 1998). Combining mobile information technology with tourism has resulted in the emergence of a new social phenomenon, smart tourism, as a result of technological advancements and changes in tourism behavior induced by innovation (Hunter et al., 2015).

Gamification has been used in the travel and tourism sector to boost brand identity (Foursquare, Brazil Quest Game), improve traveler experiences (REXplorer by Regensburg, Germany), track traveler movements (Geocaching Tripadvisor), boost customer loyalty (Earn your wings by Air Canada), and improve human resource management (Marriot My Hotel). This trend is continually growing (Egger and Bulencea, 2015; Xu et al., 2017; Corrêaa & Kitanoa, 2015). The incentive structure of Gamification encourages players and can influence behavior. When utilizing the gamified tourist application, people value features related to fun or gaming. People's expectations for a smart tourist application that has been gamified, however, differ from those they have for a regular game.

While playing, flow is thought to create significant stimulation, but perceived enjoyment is a broad hedonic experience with low-level stimulation. A gamified smart tourism application's adoption would be significantly impacted by the requirement for personal information (Yoo et al., 2017). The application of a specific motivating technique and the selection of the user typology are the two key aspects that determine user motivation in personalized gamification. To be able to identify broad suggestions for designers, it is necessary to consider the influence of user behavior and the system's gaming domain (Hallifax et al., 2019).

Gamification elicits strong, genuine human emotions. Positive user experiences are produced, and engagement and loyalty are raised (Alčaković et al., 2017). Games can be used for learning about tourism, controlling destination competitiveness, and improving adaptivity because they combine incentives, engagement, adaptivity, simulation, collaboration, and data collecting (Shaffer et al., 2005). Badges, leaderboards, and performance graphs all appeared to improve the perceived importance of the activity. On the other side, perceived work significance was unaffected by avatars, meaningful stories, or teammates. The collection of game design elements that included teammates, meaningful storylines, and avatars had a positive impact on players' feelings of social connectedness (Sailer et al., 2017).

Gamification may be applied to crowd-sourcing in any marketing strategy and can be used to influence consumer behavior at any point in the consumer behavior process (Sigala, 2015). Gamification not only provides motivational affordances that induce the travelers to use the website tasks, but it also creates an engaging and gameful user experience by generating experiential values and benefits for the users (such as autonomy, achievement, competence, and 'competition'), which lock users into a constant gameful experience/flow in which the users continuously strive to improve their travel profile, ego, and self-esteem. Thus, the goal of the game mechanics is to increase the travelers' engagement with the

website's duties (behavioral outcomes) by increasing their motivation and creating game-like experiences (psychological outcomes) (Sigala, 2015).

2.3 Theoretical Models of Continuance Intentions of gamified Travel applications

2.3.1 Overview of the Existing Technology Continuance Models

A novel model to explain young people's ongoing usage of travel applications on the foundation of the theory of planned behavior (TPB), the technology acceptance model (TAM), and motivation theory has been built. The study found that both young people's utilitarian and hedonic motivations for using travel applications have a considerable impact on their likelihood of doing so. The results also revealed that regulating factors play a crucial role in shaping their utilitarian drive. In addition, hedonic incentive acts as a moderator between the characteristics of these apps and the intent to keep using them (Zhou et al., 2022). The Technology Acceptance Model (TAM) is a popular framework for elucidating the factors that influence people's propensity to adopt novel technologies (Schepers & Wetzels, 2007).

The research utilized a modified version of Bhattacherjee's Expectation-Confirmation Model (ECM) that included numerous new factors such as privacy risk, perceived fee, and perceived value (Bhattacherjee, 2001). According to the outcome, user happiness is a pivotal factor in influencing the likelihood of individuals continuing to utilize a service, and this principle also applies to online platforms. When people find an online service, like a ticketing website, to be helpful and valuable, they are more likely to keep using it (Susanto et al., 2020).

Liao et al. (2009) initially proposed the Technology Continuance Theory (TCT) to anticipate people's propensity to continue using a specific technology. According to Liao et al. (2009), this model integrates the cognitive model, the ECM, and the TAM to assess how new technologies will be used in the long run. Mobile banking, taxi booking, and mobile healthcare (Weng et al., 2017; Foroughi et al., 2019; Gilani et al., 2017) are only a few examples of technologies that have their use explained by TCT. While TCT does a decent job of laying the groundwork for studying continuing intention, it is suggested that researchers can learn more about the factors related to pre- and post-adoption behaviors by combining and expanding upon other theories. The research concluded that a successful framework integrates user happiness, innovation, and the attractiveness of many interpretations of the

TCT paradigm. Having a good time was determined to be an important component of people's happiness. The presence of attractive alternatives and the impression of novelty have a detrimental effect on the intention to continue (Foroughi et al., 2023).

Dorcic et al. (2019) found that several theories and models were used to measure buyer behavior and the intention to use mobile technology. These included TAM, the unified theory of acceptance and use of technology (UTAUT) and its extension, UTAUT2, the innovation diffusion theory, ISS, the contingency and task technology fit theory, and the theory of planned behavior. The integrated ECM-ISS model was used to examine how a DMO's website affected the decisions of tourists, with the results suggesting that INQ was the most influential factor (Chung et al., 2015). A study used an integrated expectation confirmation model (ECM) and an information system success (ISS) model to construct a research model for a tourism application. This model focused on the intention to continue using the app and included three underlying factors: the perception of confidence, perceived pleasure, and perceived threat. The research examined the subject matter by considering the viewpoints of information systems and user behavior influenced by Confucian principles. According to Liu et al. (2023), there is a positive correlation between expectation confirmation and perception of usefulness, Perception of trust, Perceived enjoyment, and satisfaction, and a negative correlation with perceived risk.

The study defined four distinct forms of external motives, drawing on self-determination theory and existing literature on gamification. It then investigated how these motivations influenced users' willingness to continue using gamified online travel applications. The findings suggested that these motivations: 1) positively influence the satisfaction of consumers' three basic psychological needs (i.e., autonomy, relatedness, and purpose in life), but have less significant effects on the requirements for competence (Zang, 2022). Human motivation and character is the subject of self-determination theory (SDT), a broad theoretical framework. In this view, people are viewed as dynamic organisms with a natural propensity towards self-integration, self-improvement, and ongoing learning; however, this propensity is not a given and must be fostered by several social institutions. Separate from SDT are the ideas of extrinsic motivation (organism integration theory) and intrinsic motivation (cognitive evaluation theory) (Deci & Ryan, 2000).

The research was undertaken to examine the behavior of travel app users in terms of their continued usage. The study was based on the expectations confirmation model, which mainly investigates the happiness and cognitive processes of users after they have adopted information technology. The results indicated that the hedonic value viewpoint included just

one aspect, which is felt pleasure. On the other hand, the functional value perspective consisted of three factors, namely perceived functional advantages, ease of use, and financial benefits. The combination of these factors, together with user satisfaction and trust, has an impact on travelers' intentions to continue using their preferred applications (Choi et al., 2019).

Using TAM-relevant notions (such as perceived enjoyment and perceived ease of use), the study aimed to determine whether these variables truly affected the desire to use a hotel's gamified application. Since fun is a key factor in getting people to play games, we made sure to incorporate that, too. According to the findings, fun is a driving factor in the gaming context; hence this aspect is prioritized above all others (Parapanos et al., 2019).

To illustrate that customer satisfaction is positively influenced by perceived simplicity of use, online consumer review (OCR) credibility, and OCR usefulness, the Technology Acceptance Model and the Information Systems (IS) Continuance Model have been implemented (Filieri et al., 2021). Ultimately, these factors result in UGC continuation intent platforms (Filieri et al., 2021).

To learn more about what influences customers' decisions to book trips via mobile apps, the UTAUT-2 framework has been expanded to incorporate the concepts of perceived risk and perceived trust. The findings reveal customers' adoption of smartphone apps was significantly affected by price-saving orientation, performance expectancy, social influence, perceived risk, perceived trust, and habit. In addition, the study discovered that the expectation of performance is the most important factor, followed by the desire to save money and the influence of others (Gupta et al., 2018).

Earlier studies using technology continuance models like the Technology Acceptance Model (TAM), Expectation-Confirmation Model (ECM), and Technology Continuance Theory (TCT) have offered useful information about how users continue to use technology after they adopt it. However, a closer look shows that these studies have some important shortcomings. Many studies in this area provide basic overviews of what affects users' ongoing involvement but don't explore the psychological reasons behind why users stay engaged. For example, research by Foroughi et al. (2023) and Filieri et al. (2021) points out key factors like how easy a service is to use, overall satisfaction, and trust. However, these studies mostly use snapshots in time and rely on people's self-reports, which might not accurately reflect how outside factors affect people's thoughts and feelings in real time. These

methods often ignore how gamification features, which aim to make situations fun and engaging, change the user's mindset and encourage them to keep interacting. Due to these gaps, this study uses the Stimulus-Organism-Response (SOR) model and Flow Theory as its main concepts. The SOR model helps us better understand how gamified features (stimuli) impact users' feelings (organism) and how these feelings affect their actions. Meanwhile, Flow Theory gives important information about the experiences and inner motivations that keep people engaged for a long time. These models provide a complete method that improves on earlier studies and better explains how people keep using gamified travel apps.

2.3.2 Stimulus Organism Response

Environmental Psychologist created the SOR Model, which stands for Stimulus, Organism, and Response Model, which has been extensively tested in numerous studies to determine the effect of stimuli on the emotional and cognitive behavior of consumers, resulting in behavioral and attitude change among consumers (Mehrabian & Russell, 1974).

The virtual environment's elements, alone or in combination, have an emotional effect on users, who then react either positively or negatively, wanting or avoiding to buy a product or do a certain action. It is important to remember that when a gamified model is applied in a virtual world, the aspects of that environment trigger certain emotions in the customer by accessing their consciousness. Consumers' actions might be influenced by positive feelings. The consumer's conscious mind always responds with either an aversion or an aspirational attitude toward any given stimulus (Gatautis et al., 2016).

The conceptual model of online consumer behavior was presented by Eroglu in 2003 (Eroglu et al., 2003). High task-relevant and low task-relevant stimuli were separated into two categories by the authors. According to Eroglu et al., (2003), the affective and cognitive impact of virtual environment stimuli on consumers results in a favorable or unfavorable response (desire or aversion to purchase a product). According to Sautter et al. (2004), there are two separate parts to the virtual environment: the operator environment and the virtual (selling) environment. Considering this, it is advised that marketing experts not only focus on the virtual environment's components but also try to foresee and control the operator environment's interference.

Numerous authors use the SOR model to analyze online consumer behavior, as has already been mentioned. Considering this, we will investigate further the possibility of

applying gamification to the SOR model. The SOR model consists of three elements: stimulus, organism, and response. The gamification model commonly referenced by multiple authors is derived from the pyramidal method of gamification introduced by Werbach & Hunter, (2012). This model encompasses game components, game mechanics, and game dynamics. Stimuli in the virtual realm can be categorized as website aspects, including website design, website communication elements, website content, and website navigation and structure (Gatautis & Vaiciukynaite, 2013). Stimuli in the context of gamification encompass game elements such as avatars, badges, points, levels, and virtual gifts. These components function as stimuli, impacting the customer and shaping their emotional reaction.

Game dynamics in the context of gamification refer to the emotional state of the player. Once the client reaches the state, they must decide whether to continue participating in the gamified activities or opt out. Therefore, in the framework of the SOR model, it is possible to say that game dynamics is associated with a state that stimuli should lead to.

It can be argued, with support from Werbach & Hunter (2012), that game dynamics is not achieved through game components alone. The unique dynamics of each game are the result of the interplay of many game elements and systems. Different combinations of game elements are selected and implemented for specific game circumstances based on game mechanics. The mechanics of a game are linked to the choices players make, which in turn alters the set of stimuli they encounter (Gatautis et al., 2016).

Existing research indicates that the 'S-O-R' approach is more responsible for gauging the customer brand engagement and Continued Use Intention in a gamified setting (Supotthamjaree, & Srinaruewan, 2018; Guo et al., 2016). To meet the requirement to examine the continuing intent about gamified elements, customer brand engagement, and self-brand connection act as a mediator along with flow experience as moderator the present study focuses on the S-O-R paradigm. The stimulus organism response theory holds that an organism's own emotions or behavior prompts a response to a stimulus (person). This processing of internal stimuli may be conscious or unconscious. Additionally, it evokes an emotional response. The Stimulus-Organism-Response model permits a systematic analysis of how gamification affects consumer behavior (Hwang & Choi., 2020). In this context, the three elements of gamification—Sociality, Challenge, and Rewards—are viewed as environmental stimuli that influence the emotional and cognitive response of engagement in humans (Xi & Hamari, 2019). The organism component (O) in the present study, which

depicts the internal experience of players while using a gamified mobile app, is comprised of brand engagement, consumer happiness, and self-brand connection. Regarding behavioral intention, reaction (R) represents the players' willingness to continue executing a particular behavior. Multiple scholars have concurred on the S-O-R model's prevalence in the retail and internet sectors (Demangeot and Broderick, 2016; Lucia-Palacios et al., 2016; Floh and Madlberger, 2013; Peng & Kim 2014; Tak et al., 2021). Different stimuli have been utilized by studies to determine the positive or negative impact of stimuli on the cognitive and emotional behavior of online consumers (Lee et al., 2021, Gatautis & Vaiciukynaite, 2013). However, there is a lack of studies that concurred with the S-O-R model's prevalence in the hospitality and tourism industry specifically in a gamified context.

2.3.3 Flow Theory

The term "flow" or "immersive flow" was introduced by Csikszentmihalyi and LeFevre in 1989 to describe an emotional state in which an individual is entirely engaged and absorbed in an activity. According to Csikszentmihalyi and Csikszentmihalyi, (1990), flow is "a state of optimal experience in which an individual feels concurrently happy and cognitively efficient because they are so absorbed in an activity that nothing else counts". The term "flow" is derived from individuals associating their experience with the movement of water that drives them ahead (Csikszentmihalyi, 1975). The phenomenon of this psychological procedure has been thoroughly investigated in the disciplines of music, academic achievement, and physical activity (Agarwal & Karahanna, 2000; Hsu & Lu, 2004).

According to Ho and Kuo (2010), those who are fully engaged in an activity are psychologically driven to take an active part. Due to the inherent satisfaction of flow, individuals tend to seek out and participate in flow experiences repeatedly, resulting in an emotional mechanism that promotes engagement (Nakamura & Csikszentmihalyi, 2002). Hamari et al. (2016) found that flow enhances customers' inherent drive, which in turn promotes long-term dedication and engagement with a brand.

There have been numerous studies on the causes and effects of flow in the field of interactions between people and computers since Hoffman and Novak (1996) first proposed the theoretical framework of flow in the digital realm. Although most of these studies only considered one dimension of flow, more recent studies (Hamari & Koivisto, 2015; Procci et al., 2012) have demonstrated the benefits of including many dimensions. Because of the importance of both virtual and in-person communication in gamification, a multi-dimensional flow model is ideal for characterizing the flow state (Kaur et al., 2016).

Previous research into the effect of flow on product usage found that when people experience the following states while using the product: focused immersion, temporal dissociation, control, curiosity, and heightened enjoyment, they become completely absorbed and motivated to use the product continuously. According to Lowry et al., (2013), gamification works because players feel more invested in the outcome of the game, which in turn increases their desire to play for longer periods. Consequently, we are conducting this study to examine the gamified consumer experience, as it is anticipated to have a positive impact on consumer brand engagement. This, in turn, will establish a strong connection between the consumer and the brand, thereby positively influencing the customer's future utilization of the brand.

In their study, Sangroya et al., (2021) found that both mental and emotional brand engagement benefited from the presence of flow. Users of a gamified mobile app for a brand are kept interested in the app by Flow experiences that make the application fun to use. Flow states can be achieved in many different contexts, from retail therapy to creative writing to rock climbing to gambling to working out to performing in an art show. The state of "flow" is characterized by intense focus and pleasure (Robson et al., 2014; Zhou and Lu, 2011).

Flow in online activities like searching and playing games has been studied by various academics (Koivisto and Hamari, 2014). In addition to increasing customers' enthusiasm for a business's website or its offerings, the flow state also dulls their price sensitivity. People's purchase intention is raised (Liu et al., 2011; Steffen et al., 2013) and their attitudes are altered (Landers et al., 2015; Steffen et al., 2013) while they are in a state of flow.

Perceived competitive achievement has a major impact on flow (Lee et al., 2022). Players' competitive spirits are piqued, and their interest is piqued when they see how they stack up against other players (Bista et al., 2014; Lin et al., 2015). Users experience intense emotions and enter a state of flow when they obtain high scores or receive incentives, giving them the feeling that they have triumphed over other users. However, Perceived Promotional Achievement has no meaningful effect on Flow. Users' states of flow may be negatively impacted since consumers may become irritated and bothered by promotional content and advertising and choose to disregard it (Lee, 2015).

Consumers who can quickly find what they require, learn about it and make purchases feel more in charge of the experience (Hoffman and Novak, 1996), which has a positive effect on their flow state of mind. Websites are judged on their navigational performance,

which includes how quickly and easily users can find what they're looking for on the site (Wang et al., 2009; Zeithaml et al., 2002). Several research projects (e.g., Guo and Poole, 2009; Novak et al., 2000) have looked at the correlation between website speed and user flow experiences.

According to Smith and Sivakumar, (2004), the flow state is so satisfying that people would keep looking for it. As a result, consumers are more likely to return to a website that evokes the flow experience than to a page that does not. These claims are supported by research showing a beneficial direct effect between flow and revisit intentions by Koufaris, (2002) and Hausman and Siekpe, (2009). As a result, it is evident from the literature that flow is related to the desire to return.

An individual's skill level is a crucial antecedent of flow (Webster et al., 1993). Researchers have discovered that a user's level of confidence in his or her ability to utilize a computer effectively influences his or her behavior in front of a computer. Likewise, it has been discovered that abilities are crucial factors that lead to the state of flow. The impact of various website qualities, including interactions, velocity of download, popularity, design elements, quality, and complexity, on flow-related constructs have been investigated (Skadberg & Kimmel, 2004). However, there is a lack of studies that concurred with the flow theory's prevalence in the hospitality and tourism industry specifically in a gamified context.

2.4 Hypothesis development

In the form of testable statements, a hypothesis is an illustration of a logical assumption or conjecture between any two or more variables. "A hypothesis is a tentative, yet testable, statement that predicts what you expect to find in your empirical data" In other words, the development of hypotheses is founded on either prior empirical findings or existing theoretical frameworks in the relevant literature. Primarily, the researcher developed hypotheses based on the conceptual framework he or she proposed.

The hypotheses developed for this investigation were consistent with the stated research objectives.

Table 2.3 Research objectives mapping research hypotheses

Research Objective	**To examine the effect of travel applications' gamified features on user brand engagement and happiness**
Research Hypothesis	H1a: Sociality gamified features of travel apps positively impact user brand engagement with the apps. H1b: Challenge gamified features of travel apps positively impact user brand engagement with the apps. H1c: Rewards gamified features of travel apps positively impact user brand engagement with the apps. H2a: Sociality gamified features of travel apps positively impact user happiness. H2b: Challenge gamified features of travel apps positively impact user happiness. H2c: Rewards gamified features of travel apps positively impact user happiness. H3: User brand engagement on the gamified travel apps positively impacts user happiness. H4: User happiness with the gamified travel apps positively impacts their continuance intention. H5: User happiness with the gamified travel apps positively impacts their users' self-brand connection with the travel app brand H6: User's Self-brand connection with the gamified travel apps positively impacts their continuance intentions.
Research Objective	**To investigate the mediating effect of user brand engagement on the relationship between travel applications' gamified features and user happiness.**
Research Hypothesis	H7a: User brand engagement mediates the relationship between Sociality game element and user happiness with the travel apps.

	H7b: Users brand engagement mediates the relationship between Challenge features and user happiness with the travel apps. H7c: User brand engagement mediates the relationship between Rewards features and user happiness with the travel apps.
Research Objective	**To investigate the mediating effect of self-brand connection on the relationship between user happiness and continuance intention of gamified travel applications.**
Research Hypothesis	H8a: Self-brand connection positively mediates the relationship between user happiness and continuance intentions.
Research Objective	**To examine the moderating role of flow experience on the relationship between travel applications' gamified features and user brand engagement.**
Research Hypothesis	H9a: Flow experience positively moderates the relationship between sociality features and user brand engagement on the travel apps. H9b: Flow experience positively moderates the relationship between Challenge features and user brand engagement on the travel apps. H9c: Flow experience positively moderates the relationship between Rewards features and user brand engagement on the travel apps.
Research Objective	**To compare the hypothesized relationships of the proposed conceptual framework between age cohorts of 'Gen X' and 'Gen Y'.**
Research Hypothesis	H10: The proposed hypothesized relationships in the model would vary between Gen 'X' and Gen 'Y'.

2.4.1 Gamification Elements and User Brand Engagement

Engaging with other consumers is an essential aspect of how consumers interact with a company. Developing a communication platform that enables customers to socially interact is an essential basis for fostering brand engagement (Sangroya et al., 2021). Interaction pertains to the extent to which users engage in social communication during gamification (Yoo et al., 2018). Another previous research indicates that communication amongst members and the use of technology generate affective feelings that contribute to engagement. At present, gamification allows users to engage in social contact via various means such as instant messaging, discussion boards, etc. According to Pasca et al. (2021), communicating gamified tactics might be an excellent way to deliver travel information in a collaborative, fun, and immersive manner.

As stated by Yoo et al., (2018), "the level of difficulty an individual feels about their skill level" is one definition of challenge in academic literature. Previous research suggests that this difficulty can have negative psychological effects if the challenge is too big for the individual's present level of expertise. Whereas indifference may set in if it doesn't correspond to existing knowledge (Johnson & Wiles, 2003). According to prior studies (Abuhamdeh & Csikszentmihalyi, 2012), gamers reported having a better time when the game is more difficult. The role of challenge in eliciting cognitive responses has also been addressed by research (McMillan & Hwang, 2002). According to Griffith and Hunt, (1995), competition is widely considered to be the main attraction of playing sports. According to Kiili, (2005), a higher level of difficulty correlates with a more enjoyable flow state. Individuals who set objectives for themselves in physical activities reported higher levels of self-efficacy and exhibited more long-term behavior consistency, as observed by Ashford et al., (2010). Therefore, this research postulates that the presence of a challenging feature has a significant role in fostering cognitive, affective and activation brand engagement.

Reward-based gamification systems can increase user engagement by encouraging them to explore new features (Nicholson, 2015). Gamification badges (one of kind of reward) can enhance customer engagement by encouraging them to publish reviews and provide higher ratings to hospitality facilities (Sai et al., 2017). In similar way under learning environment, rewarding students satisfies their basic needs and gives them a sense of accomplishment. It also contributes to the course's increased interest, difficulty, and prominence ultimately creates the engagement. Rewards can take many different forms. For example, leaderboards can motivate students to compete (O'Donovan et al., 2013), points can recognize students' advancement, and badges and trophies can symbolize students' status

(Denny, 2013). Similarly, the implementation of gamification has a clear and substantial impact on customer brand engagement, as demonstrated by Jami Pour et al., (2021). Consumer engagement with the aid of a gamified travel booking app may strengthen such a relationship (Hsiao and Cheng, 2016; Hollebeek et al., 2011). The concepts led to the development of the following hypotheses:

H1a: Sociality gamified features of travel apps positively impact user brand engagement with the apps.

H1b: Challenge gamified features of travel apps positively impact user brand engagement with the apps.

H1c: Rewards gamified features of travel apps positively impact user brand engagement with the apps.

2.4.2 Gamification Elements and User Happiness

Happiness signifies the highest level of consumer experience enjoyment, which influences their satisfaction (Lin et al., 2020; Kumar, 2021). A study in the gaming industry has determined that social interaction, which includes relationship strategies, social ties, social exchange intimacy, and a sense of community, are crucial factors in enhancing motivation and happiness in participation (Banyai et al., 2019). Personalization and customization offered by gamified social elements in travel apps add to user happiness in a gamified environment (Seongwon et al., 2013; Nasirzadeh et al., 2020).

Heterogeneity and mobile internet satisfaction are associated in a non-linear fashion within the setting of different levels of mobile internet risk. Danger and difficulty go hand in hand. Zhan et al. (2018) found that customers whose exposure to online risk is higher find it more challenging and are content with intermediate levels of diversity, whereas consumers whose risk is lower are happier with greater levels of variety. According to a study conducted by Hamari and Koivisto, (2015), the inclusion of gamified features such as challenges has a good impact on user enjoyment and satisfaction with mobile applications. In addition, Deterding et al., (2011) emphasized the capacity of gamification to leverage intrinsic motivators such as challenge and achievement, hence increasing user happiness.

Furthermore, scholarly research conducted by De and De, (2013) and Lieberoth, (2015) has provided evidence that gamification is crucial in creating an enjoyable atmosphere. Moreover, Gamification appears to alter the range of emotions toward "relaxed". The ability to induce a sense of calmness among consumers is very desirable, especially in professional environments. Thus, these findings support the use of gamification to increase

user happiness (Korn et al., 2015). Alomar et al., (2016) also found that the gamified environment makes participants joyful. According to Richter et al., (2015), a reward component motivates users to achieve and feel satisfied by offering prizes based on their performance. Rewarding users with badges, trophies, bonuses, points, virtual goods, and other rewards for their performance and achievement encourages them to continue using the platform. Gamification rewards differ from standard company motivator structures as game aspects themselves are rewarding (Werbach et al., 2012). Gamified information systems may not distract from users' intrinsic drive. Receiving physical incentives in game-like circumstances enhances consumers' needs satisfaction.

Based on the above discussion, the following hypotheses are draft:

H2a: Sociality gamified features of travel apps positively impact user happiness.

H2b: Challenge gamified features of travel apps positively impact user happiness

H2c: Rewards gamified features of travel apps positively impact user happiness.

2.4.3 User Engagement and User Happiness

A satisfied consumer is termed a happy consumer. Therefore, it is crucial to know about the variables that affect customer satisfaction and assess their effect on consumer behavior (Eckhaus, 2018). In another research Customer happiness is defined as the degree to which actual experiences match up favorably with those imagined while purchasing a product or using a service (Kotler & Keller, 2021).

There have been many studies in different fields that suggest engagement can lead to happiness. This is because people voluntarily engage only when it benefits them in the short or long term (Csikszentmihalyi and Csikszentmihalyi, 1990; Peterson et al., 2005; Rudd, et al., 2012; Seligman, 2011). Active and passive engagements are both important for customer happiness, according to a study that looked at the brand community area, both leads to user happiness (Niedermeier et al., 2019). In the workplace, employee engagement affects beliefs, plans, and actions which lead to a positive link between engagement and job happiness (Saks, 2006).

According to Wirtz et al., (2013), internet-based brand engagement functions as a mediator between motivators to interact with a brand and raising user happiness and brand loyalty. Similarly, in the realm of sports federations, consumer engagement is viewed as

ancillary to boosting consumer happiness alongside consumer loyalty (Núñez-Barriopedro et al., 2021). Therefore, based on this discussion, the following hypotheses was drafted:

H3: User brand engagement on the gamified travel apps positively impacts user happiness.

2.4.4 User Happiness and Continuance Intention

According to Khan and Hussain, (2012), the three most prominent precursors of consumer happiness are rationality, circumstance, and culture. A satisfied consumer is termed a happy consumer (Eckhaus, 2018). App users who are satisfied with their experience are 59% more likely to use the app again, as reported by the Mobile Satisfaction Index in Tourism (Choi et al., 2019). Higher customer satisfaction is also associated with hotels that have their mobile applications perhaps because of hotels' efforts to offer an outstanding experience by going above and beyond customers' expectations via mobile app services (Choi et al., 2019). Customers with higher levels of satisfaction are more inclined to have a stronger desire to persist in using the product and advocate for it to others (Zeithaml et al., 1996). In addition, consumer happiness has been a crucial indicator of the company's success, because it has a major impact on customers' actions and repurchase intent (Dam & Dam, 2021; Landicho et al., 2021).

According to studies cited in academic works on marketing, customer happiness plays a significant part in maintaining repeat business. In a similar vein, it has been argued (Limayem et al., 2008) that consumers' positive experiences with a technical product or service increase their likelihood of continuing to use it. Customer happiness with the shopping clubs' apps and websites had a direct and substantial effect on the users' willingness to keep using them (Bölen and Özen, 2020). Furthermore, according to research by Choi et al., 2019 users are more likely to keep using a trip-booking app if they are happy with their experience. Happy customers are more loyal result of continuing to use it (Schmitt and Van Zutphen, 2012).

Customer satisfaction has been shown to have a beneficial effect on customers' post-purchase intentions in the context of mobile added-value services (Kuo et al., 2009). Along with it, within the context of tourism, the variable happiness has a positive impact on behavioral intention (Haji et al., 2021). The retention of customers is predicated upon their satisfaction with the goods and services, and other social variables that are significant to the business (Gong and Yi, 2018). Considering this discourse, the subsequent hypothesis is put forth:

H4: User happiness with the gamified travel apps positively impacts their continuance intention.

2.4.5 User Happiness and Self-Brand Connection

A person's level of happiness with a product or service is determined by how well it meets their needs and how closely those needs are met (Prasilowati et al., 2021). Along with it, the gap between customers' anticipations and a product's actual performance is seen as a major contributor to their overall level of consumer happiness (Oliver, 1999). In a similar vein, other authors have discovered that consumers experience happiness when exhibiting them online and increasing their exposure (Schau and Gillen, 2003).

Escalas and Bettman (2003) introduced the concept of self-brand connection to examine how reference groups are used to establish brand associations. This relationship provides insight into the extent to which customers have integrated the brand into their self-concept. They found that when people have strong ties to their peer groups, they are more likely to establish a sense of identity with the brands they use themselves (Escalas and Bettman, 2005). Self-brand connection can be developed through a positive, exceptional, and memorable customer experience with the brand (Van der Westhuizen, 2018).

When the customer's individual experience with the brand is intrinsically linked to the brand's image and the brand itself satisfies the consumer's psychological needs like happiness, a strong self-brand connection is formed (Moore & Homer, 2008). Kwon and Mattila (2015) showed that consumer happiness leads to self-brand connection. Moreover, a study in the culinary industry showed that Customer happiness positively influences self-brand connection (Seminari et al., 2023). So, based on the discussion, the present study proposed the following hypothesis:

H5: User happiness with the gamified travel apps positively impacts their users' self-brand connection with the travel app brand.

2.4.6 Self-Brand Connection and Continuance Intention

There is an incorporation of brands into consumers' sense of identity. Self-brand connections refer to the emotional ties that form between a product's name and a person's sense of identity (Escalas & Bettman, 2005). For users of gamified mobile applications, a self-brand connection is a key element that predicts continued use intent (Sangroya et al.,

2021). Self-brand connection was found to positively affect purchasing intent among Smartphone users. The level of brand loyalty may also be influenced by the extent to which a person feels a strong connection to their brand (Kırcova et al., 2015).

An individual's propensity to make a repeat purchase is influenced by their level of satisfaction with the brand's culinary offerings (as a subjective norm) and the strength of their emotional connection to the company. Quality associations and self-connection with a brand are important motivators for repeat purchases (Suthongwan, 2020). The following hypothesis was created considering this discussion:

H6a: User's Self-brand connection with the gamified travel apps positively impacts their continuance intentions.

2.4.7 User Brand Engagement as a mediator

Consumer brand engagement is viewed as a three-dimensional second-order construct in a study of online brand communities, including cognitive, affective, and behavioral dimensions (Islam et al., 2018). In similar vein according to Hollebeek et al., (2014), the dimensions of consumer engagement are cognitive processing, affection (emotional), and activation (behavioral). Cognitive, emotional, and behavioral engagement were also identified as a result of digital consumer engagement (Hollebeek and Mackenzie, 2019). Several research (Hollebeek et al., 2014; Tsai and Men, 2013; Phang et al., 2013) point to the benefits of frequent customer interaction in building the client's emotional, psychological, and physical connection to the service provider. This phenomenon is known as consumer engagement. So, in present study we considered cognitive processing, affection (emotional), and activation (behavioral) aspects of user brand engagement.

Abou-Shouk and Soliman (2021) looked at how gamification relates to customer engagement and discovered that user engagement acts as a mediator between gamification and other dimensions in Egyptian tourism businesses. Next, Jami Pour et al., (2021) investigated this phenomenon in online retail settings and discovered that brand engagement mediates the relationship between gamification and consumer loyalty. CE serves as a connecting notion between gamification and other ideas in both articles. Various previous studies demonstrated a correlation between gamification usage and consumer engagement (Hwang & Choi, 2020; Rodrigues et al., 2019; Yang et al., 2017). Several studies in the field of tourism have shown that gamification apps can increase engagement among stakeholders, including customers (Eisingerich et al., 2019), festival activities (Liu et al., 2019), and

heritage sites (Coghlan & Carter, 2020). These studies cite work by Marcucci et al. (2018), Jang et al. (2018), and Hsu and Chen (2018).

Tsou (2023) emphasised that challenges, points, and enjoyment are essential elements of gamification that positively influence customer engagement, resulting in a rise in brand affection. Furthermore, customer brand involvement serves as a positive mediator in the interaction between challenge, rewards, enjoyment, and brand happiness. Permana (2021) did a comprehensive study to examine the impact of gamification on brand engagement and awareness. The research emphasized the crucial importance of immersion, accomplishment, and social interaction variables in impacting user satisfaction, with brand engagement playing a role as a mediator.

According to Alvi (2022), the findings showed that interacting with gamified achievement aspects, like as awards and points, had a positive and significant effect on brand engagement.

So in the present study, we proposed the following hypothesis by taking user brand engagement as a mediator

H7a: User brand engagement mediates the relationship between Sociality game element and user happiness with the travel apps.

H7b: Users brand engagement mediates the relationship between Challenge features and user happiness with the travel apps.

H7c: User brand engagement mediates the relationship between Rewards features and user happiness with the travel apps.

2.4.8 Self-Brand Connection as a Mediator

According to research conducted by Revaldi et al., (2022), consumers are more likely to remain loyal to a brand after having a favorable experience with it if that emotion is mediated by feelings of passion, self-brand connection, affection, and happiness. Research also suggests that Smartphone manufacturers and retailers would do well to consider the mediating effects of brand passion, self-brand connection, brand attachment, and customer satisfaction on consumers' propensity to remain loyal to a certain brand. Kwon and Mattila (2015) demonstrated the psychological process through which a consumer's emotional connection to a brand influences WOM. Consumers' emotional attachment to a brand like the recommendations they make to others and continue using the apps are mediated by the self-brand connection.

Consumers' impressions of self-brand connection are influenced by their level of satisfaction with certain brands, since doing so is a way for them to make a statement about 'who they are' (Escalas, 2004). Consumers need to be happy with the brand's performance, or how well it lives up to their original expectations and continues to impress them over time, to develop a distinct image. Customers cut ties with a company if they discover its products or services fall short of their expectations in this way customers' emotions lead to self-brand connection (Markus, 1977). Brand success plays an important part in shaping self-brand connection. Consumers who are satisfied or happy with the products they purchase are more likely to stick with those products over time (Dolich, 1969). A study established a correlation between customer happiness, self-brand connection, and the quality of the service they received (Dwivedi et al., 2016). From this discussion, the subsequent hypotheses were formulated.

H8a: Self-brand connection positively mediates the relationship between user happiness and continuance intentions.

2.4.9 Flow Experience as a Moderator

Flow is a concept that describes a state of intense focus and engagement, where an individual becomes fully absorbed in their current activity to the point where they lose interest in anything else Csikszentmihalyi (1975). The ultimate goal of gamification is to enhance user flow and, by extension, promote voluntary involvement. The game mechanism is a tool for creating the player's path through the game and is a key component in the game's formation. When the mechanics of the game are used to steer the experience, they become a tool for directing player interaction. Having fun when playing a game is a key component to achieving a state of flow (Eppmann et al., 2018; Sillaots, 2014), and the atmosphere created by these tools contributes to this. The flow experience of an app user is also found to positively affect app loyalty (Zhou et al., 2010). Therefore, the flow experience of the user is a crucial part of the app's success (Zichermann and Cunningham, 2011). Flow is most readily perceived in games or sporting scenarios and it is one of the most frequently employed factors in game and enjoyment studies (Boniface, 2000).

Consumers' intrinsic motivation is stoked by flow, which, as per Hamari et al., (2016), paves the way for long-term loyalty and brand loyalty. According to prior research (Ho and Kuo, 2010), when people are fully engaged in a task, they are psychologically compelled to do their best. Repeated exposure to flow states, which are intrinsically rewarding, leads to the

development of a mechanism for psychological functioning that encourages immersion (Nakamura & Csikszentmihalyi, 2002). The results of a study conducted on smartphones indicated a positive correlation between cognitive and emotional brand engagement and the multidimensional construct flow produced by gamified elements. These two methods of interacting with a brand also serve to deepen consumers' emotional investment in the product and encourage them to keep using it (Sangroya et al., 2021).

A study of people who use fitness apps discovered that flow mediates the relationship between gamified features and the desire to keep using the application (Uhm et al., 2023). Multiple research (Koivisto and Hamari, 2014; Robson et al., 2014; Steffen et al., 2013) have shown that consumers can be prompted into a flow state by participating in gamified activities. Flow was found to be a mediator between gamified aspects and brand resonance in research on gamified branded apps (Lee et al., 2022). Prior research on the effects of rewards on flow has primarily been conducted in the game area. A study on online gamers indicated that rewards have a positive impact on flow (Laffan et al., 2016).

High social interaction and the right amount of difficulty are two essential elements of flow (Nakamura, and Csikszentmihalyi, 2002; Berger et al., 2018). Flow is distinguished from other pleasurable but passive activities like watching a movie or listening to music using one's skills (Csikszentmihalyi, 1988; Privette, 1983). Therefore, the best conditions for flow include a high degree of involvement and a balance between skill and difficulty (Csikszentmihalyi et al., 2005; Engeser and Rheinberg, 2008). It's important to note that the best conditions for experiencing flow are those in which one's talents are being challenged but not overwhelmed. Both emotional and rational reactions to an experience can be triggered by being in a state of flow, according to research (Moneta and Csikszentmihalyi, 1996). Similarly, previous studies have demonstrated that emotional and cognitive factors are crucial features underlying the engagement process in online contexts (Mollen and Wilson, 2010), and that flow causes engagement (Shernoff et al., 2003; Calder et al., 2009). A user's flow experience increased with a greater sense of challenge (Kiili, 2005). Flow, thus, is a moderator in the context of these investigations. Our findings suggest that flow moderates the relationship between gamified interactions and user engagement. The notions discussed above resulted in the formulation of the subsequent hypotheses:

H9a: Flow experience positively moderates the relationship between sociality features and user brand engagement on the travel apps.

H9b: Flow experience positively moderates the relationship between Challenge features and user brand engagement on the travel apps.

H9c: Flow experience positively moderates the relationship between Rewards features and user brand engagement on the travel apps.

2.4.10 Gen 'X' and Gen 'Y' as a Moderator

Generation 'X' comprises those born between 1961 and 1979 (Jackson et al., 2011). They are the most educated generation in human history and are known for their proficiency in media and technology, skepticism, and realism. Gen Y, which covers individuals born between 1980 and 1999, moreover they evaluated the first technological generation. (PWC, 2011) A major portion of the tourism industry is occupied by the young segment. Here the young segment denotes Generation Y which comes under the age group of 26-40 years. Generation Y will occupy 50% of worldwide human resources by the end of 2020. So, consequently, they will be the largest portion of international tourism. It also has been noticed that millennials are more interested in traveling as compared to Baby boomers and Generation X (PWC, 2011). Shen et al., (2020) stated how gamification is used out of the zone of a game such as in tourism. To make tourism more fun-loving and challenging with the help of gamification convert the simple trip into the gamified trip. The paper conceptualized and categorized gamified trips to explore the reasons for liking or disliking them. In this paper, the researcher used the Q methodology to know about the gamification impact on various tourists of a different generation (X, Y, and Gen Z). Most individuals from Generation X and Y were primarily driven by the ethical value of gamified trips, but those from Generation Z had a comparatively broader range of interests. Along with-it generation X and Y noticed more knowledge seekers, curiosity, and challenge accepters. It influenced me to choose Generation X and Generation Y for this study as the study is related to the tourism industry.

In a study, researchers examined the utilization of smart technologies by young individuals in the public transport system to facilitate their everyday travel activities. The study found that the increasing reliance of young audiences on mobile apps for making purchases and planning their journeys has had a major impact on the overall development of various sectors of the economy in a particular location (Musatova et al., 2016). Trivedi et al., (2014) highlighted the growing expectations of Gen Y travelers for the development and creation of travel mobile applications that provide automatic insights into the changing travel preferences of present-day travelers. The significant presence of Gen Y as the largest

demographic of mobile application users establishes the potential for the convergence of technology and travel in the future. This calls for extensive study in the development of apps that can effectively meet the diverse travel needs of different segments of the population. The growing inclination towards using these mobile applications also indicates the increased enthusiasm of young travelers for accepting change and innovations in their travel experiences.

To tailor digital engagement approaches to specific user needs, generational cohort analysis must be included in the tourism industry's gamification framework. Generation Y is more likely to respond positively to gamified travel applications than Generation X, who, despite their technological competency, prefer functionality and reliability over novelty (Jackson et al., 2011). Such divisions are significant because they demonstrate that generational factors actively influence the relationship between gamification components and user involvement, rather than just reflecting demographic differences. Gamified components such as challenges, badges, and point systems may considerably improve the travel experience for Generation Y, but they may not have the same effect on Generation X, who may be less convinced of such systems (Musatova et al., 2016). Shen et al. (2020) also demonstrate how different generations perceive the value and acceptance of gamified trips, emphasizing the fact that a one-size-fits-all solution cannot be successful. This study emphasizes the importance of tailored gamification strategies that address the specific motivating drivers and technological expectations of each cohort, resulting in increased user engagement and satisfaction in travel applications by explicitly linking these generational insights to the study's objectives. Based on the above discussion, the following Hypothesis was developed.

H10: The proposed hypothesized relationships in the model would vary between Gen 'X' and Gen 'Y'.

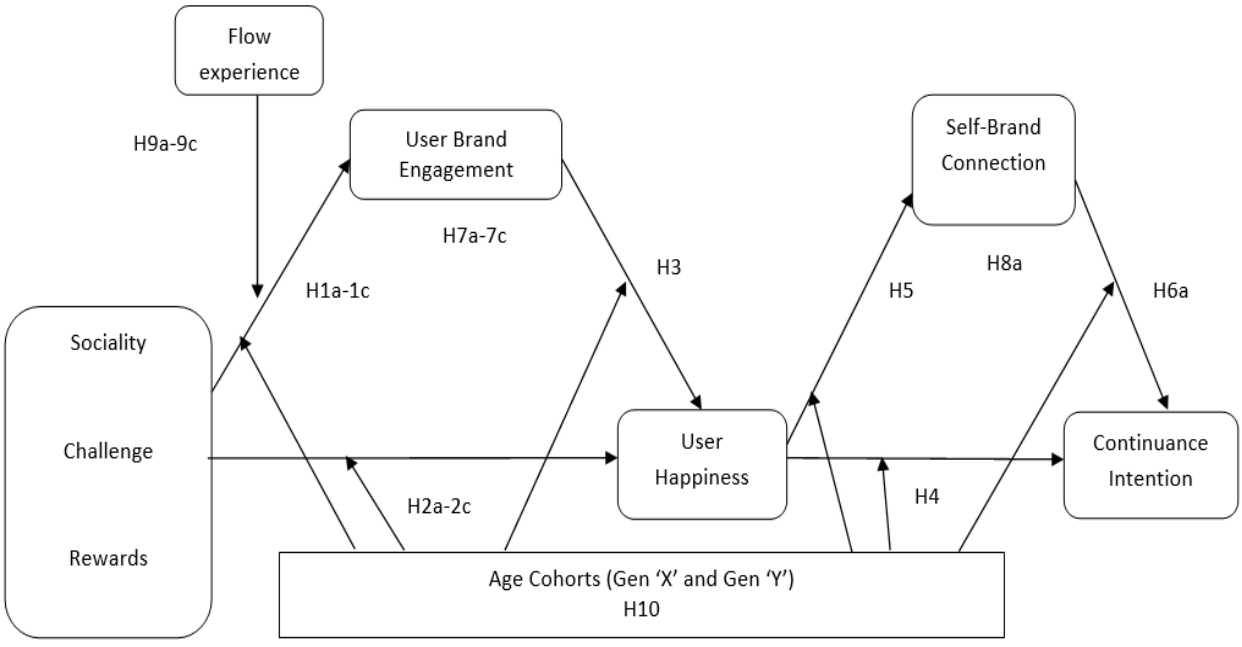
2.5 Theoretical Framework

Environmental Psychologist created the SOR Model, which stands for Stimulus, Organism, and Response Model, which has been extensively tested in numerous studies to determine the effect of stimuli on the emotional and cognitive behavior of consumers, resulting in behavioral and attitude change among consumers (Mehrabian and Russell ,1974). Existing research indicates that the 'S-O-R' approach is more responsible for gauging customer brand engagement and Continued Use Intention in a gamified setting (Supotthamjaree, W., & Srinaruewan, P., 2018, Guo, J., Liu, Z., & Liu, Y., 2016). In order to

meet the requirement to examine the continuance intention concerning users' happiness, users' self-brand connection, and users' brand engagement as a mediator and test the role of flow experience as a moderator the present study focuses on the S-O-R paradigm. The Stimulus-Organism-Response model permits a systematic analysis of how gamification affects consumer behavior (Hwang. & Choi., 2019). In this context, the three parts of gamification—Sociality, Rewards, and Challenge—are viewed as environmental stimuli that influence the emotional and cognitive response of engagement in humans (Xi, N., & Hamari, J., 2019). The organism component (O) in the present study, which depicts the internal experience of players while using mobile apps, is comprised of user brand engagement, user happiness, and self-brand connection. While, continuance intention represents the response (R) that denotes the user's willingness to continually executing a particular behavior.

Multiple scholars have concurred on the S-O-R model's prevalence in the retail and internet sectors (Demangeot and Broderick, 2016; Lucia-Palacios et al., 2016; Floh and Madlberger 2013; Peng and Kim 2014, Tak et al., 2021). Different stimuli have been utilized by studies to determine the positive or negative impact of stimuli on the cognitive and emotional behavior of online consumers (Lee et al., 2021, Gatautis & Vaiciukynaite 2013).

2.2. Conceptual Framework Diagram



2.6 Summary

The literature review chapter introduced and talked about how adding game-like elements to a trip booking app makes people more likely to keep using it by using user brand engagement and self-brand connection as mediators and flow experience as a moderators. The first part of the chapter introduced the reader to the travel app industry. The next part talked about gamification and its role in the travel app industry by briefly explaining its background and scope. Additionally, this chapter showed why the proposed study was needed by reviewing and summarizing previous work. This chapter conducted a study of published literature to assess identified constructs and identify research gaps. The chapter's highlighted studies showed that very limited studies have been done in the Indian setting, both in terms of travel and hospitality. This process led to the formation of hypotheses.

Chapter 3

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Overview

This chapter aims to thoroughly explain the research approach used in the present work. This chapter covers the research design, the sampling frame, data collection instruments, the research instrument, reliability and validity, and the final data collection. Research methodology focuses on the reliability and applicability of a study's findings. The research is exploratory and descriptive.

3.2 Research Design

Research design incorporates data collection methods, processing the acquired information, and data analysis utilizing several statistical tools and techniques. Qualitative and quantitative research designs are the two primary types of research designs. However, some research employs a mixed-method research design, which combines qualitative and quantitative methods of research. In this present study, a descriptive research method was adopted for this research work. A descriptive study is defined as “the research is concerned with finding out who, what, where, when, or how much” (Cooper and Schindler, 2003). In this study, descriptive research provided an understanding of the relationship between different gamification elements on brand engagement and continued use intention among the Gamified travel applications users. The present study also explored the mediating effect of user brand engagement on the relationship between gamified mobile app elements and user happiness. Along with it another mediating effect of self-brand connection on the relationship between user happiness and continued use intention of users of gamified mobile applications is discussed. In addition, the study investigated the moderating impact of Flow experience between gamified elements and user engagement.

The investigation is conducted in two stages. Phase I research is descriptive, including the identification of constructs based on a comprehensive literature review. Based on the findings of the literature review, a conceptual model for the study was developed. Lastly, the instrument for collecting responses was developed. Phase II consists of the quantitative portion of the research. The collected responses from the final questionnaire were validated using a variety of statistical techniques and procedures.

Table 3.1 Phases of the research study

Phase 1 of the study: Descriptive phase	**Phase 2 of the study: Quantitative phase**
1. Literature review 2. Identification of the constructs 3. Research Instrument development	1. Validation of the scale using CFA 2. Testing the relationship between the constructs using SEM 3. Mediating role of user engagement and self brand engagement using bootstrap SEM

Techniques such as Confirmatory Factor Analysis and Structural Equation Modelling are employed for this purpose. The phases of this investigation are detailed in Table 3.1.

3.2.1 Phase-1 Descriptive Phase

During this phase, a comprehensive literature search was conducted to identify the numerous factors influencing users' intent to continue using gamified travel booking applications. This step contributed to the conceptual framework and research instrument development.

A total of three gamified elements were identified for the research after a robust literature review. The research instrument was developed by adapting a pre-existing scale with the intent to utilize mobile applications continuously. The initial drafting of the research instrument was distributed to three experts (3 academic experts) to establish the content and construct validity. The items were evaluated based on their construct-representativeness, lucidity of language, and comprehensiveness. Their recommendations and suggestions provided some concrete ways to enhance the questionnaire. Based on the input provided by the specialists, two redundant items were eliminated, and three items have been rephrased. The list of items that were eliminated and rephrased based on the recommendations of experts is supplied in Table 3.2. Thus, the contributions of experts aided in the modification of the items to achieve optimal dimensions.

Table 3.2 List of items eliminated

Redundant	Rephrased
1. 1 try to make frequent bookings to for an additional benefit in my travel app.	1. I usually accept the additional tasks like participating in bonus point offers (Festival offers, specific banks card use.)
2. I frequently share my travel experiences on review section available in the app?	2. I enjoy sharing my travel stories or photos or reviews about particular site/hotel/flight/bus/train.
	3. I actively participate in travel communities (review Section) within the app to seek advice.

3.2.2 Phase 2: Quantitative phase

The quantitative method facilitated the objective assessment of essential constructs and the evaluation of statistical relationships, thus improving the generalisability and replicability of the results (Cresswell, 2013; Bryman, 2016). No doubt quantitative approaches have also intrinsic limitations, such as limited depth and contextual awareness, potential simplifying of complex events, and vulnerability to response bias (Cresswell, 2013; Bryman, 2016; Podsakoff et al., 2003). Furthermore, although the potential for oversimplification and bias in quantitative data is recognized, these limitations are counterbalanced by the clarity, replicability, and objectivity provided by standardized measures. This methodological choice establishes a strong basis for analyzing the connections between gamification elements and user behavior while allowing future research to integrate qualitative insights for enhanced contextual comprehension. In this phase, the research instrument (Link of Instrument-- https://forms.gle/7GKaYBcqELiBhPw37) was distributed to users of the gamified mobile booking app to acquire data. For the investigation, a total of 405 questionnaires were analyzed

3.3 Sampling Design

The sampling design in research consists of a description of the population and the target population, the sampling procedure, the sample size, and the justification for the sample size

3.3.1 Population

The populations of the current study constitute the users of mobile booking applications such as Goibibo.com, Hotels.com, Expedia and Yatra.com among others.

3.3.2 Target Population

The intended population is also known as the research study's sampling frame. Users of a gamified mobile app (such as Goibibo.com, Hotels.com, Expedia.com, and Yatra.com) residing in India constitute the study's target population.

3.3.3 Sampling Method

A Purposive sampling approach is used to acquire the responses, followed by the snowball sampling technique.

This is a non-random sample selection method where a specific population is targeted. The selection of the sampling unit from the study's target population is contingent on the following criteria**:**

1. The Users must have a gamified mobile booking application installed in their phones.

2. The users must complete transactions within the past three months.

3. The users must belong to either Gen X or Gen Y category.

3.3.4 Sample Size

The study's sample size is 405. The primary responses were collected from 405 users of the mobile applications. The request was made to various users; however, some of the respondents did not meet the criteria and a few declined to respond, resulting in 492 completed questionnaires. After eliminating the questionnaires with incomplete responses, 405 questionnaires were chosen for empirical analysis.

3.3.5 Justification of the sample size

The sample size of 405 is presumed to be representative of the population. As non-probability sampling procedure does not have any formula for determining the sample size. For determining the sample size in this instance, the Lower Bound sample formula was used. When a researcher wishes to conduct structural equation modeling (SEM) analysis on a sample when the population size is unknown, this technique is deemed appropriate. Cohen (1988) first proposed this formula, followed by Westland (2010) who refined it. This formula was developed to determine the minimum sample size required for SEM analysis. In the study, two formulas were employed: the first to determine the error function formula, and the second to determine the lower limit of the sample size.

Error Function Formula:

$$\mathrm{erf}(x) = \frac{2}{\sqrt{\pi}} \int_0^x e^{-t^2}\, dt$$

Lower bound sample size formula for a structural equation model:

$$n = \max(n_1, n_2)$$

where:

$$n_1 = \left\lceil 50\left(\frac{j}{k}\right)^2 - 450\left(\frac{j}{k}\right) + 1100 \right\rceil$$

$$n_2 = \left\lceil \frac{1}{2H}\left(A\left(\frac{\pi}{6} - B + D\right) + H + \sqrt{\left(A\left(\frac{\pi}{6} - B + D\right) + H\right)^2 + 4AH\left(\frac{\pi}{6} + \sqrt{A} + 2B - C - 2D\right)} \right) \right\rceil$$

$$A = 1 - \rho^2$$

$$B = \rho \arcsin\left(\frac{\rho}{2}\right)$$

$$C = \rho \arcsin(\rho)$$

$$D = \frac{A}{\sqrt{3 - A}}$$

$$H = \left(\frac{\delta}{z_{1-\alpha/2} - z_{1-\beta}}\right)^2$$

Sources: Cohen (1988) and Westland (2010)

where j represents the number of variables that have been observed, k represents the number of latent variables, ρ represents the estimated Gini correlation for a bivariate normal random vector, δ stands for the anticipated effect size, α for the Sidak-corrected Type I, β is the Type

II error rate and z for a standard normal score. Using the above formula, the estimated minimum sample size is 262.

To further validate the adequacy of the sample size, a statistical power analysis was conducted using G*Power software. Power analysis helps determine the minimum required sample size needed to detect an effect of a given magnitude with an acceptable level of statistical confidence (Cohen, 1988). A power analysis was conducted for this study using an effect size of 0.15 (medium effect), a power level of 0.80, and a significance level (α) of 0.05—parameters commonly recommended in behavioral and social sciences research (Cohen, 1988). The analysis indicated that a minimum of 384 participants was required to ensure adequate statistical power. For this study, however, the final sample size was found to be 405.

3.4 Type of Data & Data Collection

The survey method is used to acquire primary data from respondents who use gamified mobile travel booking applications using a developed questionnaire. Participants were also informed of the significance of the study and assured that their responses would be kept confidential. The data was collected for all selected gamified apps: Goibibo.com, Yatra.com, MakeMytrip.com, Expedia.com, and Hotels.com simultaneously. This helped save time and additional resources. The data collection procedure began in November 2023 and ended in April 2024.

3.4.1 Data Collection Strategy

The questionnaire has been disseminated to potential respondents by utilizing a Purposive sampling approach through various channels to ensure maximum reach. Suitable networks and platforms for locating users of gamified travel apps have been explored, including:

- Instagram
- WhatsApp
- In-app communities of popular travel apps
- Facebook groups associated with travel app brands or users
- Posting the questionnaire on the official channels of the travel apps

After that, using the snowball sampling technique, participants were encouraged to share the survey with fellow app users (Faßbender, 2021). This diversified data collection strategy aims

to engage a wide and representative pool of participants who meet the criteria for active use of gamified travel apps.

Utilizing Facebook as a recruitment platform for web-based surveys offers a practical and budget-friendly approach. It proved particularly valuable in reaching out to population segments that might typically be challenging to engage in or are often underrepresented. This recruitment method through Facebook also contributed to achieving a diverse participant pool. As observed in the study conducted by Green et al. (2021), participants sourced via Facebook displayed a broad spectrum of characteristics, including differences in socioeconomic status, geographical locations, educational backgrounds, and age groups. A similar type of data collection strategy has been used in multiple earlier studies (Pilgrim & Bohnet-Joschko, 2022; Brusch & Rappel, 2020).

After data collection, additional statistical analyses were conducted. This collected data must be filtered and analyzed statistically to yield pertinent information for the research project. The collected primary data were examined for missing values and errors for this purpose. Next, the data were compiled, edited, and coded, followed by an analysis procedure.

3.5 Measuring instrument

A cover letter or descriptive note served as the preface to the questionnaire. After extending greetings to the responders, it presented the researcher. The subsequent note elaborated on the objective of the questionnaire distribution and provided reassurance to the participants that the study was conducted for scholarly purposes only, and that their responses and findings would be utilized exclusively for research and academic endeavors. A summary of a gamified travel booking application was provided to the respondent. This was followed by instructions instructing the respondent to answer the queries in the subsequent section.

In Section A, the demographic information of the respondents was recorded. This list shows the person's gender, age, qualifications, and marital status. Also included was a list of the pre-qualification questions for the study, which included questions about how often respondents use gamified travel booking apps as well as questions about the various apps that fall under the definition of gamified mobile booking apps captured in this section.

In Section B, 30 items measured how three gamified elements affected user brand engagement, user happiness, self-brand connection, and the user's desire to continue using the apps. These items were taken on the previously available standardized scale. It was based on

a 5-point Likert scale, where 5 means "strongly agree" and 1 means "strongly disagree." Various studies used for instruments are shown in the following table 3.2.

Table 3.3 Scale Items

Sr. No.	Variables	Source	No. of Items	Likert Scale
1.	Rewards related features	Suh, Wagner & Liu, 2018	4	1-Strongly Disagree
2.	Challenge related features	Mattke & Maier, 2021	3	
3.	Sociality related elements	Mattke & Maier, 2021	4	5- Strongly Agree
4.	User Brand Engagement	Hollebeek et al., 2014	8	
5.	User Happiness	Zhan & Zhou, 2018	3	1-Strongly Disagree
6.	Self-Brand Connection	Kim, S. and T. H. Baek, 2018; Dwivedi et al., 2016	4	
7.	Flow Experience	Lee, 2019	4	
8.	Continuance Intention	Tu et al., 2019	2	5-Strongly Agree

3.6 Pilot study

Following the preliminary assessment of the survey instrument and before the commencement of data collection, by previous scholarly works, we executed a pilot study to validate the scale's reliability.

Through a pilot study, the final draft of the instrument was self-administered. A pilot questionnaire was distributed to 120 consumers of gamified travel mobile applications, selected at random from the entire user population. The respondents comprised a variety of groups, each with its own educational, geographical, socioeconomic, and demographic characteristics. The returns of valid, completed questionnaires amounted to 115. The rate of response was 95.83%. Following the data sifting, a total of 115 data sets were analyzed for the pilot study.

3.6.1Validity and Reliability of Scales (Pilot Study)

To assess the precision of the measurement and enhance its usability, three criteria—namely sensitivity, validity, and reliability—were implemented.

- **Reliability** pertains to the instrument's consistency in measuring the intended construct. To assess the internal consistency reliability of the items in the pilot study, Cronbach's Alpha was calculated using a cut-off level of 0.70, as suggested by Nunnally and Bernstein in 1994.
- **Validity** refers to the degree to which an instrument accurately measures the construct it is intended to assess and operates in accordance with its design. It pertains to the degree to which systematic and random defects are absent from the measurement process. To establish content validity for the current study, a comprehensive evaluative discussion was conducted with knowledgeable users of travel mobile applications.
- **Sensitivity** is the capacity of a measuring instrument to precisely quantify the variability of a given concept. The current study assessed a range of factors of users of gamified travel mobile applications, including Gamified elements, user brand engagement, user happiness, self-brand connection, flow experience and continued intention. To increase the sensitivity of the measurements for each of these significant constructs, 5 points were added to the corresponding Likert scales.

Section B, an exploratory study was conducted on pilot result which consists of 30 Likert items. The Mean, Standard Deviation (SD), and Reliability of the data were calculated for Section B was organized and analyzed using SPSS 20.

In the exploratory study on Reward Elements, Challenge Elements, Sociality Elements, Cognition, Affection, Activation, User Happiness, Self-Brand Connections, Continuance Intention, and Flow Experience, the reliability of the scales was assessed using Cronbach's alpha and McDonald's omega. Additionally, item-rest correlation was examined. De Groot & Van Naerssen (1969) and Van den Brink & Mellenbergh (1998) state that item-rest correlations for maximum-performance (or cognitive) tests should be at least .20, .30, or .40, while for typical-behavior tests, higher values are required. To enhance reliability, we determine that the item-rest correlation should be 0.5 or higher. Upon examination, we discovered that out of the 30 items, two items did not meet this criterion. Specifically, item REW4, which is related to rewards, had an item-rest correlation of 0.37, and item FE4, which is related to flow experience, had an item-rest correlation of 0.38. Both values fell below the established threshold. As indicated by previous research, when we removed both items consequently, it increased the Cronbach Alpha values of the related variables from 0.76 to 0.79 and from 0.74 to 0.76. This represents adequate discriminant and convergent validity of all constructs.

Following the removal of unsuitable items, "Cronbach alpha" values for all 10 constructs exceeded 0.7, signifying satisfactory internal consistency among the gauging items (Nunnally and Bernstein, 1994). Table 3.3 displays the results of the pilot study's analysis of the app's dependability.

Table 3.4 Scale Reliability Statistics

Latent Variables	Mean	SD	Cronbach's α	McDonald's ω
Rewards	2.82	1.10	0.79	0.77
Challenge	2.73	1.16	0.76	0.76
Sociality	2.80	1.16	0.82	0.82
Cognitive	2.77	1.06	0.73	0.73
Affection	2.74	1.08	0.76	0.76

Activation	3.19	1.06	0.70	0.72
User Happiness	2.70	1.10	0.76	0.77
Self-Brand Connection	2.73	1.14	0.80	0.80
Continuance Intention	2.79	1.16	0.72	0.78
Flow Experience	2.76	1.07	0.76	0.75

3.6.2 Refining Research Instrument

Subsequent qualitative interventions and the results of the pilot study informed the following modifications to the designed research instrument (questionnaire).

1. In some cases, the order of the questions was changed to keep people interested and on track with studying the most important things.
2. Some questions were changed so that there were enough possible answers.
3. Refinements were made to the designated scales for measuring the respective constructs. A limited number of items on the adapted scales were eliminated and/or rephrased. As a consequence, any ambiguity or duplications were eliminated, and the time required to administer the full-scale questionnaire was reduced. By eliminating items that exhibited lower correlations, the homogeneity of the scale's items were improved, this in turn increased the reliability and confidence in the measure's stability.

Thanksgiving and the already-drafted introductory message (covering letter) were both reworded as needed.

The full-scale research tool (Questionnaire) based on the pilot study was finalised by including the specified revisions / refinements.

3.7 Statistical Approach

For scientists and researchers in the social sciences, statistical analysis is the gold standard for developing, exploring, and validating study findings. This thesis uses the statistical instrument of partial least squares structural equation modeling (PLS-SEM) and the SmartPLS software, which is a standard for the PLS-SEM statistical technique, to conduct an empirical investigation.

3.7.1 PLS-SEM

One widely accepted and widely used second-generation statistical method for multidimensional analysis is the partial least squares structural equation model (PLS-SEM). It is highly recommended to use PLS-SEM because it is perfectly suited to the nature and objectives of this research investigation. For that reason, this thesis's empirical study will focus on it.

3.7.2 SmartPLS

SmartPLS, a graphical user interface (GUI) program, is employed in variance-based structural equation modeling (SEM) to implement the partial least squares (PLS) path modeling approach (Wong, 2013; Sarstedt et al., 2021). It also makes it easier to use a variety of commonly used evaluation criteria for judging the outcomes, including metrics for measuring model fit, structural model assessment criteria, and assessment criteria for measurement models (both reflective and formative). It uses the PLS-SEM algorithm to estimate PLS path models containing latent variables, also known as constructs (Lohmöller, 2013; Ramayah et al., 2018).

Aside from the PLS Algorithm, bootstrapping process, and blindfolding process, it also facilitates several other statistical analyses, including multi-group analysis, confirmatory tetrad analysis, importance-performance map analysis, prediction-oriented segmentation, and combinations (Garson, 2016; Sarstedt & Cheah, 2019). One advantage of using Java programming in the Smart-PLS software is its interoperability with other computer operating systems, such as Windows and Mac (Temme et al., 2010).

As a result, SmartPLS is now regarded as a popular and industry-standard piece of software for the PLS-SEM statistical method. For this reason, it is also considered in this research investigation. In particular, the thesis's empirical investigation makes use of the SmartPLS3 version (Ringle et al., 2015).

3.8 Summary

The primary objective of the chapter has been accomplished through the development of the research procedure and the use of suitable methodological and statistical tools to

conduct the research for this thesis. The nature and objectives of the research justify and reflect the research process and approaches used in this thesis. To address the research issues and accomplish the intended outcomes of the thesis, it is therefore anticipated that the research methodology and procedures used for this investigation will be adequate and suitable.

Chapter 4

CHAPTER 4

DATA ANALYSIS AND RESULTS

4.1 Introduction

This chapter provides an extensive overview of the statistical analysis conducted on the data collected from the large-scale study, as well as the results. Using a questionnaire created specifically for the study, the primary data was gathered from users of the gamified travel booking apps. The purpose of this research study is to determine the gamified components that influence Gen X and Gen Y users' adoption of gamified travel booking apps and their ongoing desire to use them in India. In the relationship between gamified elements and user happiness, the study looked at the mediating role of user brand engagement and the mediating role of self-brand connection between user happiness and continuous intention to use it. The moderating effect of Flow experience in the relationship between gamified elements and user brand engagement was also investigated in this study. The sample profile is shown first, and then the validity and reliability metrics are applied to the data. It comprises an examination of the complexities of the tests conducted to ascertain internal consistency reliability, convergent validity, and discriminant validity. The results for the structural model path coefficients, the effect size, the coefficient of determination (R2 value), the collinearity assessment, the structural model assessment using PLS-SEM, and the predictive significance of the model are described.

4.2 **Statistical Analysis**

The Partial Least Squares-based Structural Equation Modelling (PLS-SEM) method and Smart PLS 3.0 software were employed to analyze the data. This investigation implemented the variance-based PLS-SEM methodology (Hair et al. 2017). An overview of the factors that should be considered by researchers when selecting PLS-SEM as the suitable SEM technique for a study was provided by Hair et al., (2018). The majority of the primary arguments presented here are also suggested by Sarstedt et al. (2017):-

- When scenario that the structural model in the PLS path model is complex, such as the inclusion of numerous constructs, indicator variables, and connections
- When analyzing a conceptual model or theoretical framework to forecast target constructs in the model

- When ratings for latent variables are necessary for the research study's follow-up analysis.
- When the study focuses on theoretical development by exploratory research or theoretical expansions of existing ideas to gain a deeper comprehension of the theories' growing complexity.
- When research contains financial ratios or comparable data types

This investigation aims to explore and evaluate a theoretical framework or conceptual model for gamified mobile booking applications. It is exploratory research that investigates theories with limited prior knowledge. The research primarily relies on pre-existing works of literature, theories, and logical reasoning to establish an initial theoretical framework or construct a conceptual model. These arguments support the use of PLS-SEM for the target study.

4.3 Sample Demographics

The demographic characteristics of the study's 405 participants, who were users of gamified travel apps, reveal a predominance of males (60.25%) compared to females (39.75%). The age distribution highlights that a larger proportion of participants were from Generation Y (58.27%), while Generation X comprised 41.73% of the sample. In terms of education, nearly half of the respondents held a bachelor’s degree (48.64%), with a significant portion having a Master’s degree (34.81%), and a smaller percentage holding Doctoral degrees (13.58%) or being high school graduates (2.96%). Travel frequency varied among participants, with the majority traveling 2 to 5 times per year (37.78%), followed by those traveling 6 to 10 times annually (26.67%), and fewer traveling either 0 to 1 time (23.70%) or more than 10 times per year (11.85%). The respondents were also located in different regions from India with Northern India contributing to 216, Central region amounting to 103, while 52 were from southern region and the rest (34) were from Western region. This diverse demographic profile provides a comprehensive understanding of the typical user of gamified travel apps, highlighting a well-educated and moderately traveling population, with a skew towards younger, male users.

Table 4.1: Demographic Characteristics

Category	Subcategory	Count	Percent
Gender	Male	244	60.25
	Female	161	39.75
Age	GenX	169	41.73
	GenY	236	58.27
Education Level	High School	12	2.96
	Bachelor's Degree	197	48.64
	Master's Degree	141	34.81
	Doctoral Degree	55	13.58
Travelling Frequency	0-1 times per year	96	23.70
	2-5 times per year	153	37.78
	6-10 times per year	108	26.67
	More than 10 times per year	48	11.85
Region	North	216	53.34
	West	34	8.39
	Central	103	25.43
	South	52	12.84
Type of mobile app used	Goibibo.com	83	20.49
	Yatra.com	66	16.29
	MakeMytrip.com	232	57.28
	Expedia.com	3	0.75
	Hotels.com	21	5.19

4.4 Reliability and Validity Measures

4.4.1 Data Cleaning and Preparation

For any analysis to be conducted, the raw data need to be tested for irregularities and inconsistencies. This study first checked the data for missing values. Missing values happen when someone answers a question idly because they are too stressed, too tired, or don't know the answer. Furthermore, if a question is sensitive, the respondent could choose not to answer (Little & Rubin, 2019). For the data that we gathered, we conducted a missing value analysis,

but we discovered none. Out of 492 questionnaires received, an evaluation of the gathered data revealed significant concerns regarding consistent, growing, or decreasing response patterns that suggest non-differentiation or straight lining, which may compromise the credibility of the data. Following the evaluation, 87 replies were eliminated for additional analysis.

Afterward, the data was also tested for normality. However, it is reiterated that PLS-SEM is a non-parametric technique, meaning it does not require data to be normally distributed (Hair et al., 2017). Unlike CB-SEM (e.g., AMOS, LISREL), which assumes multivariate normality for Maximum Likelihood Estimation (MLE), PLS-SEM works well with skewed and non-normal data. However, for statistical significance testing, SmartPLS uses bootstrapping rather than normality-based tests, making normality checks less critical. However, this study checked the normality for all questionnaire items and it was found that all values of skewness and kurtosis were within the range of ± 2. Furthermore, to check the presence of multi-collinearity, the study checked VIF values for all questionnaire items and it was observed that all of these items were well below 5, thus hinting no signs of multicollinearity (Hair et al., 2021). The VIF values are available in Table 4.2.

4.4.2 *Non-Response Bias and Sample Representativeness*

To prevent non-response bias both before and during the data collection phase, we adhered to previous research's recommendations and used response facilitation techniques, such as carefully crafting an attractive survey instrument, controlling the survey's length and content to only include important topics, signaling respondents to the significance of their feedback for the study, tracking survey responses, and sending follow-up reminders (Yu & Cooper, 1983; Rogelberg & Stanton, 2007). Following the advice of Armstrong and Overton (1977), we segmented the survey data into two halves: the first half was categorized as early respondents, and the second half as late respondents. We then compared the data to make sure there was no rejection bias.

To compare the demographics of the early and late responders (gender, education level, traveling frequency), a chi-square test was used. The results indicated no statistically significant difference between early and late respondents in terms of overall response patterns ($\chi^2 = 0.002$, df = 1, $p = 0.960$), suggesting that non-response bias is not a concern. However, a significant difference was observed in gender distribution between early and late respondents ($\chi^2 = 17.010$, df = 1, $p < 0.001$), indicating that response timing varied across gender groups.

Despite this, since the primary constructs of interest (engagement, happiness, and continuance intention) were not expected to be strongly gender-dependent, the overall risk posed by this imbalance was considered minimal.

A Mann-Whitney U test was also conducted to compare early and late respondents regarding rewards, challenge elements, and user happiness to assess potential non-response bias (Mann & Whitney, 1947).

- Rewards: The test results (U=18781.000, Z=−1.469, p=.142U = 18781.000, Z = -1.469, p = .142U=18781.000, Z=−1.469, p=.142) indicate no significant difference between early and late respondents.
- Challenge Elements: The test results (U=18647.000, Z=−1.588, p=.112U = 18647.000, Z = -1.588, p = .112U=18647.000, Z=−1.588, p=.112) also show no statistically significant difference.
- User Happiness: The results (U=19845.500, Z=−.575, p=.565U = 19845.500, Z = -.575, p = .565U=19845.500, Z=−.575, p=.565) suggest no significant variation between the two groups.

Since the p-values for all three variables exceed the 0.05 threshold, the findings confirm that non-response bias is not a concern for these constructs

4.4.3 *Common Method Bias*

When common method bias is present, it has the potential to significantly alter the findings by exaggerating or minimizing the correlation between the variables under study (Fiske et al., 1991). Common method bias is one described as "variance that is attributable to the measurement method rather than to the constructs the measures are assumed to represent" (Podsakoff et al., 2003). There is a tendency for self-report bias to occur when the same responder is asked to measure both the predictor and the criterion variable.

One strategy to rule out significant method effects caused by common method bias, according to Conway and Lance (2010), is to demonstrate the construct validity. To ensure that there is no systematic response bias, we followed the recommendation of Podsakoff et al. (2012) and utilised Harman's one-factor test to detect common method bias. To reduce the number of variables that might be reduced to a single factor that accounted for nearly all the

covariance among measurements (Podsakoff et al., 2003). If the common technique bias exists, it will account for over 50% of the observed differences (Podsakoff et al., 2012).

The amount of variation in Harman's one-factor test that could be explained by a single factor was 34.72%, which is less than 50%. This means that there isn't likely to be any general response bias. As suggested by an earlier study, another way to check for common method bias is to check out the relationship between the hidden variables (Pavlou et al., 2007). There is a common method bias if the association between the latent variables is greater than 0.9 (Bagozzi et al., 1991). This study found that the strongest link between latent factors was 0.778, which is less than 0.9.

4.5 Preliminary Measurement Validation

4.5.1 Content Validity

Before conducting an empirical evaluation of any formative measurement constructs, it is necessary to verify the content validity of each one (Hair et al., 2021). Maintaining the items' content validity should be a top priority, as it is this issue that threatens construct validity more than Doe's common method bias. "Content validity" is the degree to which a concept's measurements capture all aspects of that construct (Podsakoff et al., 2012). Content validity refers to the degree to which an assessment instrument's components are relevant to and represent the intended concept for a given assessment purpose (Haynes et al., 1995). Conversely, incorrect indicator specification can result in a construct that is not covered by the studied and specified construct domain, which can lead to biased estimate findings (Andreev et al., 2009). In contrast to face validity, which is described as "the extent to which respondents or users judge that the items of an assessment instrument are appropriate to the targeted construct and assessment objectives," content validity is different (Hardesty & Bearden et al., 2004). Therefore, before considering additional evaluation criteria for employing PLS-SEM, this step is regarded as a preliminary and crucial one for evaluating a formative measurement model.

Before integrating measuring items for each construct in the questionnaire, as described in Chapter 2, we did a comprehensive and in-depth literature study for each construct, as recommended by previous research, to verify content validity and face validity (Hardesty & Bearden et al., 2004; Nunnally & Bernstein, 1994). The next stage was to pre-test the components with a group of academic experts, some of whom had prior experience in the industry. Based on their feedback, we made the necessary adjustments, as detailed in

section 3.6.2 of Chapter 3. We determined the study's face and content validity based on the information provided above.

4.5.2 Scale Reliability Using Pilot Test

After the first test of the survey instrument and before the real data collecting began, we performed a pilot study to confirm the reliability of the scale, following earlier research (Kline, 2015). 115 valid responses were received for the pilot study, and the reliability for each latent variable was evaluated. De Groot & Van Naerssen (1969) and Van den Brink & Mellenbergh (1998) state that item-rest correlations for maximum-performance (or cognitive) tests should be at least .20, .30, or.40, while for typical-behavior tests, higher values are required. So, for more reliability we consider that item rest correlation should be 0.5 or more and found that out of 30 items 2 items one is Rewards related that is REW4 had 0.37 items rest correlation and one is Flow Experience related that is FE4 had 0.38 item rest correlation that was below the standard threshold. Therefore, as recommended by the preceding literature, when we dropped both the items. As a result, it enhanced the Cronbach Alpha's value of respective variables from 0.76 to 0.79 and from 0.74 to 0.76 (see table 3.2 under chapter 3). This represents adequate discriminant and convergent validity of all constructs.

Following the removal of unsuitable items, "Cronbach alpha" values for all 8 constructs exceeded 0.7, signifying satisfactory internal consistency among the gauging items (Nunnally and Bernstein, 1994)

4.6 Reliability Analysis

In this investigation, each of the reflective constructs is assessed using a variety of components. The result of the internal consistency reliability, convergent validity, and discriminant validity experiments on these reflective constructs is presented in this section (Wong, 2013; Hair et al., 2016).

4.6.1 Assessment of Outer Model Loadings

The entire model's reflecting constructs' outer loadings of indicators should be more than 0.7 (Wong, 2013; Hair et al., 2016). All the reflective indicators in the model's outer loadings are displayed in Table 4.3. All latent variables' outer loading was above 0.7 standard thresholds.

4.6.2 Internal Consistency Reliability

One popular way to quantify internal consistency dependability is with Cronbach's alpha. This method estimates reliability by looking at the inter-correlations of the indicator variables that are observed. Each latent variable's Cronbach's alpha should be more than 0.6 for the internal consistency to be considered reliable (Wong, 2013; Hair et al., 2016). All latent variables have Cronbach's alpha values greater than 0.6, as shown in Table 4.3. In addition to Cronbach's alpha, a composite reliability score over 0.7 is utilized to validate internal consistency reliability. This is because Cronbach's alpha can be influenced by the number of items on the scale and may understate internal consistency reliability (Wong, 2013; Hair et al., 2016). Table 4.3 further shows that the composite reliability for all latent variables is more than 0.7. Consequently, each measurement in the model was confirmed to have established internal consistency and reliability.

Table 4.2 Latent Variables: Loadings, Reliability, and Average Variance Extracted

Latent Variables	**Indicators**	**loadings**	**VIF values**	**Cronbach's Alpha**	**Composite Reliability**	**AVE**
Rewards	REW1	0.796	1.774	0.735	0.849	0.653
	REW2	0.803				
	REW3	0.826				
Challenges	CHA1	0.812	1.663	0.774	0.869	0.688
	CHA2	0.84				
	CHA3	0.836				
Sociality	SOC1	0.826	1.147	0.862	0.905	0.705
	SOC2	0.882				
	SOC3	0.912				
	SOC4	0.727				
User Happiness	UH1	0.816	1.682	0.739	0.852	0.658
	UH2	0.858				

	UH3	0.756				
Self-Brand Connection	SBC1	0.794	1.537	0.74	0.838	0.567
	SBC2	0.743				
	SBC3	0.83				
	SBC4	0.741				
Continuance Intention	CI1	0.904	2.984	0.766	0.895	0.81
	CI2	0.896				
Flow Experience	FE1	0.852	1.885	0.792	0.878	0.705
	FE2	0.824				
	FE3	0.842				
Cognition	COG1	0.83	2.122	0.773	0.868	0.686
	COG2	0.852				
	COG3	0.802				
Affection	AFF1	0.845	2.317	0.813	0.889	0.727
	AFF2	0.861				
	AFF3	0.852				
Activation	ACT1	0.832	3.214	0.668	0.856	0.748
	ACT2	0.897				

4.7 Measurement Validity

Construct validity is defined as the "degree of correspondence between constructs and their measures." Construct validity and related measurement difficulties should receive enough attention from researchers. A theory's development and empirical testing require the confirmation of its construct validity. Two important elements that affect construct validity are convergence validity and discriminatory validity (Jarvis et al., 2003; Hair et al., 2016). In

statistics, convergent validity refers to the extent to which several measurements of the same construct correlate with one another. Discriminant validity refers to how much one component varies significantly from the other constructs in the research.

4.7.1 Convergent Validity

If a reflective construct's indicators share a significant amount of variation or converge, convergent validity has been established. The average variance extracted (AVE), also known as the "grand mean value of the squared loadings of the indicators associated with the construct (i.e. the sum of the squared loadings divided by the number of indicators)," can be used to evaluate the convergent validity of reflective indicators (Fornell & Larcker 1981; Hair et al., 2016). To validate the convergent validity of indicators that indicate a latent construct, AVE must be more than 0.5 (Wong, 2013). The average extracted variance for each latent variable is displayed in table 4.3, and every result is higher than the 0.5 threshold. Thus, it was determined that this study's convergent validity was demonstrated.

4.7.2 Discriminant Validity

A measure's discriminant validity refers to how unique it is, as opposed to just reflecting another variable (Churchill, 1979). Moreover, a construct is considered unique if it can capture phenomena that other constructs in the model are unable to capture (Hair et al., 2016). This is known as discriminant validity. Following the recommendations made by Hair et al. (2016), we evaluated the discriminant validity using all three methods: 1) Assessment of cross-loadings 2) The Heterotrait-Monotrait (HTMT) ratio of the correlations; and 3) the Fornell-Larcker criterion.

As per the Fornell-Larcker criterion, which was put out by Fornell and Larcker in 1981, the square root of AVE for each construct must be higher than its correlation with any other construct. If a construct has greater variance with its indicators than with any other construct, then the construct must be true, as stated by Hair et al. (2016). Table 4.4 displays the details of the Fornell-Larcker criteria analysis. You can see that the square root of AVE for each construct is larger than its association with other constructs; this is indicated in diagonal table 4.4. According to Hair et al. (2016), the discriminant validity is ensured by using the Fornell-Larcker criteria approach.

Table 4.3: Fornell-Larcker Criterion Analysis

Indicators	REW	CHA	SOC	FE	UH	SBC	UBE	CI	COG	AFF	ACT
REW	0.808										
CHA	0.514	0.83									
SOC	0.157	0.273	0.839								
FE	0.619	0.535	0.13	0.84							
UH	0.386	0.373	0.237	0.429	0.811						
SBC	0.353	0.401	0.304	0.381	0.557	0.753					
UBE	0.465	0.504	0.332	0.485	0.364	0.378	0.787				
CI	0.246	0.23	0.344	0.246	0.414	0.47	0.326	0.841			
COG	0.358	0.361	0.147	0.362	0.279	0.304	0.755	0.292	0.828	.	
AFF	0.324	0.385	0.255	0.36	0.248	0.307	0.807	0.283	0.507	0.853	
ACT	0.406	0.436	0.357	0.415	0.323	0.285	0.797	0.208	0.348	0.44	0.865

Note: The highlighted values represent the square root of the AVE values of all constructs

Although the Fornell-Larcker criterion analysis assessment is still the most popular method used by academics to verify discriminant validity, the method is not very good at accurately identifying and evaluating discriminant validity issues (Henseler et al., 2015). According to Hair et al. (2016), the Fornell-Larcker criteria analysis loses its effectiveness when the indicator loadings of the constructs being studied show very slight differences.

To solve the approach's inadequacies and assure reliable identification of discriminant validity concerns, Henseler et al. (2015) propose an alternate technique termed the Heterotrait-Monotrait ratio (HTMT), which uses correlation analysis to assess discriminant validity. The HTMT criteria, derived from Campbell and Fiske's (1959) multitrait-multimethod (MTMM) matrix, is evaluated by calculating the corrections' heterotrait-monotrait ratio. This ratio is determined as the average of the correlations between Heterotrait-Heteromethod indicators (i.e., indicators measuring various phenomena) and Monotrait-Heteromethod indicators (i.e., indicators measuring the same construct).

"The HTMT method provides the best balance between high detection and low arbitrary violation (i.e., false positive) rates," according to Voorhees et al., (2016), who evaluated the approaches to confirm discriminant validity. The Heterotrait-Monotrait correlations of all constructs are presented in Table 4.5. HTMT values below 1 are acceptable, whereas values below 0.85 are considered desirable. All values of the corresponding factors in this study are below 0.85, suggesting that the average variable explained by constructs indicates a higher level of construct strength (Khan et al., 2007). It may be determined that all the confidence intervals do not include a singular value (Hew and Kadir, 2017a).

Table 4.4: Heterotrait-Monotrait analysis

	REW	CHA	SOC	FE	UH	SBC	UBE	CI	COG	AFF	ACT
REW											
CHA	0.685										
SOC	0.177	0.311									
FE	0.804	0.687	0.138								
UH	0.517	0.486	0.283	0.555							
SBC	0.479	0.526	0.367	0.496	0.752						
UBE	0.642	0.68	0.399	0.645	0.502	0.531					
CI	0.327	0.297	0.414	0.315	0.552	0.623	0.454				
COG	0.471	0.457	0.168	0.454	0.357	0.403	1.066	0.383			
AFF	0.418	0.486	0.292	0.449	0.32	0.398	1.096	0.359	0.639		
ACT	0.573	0.598	0.46	0.558	0.453	0.402	1.112	0.292	0.482	0.601	

Based on our examination of both the approaches proposed in previous studies (specifically, the Heterotrait-Monotrait criterion and the Fornell-Larcker criterion), that both met the

specified criterion, we have determined that this study possesses established discriminant validity.

4.8 Higher Order Construct Measurement

The reliability of user brand engagement as a second order construct (formative) was also assessed. Analysis found that all outer weights of sub-constructs (cognition, affection and activation) were significant at .05 level. Moreover, all VIF values of the sub-constructs were less than 3.3, thus signaling the stability of the construct. The results are presented in Table 4.6.

Table 4.5: Higher order construct Measurement

Higher Order Construct	Formative Construct	Outer Weights	VIF	T-Value	p-value
User brand engagement	Cognition	0.384	1.382	14.288	0.000
	Affection	0.396	1.507	14.73	0.000
	Activation	0.489	1.273	13.766	0.000

4.9 Assessing the PLS-SEM Output

In this research we aimed, 1) To examine the effect of travel applications' gamified features on user brand engagement and happiness, 2) To investigate the mediating effect of user brand engagement on the relationship between travel applications' gamified features and user happiness, 3) To investigate the mediating effect of self-brand connection on the relationship between user happiness and continuance intention of gamified travel applications, 4) To examine the moderating role of flow experience on the relationship between travel applications' gamified features and user brand engagement, 5) To compare the hypothesized relationships of the proposed conceptual framework between age cohorts of 'Gen X' and 'Gen Y'.

Three gamified design elements Sociality, Rewards and Challenge, taken into consideration and test it empirically using users of Gamified travel apps.

The researchers employed PLS-SEM to examine the hypotheses framework. Multiple regression, path analysis, and both measurement and structural models have been developed.

Research suggests that PLS-SEM has a benefit over other analytic techniques since it does not need a multivariate normal distribution of data, a large sample size, or interval scales (Shin, et al., 2013).

The data was analyzed using a two-step approach. The researcher initially confirmed the validity and internal consistency (reliability) of the data before estimating hypotheses using a structural model.

4.10 The Structural Model

Path Analysis

Path analysis is a statistical methodology employed to define and examine a structural model that represents a hypothesis concerning the interconnections among the model's variables (Kline, 2015). PLS-SEM is an estimation technique based on ordinary least squares (OLS) regression. Its objective is to forecast the predetermined set of hypothesized relationships within the structural model in a manner that "maximizes the variance explained in the dependent variables." By maximizing the explained variance and minimizing the unexplained variance, the PLS-SEM algorithm determines the path coefficients and other structural model parameters (Henseler et al., 2015; Hair et al., 2016).

4.10.1 Checking Structural Path Significance in Boot Strapping

Bootstrapping is a statistical method used to create many simulated samples from a single dataset. This process enables us to calculate standard errors, produce confidence intervals, and conduct hypothesis testing for various sample statistics. The bootstrapping technique entails repeatedly sampling several observations from the initial sample with replacement, guaranteeing that the sampling population consistently encompasses all the original components (Hair et al., 2016).

When using PLS-SEM for bootstrapping, a considerable quantity of subsamples, also known as bootstrap samples, are chosen at random from the initial data sample. Every bootstrap sample has the identical amount of observations as that initial sample. More bootstrap samples translate into more dependable outcomes. Chin (1998), for instance, suggests 500 bootstrap subsamples. Nonetheless, 5000 is an often-used recommended number for the bootstrap samples in PLS-SEM literature (Hair et al., 2017).

Mediation analysis:

Bootstrapping is a suggested method for examining indirect effects in frameworks with mediator variables due to its extremely computational nature. It involves iteratively

sampling from the dataset, estimating the indirect effect in each resampled dataset, and constructing confidence intervals for the indirect effect.

(Preacher & Hayes, 2008). Therefore, the bootstrapping method suggested by Jose (2013) was employed to assess the mediating impacts of user Brand Engagement and Self-brand connection.

Moderation analysis:

Flow experience was identified as a mediator between gamified elements and brand resonance in a study on gamified branded apps by Lee et al. (2022). Previous research has shown that emotional and cognitive elements play a significant role in online engagement, and that flow contributes to engagement. Therefore, in the current study, flow experience served as a moderator between user brand engagement and gamified features including challenges, rewards, and sociality. The moderating impact was evaluated by using a parametric technique, particularly applying a difference test (t-test) with pooled standard errors (Henseler, 2007).

4.11 Direct Hypotheses Assessment

Next, it is required to examine the importance and relevancy of the structural model linkages, which illustrate the recommended connections between the various components in the model. The evaluation of path coefficients, which have standardized values ranging from about -1 to +1, may be used to do this study. Path coefficients that are close to +1 are usually statistically significant, suggesting a strong positive association. Conversely, route coefficients that are around -1 are often not of statistical significance, suggesting weaker relationships. The route coefficients derived from the PLS-SEM method may lack statistical significance due to their dependence on the bootstrapping standard error. The bootstrap standard error enables the computation of empirical t values (Walpole, 2006) and p values (Fisz, 1963) for all route coefficients in a structural model. If the calculated t value exceeds the critical value, it shows that the route's coefficient is statistically significant at a particular threshold of error probability. Additionally, the bootstrapping ranges of confidence offer valuable insights into the reliability of the projected route coefficients in the structural model. This allows for the assessment to decide if a route coefficient is significantly distinct from zero. The bootstrap interval of confidence is calculated based on the standard error and offers a range in which the real value is anticipated to fall, given a certain degree of confidence (e.g. 95%). If the confidence interval of the computed route coefficient does not include a value of

0, it might be deemed as a statistically significant effect. Additional details regarding the path coefficients generated through the bootstrapping technique of PLS-SEM are provided in Table 4.6.

Table 4.6: Path coefficients

Paths			Beta	SE	T-Values	2.5% CI	97.5% CI
REW	->	UH	0.221	0.053	4.205	0.114	0.315
REW	->	UBE	0.17	0.055	3.087	0.064	0.278
CHA	->	UH	0.156	0.059	2.618	0.038	0.273
CHA	->	UBE	0.24	0.059	4.053	0.118	0.35
SOC	->	UH	0.112	0.052	2.136	0.005	0.21
SOC	->	UBE	0.211	0.046	4.633	0.117	0.301
UH	->	SBC	0.557	0.045	12.394	0.472	0.641
UH	->	CI	0.221	0.067	3.315	0.085	0.346
SBC	->	CI	0.347	0.071	4.923	0.207	0.487
UBE	->	UH	0.145	0.066	2.2	0.02	0.276

A series of structural equation modeling (SEM) analyses were conducted to examine the hypothesized relationships between gamified features, user engagement, happiness, and continuance intentions in travel apps. The results are presented below, including standardized path coefficients (β), standard errors (SE), t-values (t), and confidence intervals (CI).

H1: Gamified Features and User Brand Engagement

- **H1a:** Sociality gamified features significantly predicted user brand engagement (β = .211, SE = .046, t = 4.63, p < .001, 95% CI [.117, .301]). These results suggest that a 10% increase in sociality features leads to a 2.11% increase in user brand engagement.

- **H1b:** Challenge gamified features were also found to significantly predict user brand engagement (β = .240, SE = .059, t = 4.05, p < .001, 95% CI [.118, .350]). A 10% increase in challenge elements leads to a 2.4% increase in user brand engagement.
- **H1c:** Rewards gamified features had a significant positive effect on user brand engagement (β = .170, SE = .055, t = 3.09, p = .002, 95% CI [.064, .278]). For every 10% increase in reward-based features, user brand engagement rises by 1.7%.

H2: Gamified Features and User Happiness

- **H2a:** Sociality gamified features significantly influenced user happiness (β = .112, SE = .052, t = 2.14, p = .033, 95% CI [.005, .210]). A 10% increase in sociality elements led to a 1.12% increase in user happiness.
- **H2b:** Challenge gamified features significantly impacted user happiness (β = .156, SE = .059, t = 2.62, p = .009, 95% CI [.038, .273]). A 10% increase in challenge features resulted in a 1.56% increase in user happiness.
- **H2c:** Rewards gamified features significantly predicted user happiness (β = .221, SE = .053, t = 4.21, p < .001, 95% CI [.114, .315]). A 10% increase in rewards led to a 2.21% increase in user happiness.

H3: User Brand Engagement and User Happiness

- **H3:** User brand engagement was found to significantly enhance user happiness (β = .145, SE = .066, t = 2.20, p = .028, 95% CI [.020, .276]). This finding suggests that a 10% increase in user brand engagement leads to a 1.45% increase in user happiness.

H4: User Happiness and Continuance Intention

- **H4:** User happiness significantly influenced continuance intention (β = .221, SE = .067, t = 3.32, p < .001, 95% CI [.085, .346]). A 10% increase in user happiness results in a 2.21% increase in continuance intention.

H5: User Happiness and Self-Brand Connection

- **H5:** User happiness had a strong positive impact on self-brand connection (β = .557, SE = .045, t = 12.39, p < .001, 95% CI [.472, .641]). A 10% increase in user happiness resulted in a 5.57% increase in self-brand connection.

H6: Self-Brand Connection and Continuance Intention

- **H6:** Self-brand connection significantly influenced continuance intention (β = .347, SE = .071, t = 4.92, p < .001, 95% CI [.207, .487]). A 10% increase in self-brand connection led to a 3.47% increase in continuance intention.

Overall, all direct hypotheses were supported, with significant effects observed across all paths.

4.12 Path Model Coefficient Significance and Effect Size

The researcher assessed the path model coefficients (β), which denote the hypothesized relationships among the constructs that vary from -1 to 1 (Hair et al., 2017). In addition, effect sizes (f2) are evaluated because they offer a means of ascertaining an exogenous construct's influence on endogenous constructs. Cohen (1992) outlines the criteria for evaluating effect sizes (f2): values less than 0.02 indicate no effect; values ranging from 0.02 to 0.15 signify a little impact; values between 0.15 and 0.35 signify a medium effect; and values equal to or greater than 0.35 indicate a substantial effect on the exogenous latent variables.

The f^2 values of all latent variables are equal to or greater than (= or >) 0.02 in Table 4.7, which indicates the impact of all exogenous latent variables on the endogenous variables. The exogenous constructs with the small effect size (f^2) on the endogenous constructs were REW-UH (0.043), CHA-UBE (0.099), SBC-CI (0.112), SOC-UH (0.014), SOC-UBE (0.06), CHA-UH (0.02), UBE-UH (0.017), UH-CI (0.045) and REW-UBE (0.084). Each of these constructs has an f^2 value greater than 0.02 but below 0.15, indicating that it represents a smaller effect. The values of only one construct— UH-SBC (0.449)—indicate substantial effects, as its value is greater than 0.35 (Cohen, 1992).

Table 4.7: Effect size f square (f^2)

Indicators	**UH**	**SBC**	**UBE**	**CI**	**Effect**
REW	0.043		0.084		Larger
CHA	0.02		0.099		
SOC	0.014		0.06		

UH		0.449		0.045	
SBC				0.112	
UBE	0.017				
CI					

Table 4.8 provides a comprehensive evaluation of the structural model's quality in terms of determining the predictive value and explanatory strength of these endogenous constructs. The coefficient of determination (R^2), which represents the "squared correlation between the actual and predicted values of a particular endogenous construct" (Hair et al., 2017), is utilized to compute predictive power. This value represents an in-sample prediction. To mitigate the effect of complex models, an adjusted coefficient of determination is implemented. This involves adjusting the exogenous constructs about the sample size. This method systematically compensates for non-significant exogenous constructs that would otherwise contribute to an increase in explained variance (Hair et al., 2017). Greater predictive significance is indicated by higher values of R^2 and Adjusted R^2, which range from 0 to 1. The definition of a satisfactory R-squared variance has been the subject of scholarly debate. To declare the variance explained by an endogenous construct adequate, Falk and Miller (1992) proposed that R^2 values must be = or > 0.10. According to another researcher, Cohen (1992, 1998, 2013), the assessment of R square values for endogenous latent variables is done in the following manner: The values are 0.26 (indicating a large effect), 0.13 (indicating a moderate effect), and 0.02 (indicating a modest effect). Hair et al. (2016) propose that, when conducting scholarly study that focuses on marketing research, R^2 values of 0.75 are considered substantial for endogenous constructs, 0.50 are considered moderate, and 0.25 is considered weak.

Table 4.8: Predictive Power

Path co-efficient				
	UBE	UH	SBC	CI
R^2	0.351	0.223	0.31	0.255
AdjR^2	0.346	0.215	0.308	0.251

If applying Hair et al.'s (2016) rule of thumb for marketing research, the conceptual model used in this study shows a low R^2 (coefficient of determination) for all endogenous constructs: UBE (0.351), UH (0.223), SBC (0.31), and CI (0.255), as displayed in the table. Additionally, following the suggested criteria by Falk and Miller (1992) and Cohen (1992, 2013) for statistical power in behavioral sciences, two endogenous variables, UH (0.223) and CI (0.255), indicate a large effect, while UBE (0.351) and CI (0.255) indicate a moderate effect. This suggests that our research model has a moderate level of predictive accuracy. The complete model is diagrammatically presented in the Figure 4.1

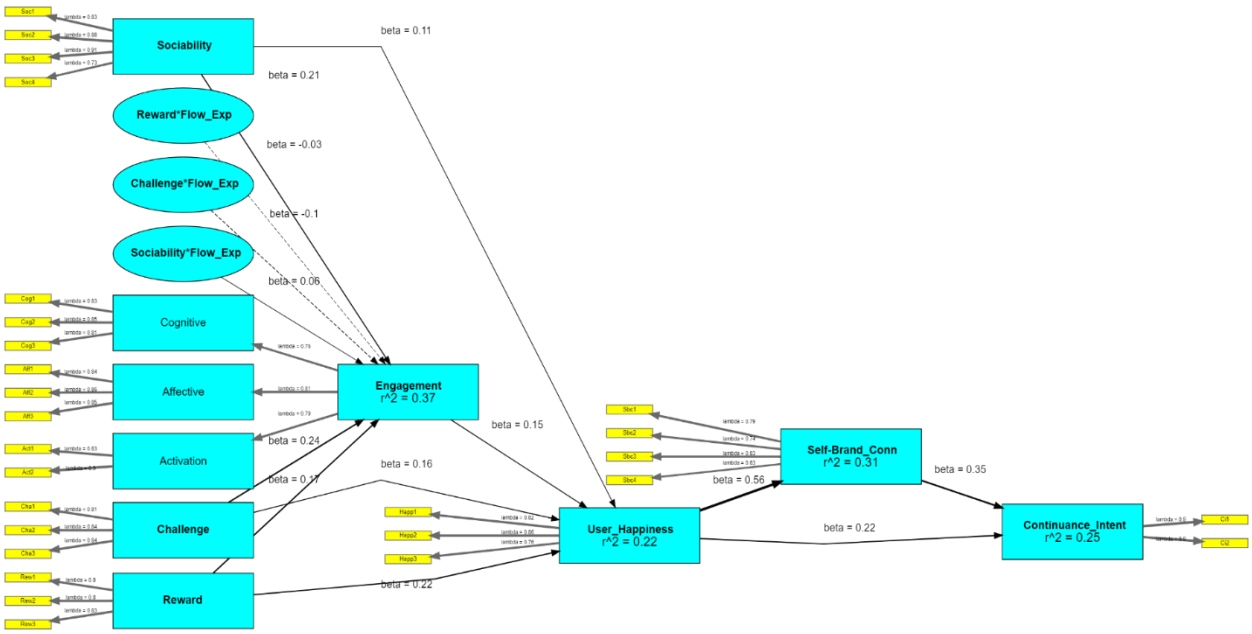


Figure 4.1. Structural paths diagram

Mediation Analysis

Our research model posits that User Brand Engagement serves as a mediator between Gamified aspects (rewards, challenge, and sociality) and User Happiness. Another construct, known as Self-Brand Connection, is also proposed as a mediator between user happiness and continuance intention for gamified mobile travel apps. Baron and Kenny (1986) examine the differences between moderators and mediators, emphasizing the need to maintain a distinct separation between both. They also address the analytical techniques used to measure and determine the influence of mediation. The method proposed by Baron and Kenny and used by other researchers is examined severely by Zhao et al. (2010). They categorize three forms of

mediation—indirect-only, complementary, and competitive—and point out conceptual and methodological flaws in Baron and Kenny's methodology. Both the direct route and indirect path in complementary mediation have statistical significance and have the same positive or negative sign. In competitive mediation, both the direct path and the indirect path are statistically significant, but they have opposite signs. In indirect-only mediation, the direct path is of no significance, while only the indirect path is significant. See the table below for the path coefficients of the indirect and direct effects of variable relationships.

Table 4.9: Testing mediating effects

Relationships	Direct effects					Indirect effects				
	beta	SE	T-stat	2.5 CI	97.5 CI	beta	SE	T-stat	2.5 CI	97.5 CI
SOC>UBE>UH	0.112	0.052	2.136	0.005	0.210	0.031	0.057	2.282	0.015	0.241
CHA>UBE>UH	0.156	0.059	2.618	0.038	0.273	0.035	0.034	3.509	0.062	0.196
REW>UBE>UH	0.221	0.053	4.205	0.114	0.315	0.025	0.031	3.510	0.056	0.176
UH>SBC>CI	0.221	0.067	3.315	0.085	0.346	0.193	0.070	3.158	0.077	0.358

As both the direct path and indirect path of all the relationships as indicated in Table 4.9 show positive signs, and in both direct and indirect effect relationships, the t-value is more than its threshold value of 1.96 Kock (2016), therefore all the relationships depict significant effects. So, all the mediating relationships in the study can be classified as complementary mediation (Zhao et al. 2010).

A more detailed explanation is as follows:

H7a: User brand engagement mediates the relationship between the Sociality game element and user happiness with the travel apps.

The relationship between user happiness with travel applications and the Sociality game element is mediated by user brand engagement. An examination of the relationship reveals a positive effect in direct and indirect relationships with indirect values of Beta-0.031 and

direct values of Beta-0.112 respectively. In addition, the t-values generated by the bootstrapping method in both cases were 2.282 (Indirect) and 2.136 (direct), accompanied by a standard error of 0.057 (Indirect) and 0.052 (direct). The significance of the effect is indicated by a t-value as it is greater than the threshold value of 1.96 in both direct and indirect relationships (Kock, 2016). Hence, the H7a Hypothesis is accepted.

H7b: User brand engagement mediates the relationship between Challenge features and user happiness with the travel apps.

The relationship between user happiness with travel applications and the features of Challenge is mediated by user brand engagement. The results of the relationship analysis show that there is a positive influence in both direct and indirect relationships, with the direct value of Beta -0.156 and the indirect value of Beta -0.035. Furthermore, the bootstrapping technique produced t-values of 3.509 (indirect) and 2.618 (direct) in both of the cases, with corresponding standard errors of 0.034 (indirect) and 0.059 (direct). A t-value, which is higher than the threshold value of 1.96 in both direct and indirect relationships, indicates the significance of the effect (Kock, 2016). Thus, the H7b Hypothesis has been accepted.

H7c: User brand engagement mediates the relationship between Rewards features and user happiness with the travel apps.

User brand engagement acts as a mediator between the travel app Rewards element and user happiness. After a thorough analysis, it can be seen that there is a positive influence in both direct and indirect relationships, with direct values of Beta-0.221 and indirect values of Beta-0.025. Furthermore, in both situations, the t-value produced by the bootstrapping procedure was 3.510 (indirect) and 4.205 (direct), with corresponding standard errors of 0.031 (indirect) and 0.053 (direct). Since the effect is larger than the 1.96 threshold value in both direct and indirect connections, a t-value indicates the effect's significance (Kock, 2016). The H7c Hypothesis is, therefore, accepted.

H8a: Self-brand connection positively mediates the relationship between user happiness and continuance intentions.

The relationship between user Happiness and continuance intentions is positively mediated by self-brand correlation. An analysis of the correlation demonstrates a favorable impact on both direct and indirect relationships, with indirect values of Beta-0.193 and direct values of Beta-0.221, respectively. Furthermore, the bootstrapping procedure yielded a t-value of 3.158 (Indirect) and 3.315 (Direct) in both situations, along with a standard error of 0.070 (Indirect) and 0.067 (Direct). The significance of the effect is demonstrated by a t-value that exceeds

the threshold value of 1.96 in both direct and indirect associations (Kock, 2016). Therefore, the H8a Hypothesis is confirmed.

Moderation Analysis

Flow Experience, according to our research model, is proposed as a moderator between Gamified features (rewards, challenge, and sociality) and User Brand Engagement. To examine the moderating influence of flow experience, both the R^2 and f^2 are calculated. Moreover, we determine the beta, t-value, and p-value for the relationships using bootstrapping.

H9a: Flow experience positively moderates the relationship between sociality features and user brand engagement on travel apps.

The relationship between Sociality gamified feature, and user brand engagement was examined, with Flow experience acting as a moderator. The beta coefficient for this relationship was found to be 0.074, which is lower than the beta coefficient of 0.259 when there is no moderator between the sociality element and user brand engagement. In addition, the t-value of 0.600, when flow experience is considered as a moderator, is below the threshold value of 1.96 (Kock, 2016). Therefore, the H9a is rejected. The moderation effects are depicted diagrammatically in Figure 4.2.

Table 4.10: Effect size f square (f^2)

Indicators	R^2 Excluding FE	R^2 Including FE	F^2	Effect
SOC-FE-UBE	0.129	0.317	0.275256223	Medium
f-square is effect size (>=0.02 is small; >= 0.15 is medium;>= 0.35 is large) (Cohen, 1988).				

Table 4.11: Bootstrapped Path

Indicators		Indicators	Beta	T-Value	p-Value
SOC	->	UBE	0.259	5.513	0.001

SOC*FE	->	UBE	0.06	0.600	0.126
FE	->	UBE	0.454	9.768	0.001

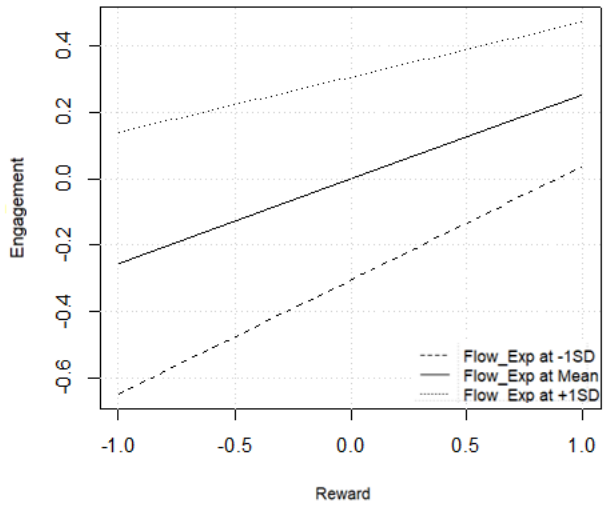


Figure 4.2: Moderation effects (SOC*FE-UBE)

H9b: Flow experience positively moderates the relationship between Challenge features and user brand engagement on the travel apps.

The study investigated the relationship between the gamified feature called Challenge and user brand engagement while considering the role of Flow experience as a moderator. The beta coefficient for this relationship was determined to be (-0.119), indicating a lower value compared to the beta coefficient of 0.32 seen in the absence of a moderator between the Challenge element and user brand engagement. Furthermore, the t-value of (-0.868), when flow experience is taken into account as a moderator, falls below the threshold value of 1.96 (Kock, 2016). Consequently, the H9b hypothesis is rejected.

Table 4.12: Effect size f square (f^2)

Indicators	R^2 Excluding FE	R^2 Including FE	F^2	Effect
SOC-FE-UBE	0.255	0.342	0.132218845	Medium
f-square is effect size (>=0.02 is small; >= 0.15 is medium;>= 0.35 is large) (Cohen, 1988).				

Table 4.13: Bootstrapped Path

Indicators		Indicators	Beta	T-Value	p-Value
CHA	->	UBE	0.32	5.782	0.001
CHA*FE	->	UBE	-0.119	-0.868	0.126
FE	->	UBE	0.296	5.44	0.001

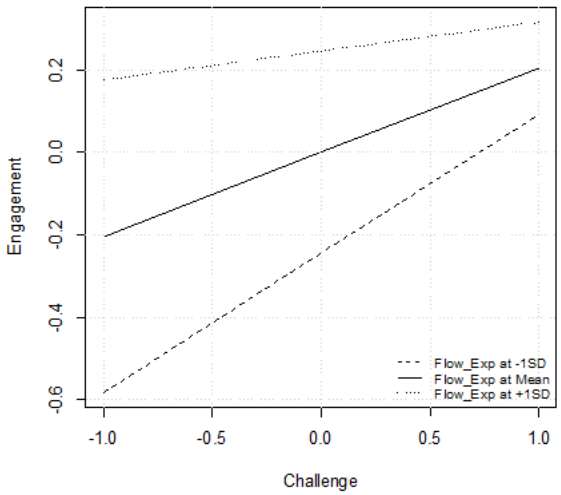


Figure 4.3: Moderation effects (CHA*FE-UBE)

H9c: Flow experience positively moderates the relationship between Rewards features and user brand engagement on the travel apps.

The relationship between Rewards gamified feature and user brand engagement was investigated, with Flow experience serving as a moderator. The beta coefficient for this association was discovered to be (-0.088), which is less than the beta value of 0.254 when no moderator exists between the Rewards element and user brand engagement. Furthermore, when flow experience is regarded a moderator, the t-value is (-0.838), which is less than the threshold value of 1.96 (Kock, 2016). As a result, the hypothesis H9c is rejected.

Table 4.14: Effect size f square (f^2)

Indicators	R^2 Excluding FE	R^2 Including FE	F^2	Effect
SOC-FE-UBE	0.217	0.291	0.104372355	Medium
f-square is effect size (>=0.02 is small; >= 0.15 is medium;>= 0.35 is large) (Cohen, 1988).				

Table 4.15: Bootstrapped Path

Indicators		Indicators	Beta	T-Value	p-Value
REW	->	UBE	0.254	4.449	0.001
REW*FE	->	UBE	-0.088	-0.838	0.266
FE	->	UBE	0.305	5.111	0.001

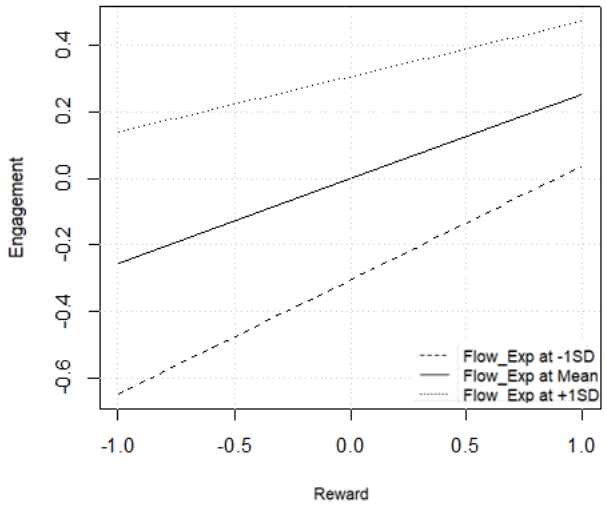


Figure 4.4: Moderation effects (REW*FE-UBE)

Multi-group Analysis

H10: The proposed hypothesized relationships in the model would vary between Gen 'X' and Gen 'Y'.

This section presents the findings from the multi-group analysis conducted to investigate the differences in continuance intentions towards gamified travel apps between Generation X (Gen X) and Generation Y (Gen Y). The analysis focused on various gamified features, such as reward-related, challenge-related and sociality-related features, and their impact on user brand engagement, user happiness, self-brand connections, and continuance intentions. The analysis used non-parametric techniques, including Henseler's MGA and permutation tests, to ensure robustness in comparing the groups.

Table 4.16 summarizes the structural model assessment and the results of the multi-group analysis. The Henseler's MGA (Henseler et al., 2009) and permutation tests (Chin et al., 2016) were employed, aligning with Sarstedt et al. (2011), which recommends these techniques as reliable for group comparison. Henseler's MGA considers p-values indicating a significant difference between path coefficients at the 5% level if they are below 0.05 or above 0.95. The analysis included 5,000 bootstrap resamples and 5,000 permutations to ensure the accuracy of the results.

The multi-group analysis revealed significant differences between Gen X and Gen Y for three out of ten hypothesized relationships. Specifically, significant differences were found for the paths from challenge-related gamified features to user brand engagement (CHA -> UBE), sociality-related gamified features to user brand engagement (SOC -> UBE), and self-brand connections to continuance intentions (SBE -> CI). The following sections discuss these findings in detail.

The analysis indicated a significant difference between Gen X and Gen Y for the relationship between challenge-related gamified features and user brand engagement. For Gen X, the path coefficient was $\beta=-0.065$, suggesting a negative influence of challenge-related features on user brand engagement. In contrast, Gen Y exhibited a positive path coefficient of $\beta=0.103$, indicating a negligible or slightly positive effect. The difference in path coefficients (0.168) was statistically significant with p-values of 0.031, 0.038, and 0.026 in Henseler's MGA, parametric, and Welch-Satterthwaite tests, respectively. This finding suggests that challenge-related gamified features are more engaging for Gen Y users compared to Gen X.

Also, Gen X showed a negative impact from sociality-related features on user brand engagement ($\beta=-0.093$), whereas Gen Y exhibited a positive response ($\beta=0.102$). The

significant difference of -0.195, supported by p-values of 0.016, 0.017, and 0.014, highlights that sociality features resonate better with Gen Y, enhancing their engagement more effectively than for Gen X.

The path from self-brand connections to continuance intentions was significantly stronger for Gen X (β=0.303) compared to Gen Y (β=0.025), with a notable difference of 0.278. The highly significant p-values of 0.001, and less than 0.001 across all tests indicate that Gen X users are more influenced by their connection with the brand when deciding to continue using the app.

For the remaining hypotheses, the multi-group analysis did not find significant differences between Gen X and Gen Y, suggesting that these relationships are consistent across both groups.

Table 4.16: Multi-group analysis

Parameters	Path Coefficients			Henseler's MGA	Parametric Test	Welch-Satterwait test	Supported
	GenX	GenY	Diff.	p-val (GenX vs GenY)	p-val (GenX vs GenY)	p-val (GenX vs GenY)	
REW->UH	0.119	0.179	-0.06	0.488	0.479	0.473	No
CHA->UH	0.17	0.151	0.019	0.869	0.856	0.842	No
SOC->UH	0.346	0.424	-0.078	0.32	0.324	0.321	No
REW->UBE	0.275	0.321	-0.046	0.579	0.547	0.565	No
CHA->UBE	-0.065	0.103	0.168	0.031	0.038	0.026	Yes
SOC->UBE	-0.093	0.102	-0.195	0.016	0.017	0.014	Yes
UBE->UH	0.158	0.253	-	0.349	0.351	0.352	No

			0.095				
UH->SBE	0.147	0.261	-0.114	0.235	0.232	0.229	No
SBE->CI	0.303	0.025	0.278	0.001	0.000	0.000	Yes
UH->CI	-0.049	0.071	-0.12	0.143	0.142	0.144	No

Chapter-5

CHAPTER 5

CONCLUSIONS, IMPLICATIONS, AND FURTHER RESEARCH

5.1 Introduction

Considering the findings derived from the data analysis conducted in the preceding chapters, this chapter concludes the research endeavor. An interpretation of the findings by the theoretical framework of the study and a summary of the research methodology are also included. Potential explanations for the outcomes of the analysis have been investigated and serve as the foundation for suggestions addressed to all relevant parties. Extensive explanations of all significant factors that impact the continued use intention of gamified mobile booking applications are provided through the application of descriptive analysis and hypothesis testing. Additionally, the managerial and conceptual implications are assessed and discussed. The concluding section of the chapter outlines prospective possibilities for future research endeavors.

5.2 Summary of Study Methods

A descriptive research method was adopted for this research work. A descriptive study is defined as "the research is concerned with finding out who, what, where, when, or how much" (Blumberg et al., 2014). This study aimed to explore the correlation between various gamification components and brand engagement, as well as the intention to continue using gamified travel booking applications among consumers. This study followed the quantitative methods to achieve the objectives. The quantitative survey method is the best-suited method for this kind of research because it helps us to find out the causal relationships between the different constructs used in the present study. Descriptive and inferential statistics have been employed in numerous studies to offer mathematical calculations or graphs that describe the population, as well as to make assumptions and forecasts about the population based on a sample of data collected from the universe (Sutanapong and Louangrath, 2015; Creswell, 2011). To ensure the efficiency of data collection and relevance to the research objectives, a non-probability convenience sampling approach implemented. The formation of a target population, as defined by Malhotra and Birks (2006), is crucial to guide participant selection. In this study, the target population is identified as individuals who actively use travel apps for planning, booking, and exploring destinations. Since exact figures

for this population were unavailable, global download statistics and user estimates for travel apps served as benchmarks for this study.

To enhance comprehension of the research issue and align with current scholarly discourse, an exhaustive literature review is undertaken to examine users' intentions to continue using gamified travel applications. We developed the conceptual framework in response to identified gaps and recommendations from eminent researchers. The scope of the study has been refined to encompass the SOR paradigm, thus establishing a distinct research area. In light of similar studies and established models of Stimulus Organism Response, several hypotheses are formulated. The hypotheses are then tested, and descriptive research is utilized to explain the characteristics of the sample. Descriptive research aims to identify the continued usage intentions of Generation X and Generation Y users of gamified mobile applications in the tourism and hospitality sector.

The process of creating the data collecting instrument (questionnaire) involves three distinct steps. Initially, based on the hypotheses presented in Chapter 2, a series of questions is created using similar past research and relevant literature. Next, a pilot study is conducted to assess the dependability and uniformity of the responses. Ultimately, an assessment is made of the reliability and validity of the questions. The questions are modified based on user feedback and statistical data. Afterward, users of gamified travel apps were reached on various platforms. After data collection and preparation, descriptive and path modeling techniques were used to assess research hypotheses.

Following data collection, the data were entered into SPSS v 22.0 and examined for disinterested respondents, missing data, and other issues such as skewness and kurtosis. The sample summary was generated using descriptive statistics, and PLS-SEM was used in quantitative analysis to investigate the measurement and structural models. Smart PLS 3 was utilized for data analysis and hypothesis testing. To evaluate the validity and reliability of the construct measures, a two-step process was adopted, beginning with a measurement model test. It is critical to analyze the measuring model because it allows the researcher to practically assess the relationships between constructs and indicators. The structural model, which examines construct relationships, was found to be valid and reliable, allowing for analysis.

5.3 Discussion of Results

Even though, the past research reported the applications of gamification design in the marketing context (e.g., Jung et al. 2013; Kim et al., 2019). The topic is still in the nascent

stage and needs more conclusive evidence to know the effects of gameful design applications in improving customer engagement and other outcomes viz. user happiness, self-brand connection, and continuance use intention (Choi et al 2019). This absence of literature may generally be attributed to the observation that past work on gamification hasn't explored the heuristic nature of the gameplay. Despite widespread agreement from prior research that gamification might inspire customers to engage in nearly game-like situations, it is unclear why and how businesses would apply different gamification strategies or which kind of gamified features to employ (Zhou et al., 2021). Yoo and Kwon (2017) and Abou-Shouk and Soliman (2021) have published a variety of research on what motivates users to embrace gamified mobile applications, but Wang et al., 2016 claim a paucity of research on the antecedents of continued usage intentions. In addition, there is a rising controversy over whether gamification results in customer retention. Not surprisingly, there are several reports of people losing interest in technology after a few months such as mobile fitness apps (Hermann and Kim, 2017). It becomes very pivotal to understand the behind the continuance intentions of users of gamified mobile applications.

From existing literature, it also has been found that very limited study has been done on gamification elements (Challenge Elements, Sociality Elements, and Rewards Elements). Especially in the hospitality and tourism industry very limited studies found and the majority of these studies are qualitative, empirical work has not been done so far in this context (Sigala, 2015). Therefore, there is a vast gap in the literature especially in the tourism and hospitality context, so the present study is one step towards filling this gap by predicting the continuance intention.

5.4 FINDINGS AND CONCLUSIONS ON THE BASES OF OBJECTIVE AND HYPOTHESES

5.4.1 Examine the effect of travel applications' gamified features on user brand engagement and happiness

The first objective of this study is to examine the effect of travel application's gamified features on user brand engagement and happiness. This study comprised three gamified features: sociality elements, challenge elements, and reward elements, all of which have positive effects on user brand engagement and happiness. The study supports the first hypothesis (H1a) that sociality has a positive effect on user brand engagement. The amount of social interaction a person has during gamification is called "social interaction" or "sociality" either it is between users and app platforms or between one or other users of the same gamified application (Yoo et al., 2018). The results of the current investigation with

earlier research have shown that including sociality elements in gamification has a beneficial impact on user brand engagement (Sangroya et al., 2021; Pasca et al., 2021; Djohan et al., 2022; Elgarhy et al., 2024). The development of brand engagement relies heavily on the establishment of a communication platform that enables social interaction among consumers. The inclusion of social interaction components in gamification has repeatedly been associated with higher levels of brand engagement (Xi and Hamari, 2019; Xi and Hamari, 2020; Nugraha and Suroso, 2023). Social elements such as interaction with others, competition, playing with friends, and feedback have an impact on both the social and cognitive aspects of brand engagement in online marketplaces (Permana et al., 2021).

Furthermore, the relationship between gamified element Challenge and user brand engagement is supported (H1b), and the most significant impact of the challenge element on user brand engagement has been demonstrated with a beta value of 0.24. The findings are consistent with previous research, which revealed that a challenging setting evokes cognitive responses (McMillan & Hwang, 2002). Challenge is usually regarded as the primary appeal of participating in sports (Griffith and Hunt (1995), and the same has been observed in the gamified environment in the current study. The result showed that most of the users want to complete the given challenge to gain some badge, represent themselves on a higher rank as compared to other users, and feel engaged with the app. This result is consistent with multiple studies indicating that incorporating gamified components, specifically self-challenge, and competition, has a beneficial effect on brand engagement (Lu and Ho, 2020; Yang et al, 2019; Shoubashy et al., 2021; Tsou et al., 2023). In our study out of three elements Sociality, challenge, and rewards, the challenge with a beta value of 0.24 showed the most significant effect on the user brand engagement.

- Because, when Users who participate in challenging tasks in gamified applications are more likely to feel a sense of achievement, resulting in higher levels of brand engagement. This reason is aligning with the previous study done by Hamari et al., 2014 that found out that challenges naturally engage users' internal drive by offering chances for skill development, independence, and proficiency that leads to more user brand engagement.
- Moreover, another reason is that active user engagement in challenging activities inside a gamified application enhances the likelihood of establishing strong connections between positive experiences and the corresponding brand. This heightened cognitive involvement leads to elevated levels of brand engagement.

- Challenges within the realm of travel applications can distinguish one application from another through the provision of distinctive and captivating experiences (Huotari & Hamari, 2017). The unique qualities exhibited by the application may appeal to users and improve their engagement with brand.

The current model discovered that reward elements have a positive effect on user brand engagement. In this way, the study supported the third hypothesis (H1c). This finding is consistent with prior research that found that Reward elements are a crucial precursor to user brand engagement since they strengthen such a relationship (Hsiao and Cheng, 2016; Hollebeek et al., 2011; Sai et al., 2017; Nicholson, 2015; Djohan et al., 2022; Elgarhy et al., 2024). Rewarding app users meet their basic requirements while also providing a sense of accomplishment. It also contributes to greater interest, resulting in engagement (O'Donovan et al., 2013). Additionally, Rewards elements motivate the users to interact with the app more frequently as they will get more rewards and ultimately enhance their engagement with the app. Similarly, Shankar (2021) concentrated on the effects of reward gamification in the setting of mobile banking and discovered a major influence of rewards on user brand engagement.

Meanwhile, H2a results showed that the Sociality gamified element of a travel app has a significant impact on user happiness, according to statistical data. Furthermore, the direction of this relationship contributes positively to the findings. It has been empirically confirmed that sociality gamified elements increase user happiness. The outcomes of this research are relatable to the findings of various existing studies. Social elements in travel apps provide a sense of community and connection among users. These features foster a supportive and engaging environment by allowing for social interactions such as sharing travel experiences, participating in review sections, and interacting with AI-powered chat-bots (Kaur et al., 2023). According to one research, social interaction is a key driver of happiness (Diener & Seligman, 2002), hence incorporating sociality gamified features can improve user happiness by meeting the intrinsic human urge for social connection. Additionally, the personalization and customization provided by gamified social elements in travel apps contribute to customer happiness (Seongwon et al., 2013; Nasirzadeh et al., 2020). Social interactions within gaming communities serve users' desire for social belonging and can boost happiness through shared experiences, rivalry, cooperation, and peer support (Baumeister & Leary, 2017). To summarize, existing research and theoretical frameworks support the hypothesis that

sociality-gamified components in travel mobile applications have a major impact on user happiness.

Further, the relationship between the challenge a gamified feature, and user happiness was supported (H2b), and a strong impact of the challenge element on user happiness was established. The results of this study are like the results of other studies that have been done in a gamified environment. Hamari and Koivisto (2015) discovered that gamified features such as challenges increased user happiness and satisfaction with mobile applications. Furthermore, Deterding et al. (2011) demonstrated the ability of gamification to tap into intrinsic motivators such as challenge and achievement, hence increasing user happiness. Gamified challenges frequently tap into intrinsic motivation, which is critical for long-term happiness and engagement (Ryan et al., 2006). The presence of challenges in gamified environments offers users significant objectives to strive for, the ability to make independent decisions, and a feeling of expertise as they conquer hurdles, so enhancing their overall happiness. Challenges provide users with a feeling of accomplishment and advancement as they strive to finish activities and attain objectives (Hamari et al., 2014). The feeling of achievement not only increases satisfaction but also elevates levels of happiness (Przybylski et al., 2010). Within gamified settings, challenges are typically organized in a manner that enables users to monitor their advancement, obtain evaluations, and celebrate their achievements, so strengthening enjoyable emotions and boosting happiness. The presence of challenges in gamified features frequently encourages collaboration among users (Reeves & Read, 2009). According to Dichev and Dicheva's critical evaluation of gamifying education, the design of a gamified system should focus on generating challenging situations and providing advice to users in order for them to achieve their objectives. It indicates that user happiness comes from conquering challenges and mastering game features in a gamified environment (Dichev and Dicheva, 2017). Participating in challenges alongside others can cultivate a feeling of companionship and togetherness, ultimately resulting in heightened happiness inside the gamified environment.

The study discovered evidence in support of the positive connection between Rewards gamified features of travel apps and user happiness (H2c). Furthermore, the favorable impact of rewards on happiness has consistently been recognized in previous studies. Concerning this finding, Marczewski (2015) asserts that when individuals are rewarded, their bodies release dopamine, causing them to feel happiness. Moreover, Rewards act as tangible symbols of accomplishment and advancement within gamified settings (Przybylski et al.,

2010). Users who are rewarded for completing tasks or reaching milestones feel a sense of achievement and progress, which results in higher levels of happiness and enjoyment (Ryan et al., 2006). In addition, the expectation and attainment of rewards stimulate the reward pathways in the brain, triggering happiness and strengthening behavior (Kivikangas et al., 2011). Rewards in gamified mobile applications enhance users' intrinsic drive, which aligns with Self-Determination Theory (SDT). Users are more likely to feel satisfied and happy when they are given rewards that meet their psychological demands for autonomy, competence, and relatedness (Deci & Ryan, 2000). As per the study given by Deterding et al., (2011), the presence of extrinsic rewards in gamified mobile applications serves as an initial motivation for users to interact with the app and take part in different activities intrinsic motivation plays a crucial role in sustaining interest. However, extrinsic rewards such as badges or virtual currency can provide an instant sense of accomplishment, leading to increased happiness and continued usage of the app.

Hypothesis H3 proposes that there is a positive influence on user happiness when users engage with the brand of gamified travel apps. The results of this hypothesis indicate that user engagement with brands has a considerable influence on the happiness of users of gamified travel apps, as shown by statistical evidence. Numerous researchers have found a link between brand engagement and consumer happiness (Choi & Rifon, 2012; Cheung et al., 2015). When users actively engage with a brand, they frequently feel-good emotions like pleasure, enjoyment, and a sense of belonging, which add to their overall happiness. Gamified interactions with a brand can help people have memorable experiences (Hamari et al., 2014). Positive experiences help to create joyful memories connected with the brand, which leads to long-term happiness and loyalty (Maital, 1999). Brand engagement in gamified travel apps can help customers understand the app's value proposition and service quality (Schmitt, 2012). When users see the brand positively, they are more likely to be satisfied with their experiences, which lead to enhanced happiness (Buil et al., 2013). Likewise, within the domain of sports federations, the enhancement of consumer satisfaction and loyalty is considered secondary to consumer engagement (Núñez-Barriopedro et al., 2021). Similarly, the success of gamification in training and development is influenced by the relevance of the information and its ability to facilitate learning (Santos et al., 2021). When consumers discover information that is both relevant and engaging, it can result in higher satisfaction levels. This, in turn, may potentially strengthen the connection between the user and the brand through pleasant experiences.

The statistical results have demonstrated the significant influence of consumer happiness on the desire of app users to use the app continuously. In this way H4 hypothesis of present study is accepted. The results of the current study are similar to several earlier research studies (Bhattacherjee, 2001; Benlian et al., 2011; Zhao & Lu, 2012; Alraimi et al., 2015). According to research, it has been found that post-adoptive behavior studies often consider happiness as an important factor. A study conducted by Johnson and Smith (2018) in the field of fitness apps investigates the correlation between users' degrees of happiness and enjoyment with gamified elements and their likelihood of consistently using the app. The happiness of customers with the mobile apps and websites of private shopping clubs has a significant and immediate impact on their willingness to continue using them (Bölen and zen 2020). Moreover, as per the study conducted by Choi et al. in 2019, users tend to continue using a trip booking application if they are satisfied with their overall experience. The happiness of customers leads to increased loyalty and continued usage of the product or service (Schmitt and Van Zutphen, 2012). However, some earlier investigations have produced contradictory findings about the proposed association (Li & Liu, 2014; Foroughi et al., 2023). These studies reported that Users' happiness did not indicate their desire to continue using the product due to a high level of habitual use. However, the current study indicated that happiness creates a favorable attitude among users of gamified apps, which leads to their intention to continue using them.

In addition, the outcomes of H5 highlighted User happiness with the gamified travel apps positively impacts their users' self-brand connection with the travel app brand on statistical findings. Empirical evidence supports the notion that a rise in user happiness directly correlates with an increase in self-brand connection. The level of user happiness significantly influences the dynamics of the relationship between users and gamified travel applications. When users encounter pleasant emotions, such as happiness and contentment, during their interactions with these applications, it cultivates a stronger connection with the brand associated with the application. This relationship is commonly known as self-brand connection, which indicates the degree to which individuals incorporate a brand into their self-concept and identity. Research has consistently demonstrated the positive relationship between user happiness and self-brand connection in various contexts, including gamified experiences. In the field of gamification in training and development, if users find the content to be relevant and engaging, it can result in enhanced happiness. This, in turn, may strengthen the relationship between the users and the brand through pleasant experiences, leading to a self-brand connection (Santos et al., 2021).

Research in consumer psychology has demonstrated that emotional reactions are essential in forming a connection with a brand (Thomson et al., 2005). Users who experience positive feelings such as happiness when interacting with their digital identity or brand in a game are more likely to acquire a strong sense of connection and loyalty. Furthermore, a study in the culinary business found that customer happiness significantly promotes self-brand connection (Seminari et al., 2023). Another study has investigated the topic of brand attachment in virtual environments including online forums and social networks. According to research, emotional experiences influence users' connection to digital representations (Kozinets et al., 2008). When consumers identify pleasant feelings with their digital personas in a gamified setting, they might enhance their bond with their virtual identities. The idea that a user's happiness has a positive effect on their self-brand connection in a game-like setting fits with well-known ideas about how emotions and brand attachment work. There aren't many studies that directly look at this relationship in gamified settings, but research that has already been done in related areas supports this hypothesis. We could learn more about how user emotions, self-brand connections, and gamified events work together by looking into them in more depth in future studies.

Finally, the outcome of Hypothesis H6 highlighted that User’s Self-brand connection with the gamified travel apps positively impacts their continuance intentions. Empirical research confirms that an increase in the connection between an individual and their brand is closely linked to their intention to continue using a gamified mobile app. Prior study have offered empirical evidence supporting the favorable correlation between self-brand connection and intentions to continue using a product or service in different situations (e.g., Escalas & Bettman, 2005; Thomson et al., 2005). These studies regularly demonstrate that consumers who experience a deep personal connection with a brand exhibit more dedication to its future usage. Studies in consumer psychology indicate that people frequently develop emotional connections with brands that align with their self-concept or identity (Escalas & Bettman, 2003). When a person feel a significant bond between themselves and a brand, they are more inclined to integrate it into their self-identity, resulting in increased brand loyalty and ongoing usage.

Similarly, research conducted by Sangroya et al. (2021) has demonstrated that a self-brand link is a crucial factor in determining the likelihood of users of gamified mobile applications to continue using them. One another study revealed that there is a favorable correlation between the relationship individuals have with a certain brand and their intention

to purchase smartphones. The level of brand loyalty can also be influenced by the extent to which an individual experiences a sense of connection with their chosen brand (Kırcova et al., 2015). Thus, consumer psychology concepts and empirical evidence from past research studies suggest the favorable impact of users' self-brand connections on their long-term use intentions. This relationship emphasizes the need to create strong emotional ties between consumers and brands to drive repeat usage.

5.4.2 Mediating effect of user brand engagement on the relationship between travel applications' gamified features and user happiness.

The second aim of this study is to investigate the mediating effect of user brand engagement on the relationship between travel applications' gamified features and user happiness. Furthermore, the objective of this study is considered with the H7a, H7b and h7c hypotheses of the research. The outcomes of H7a reported that User brand engagement positively mediates the relationship between the Sociality game element and user happiness with the travel apps. Furthermore, H7b and H7c considered the mediation effect of User brand engagement between the Challenge and Rewards features of gamification and user happiness.

According to the proposed mediation, the sociality game aspect has an indirect impact on user satisfaction through brand engagement. In other words, social aspects within a game increase user involvement with the company, which contributes to overall satisfaction. This mediation pathway illustrates the necessity of adding social features into gaming experiences not only to increase user engagement but also to improve their emotional well-being. Similarly, Users are more likely to be engaged with brands when games have challenging jobs, which in turn makes them happier overall. This mediation pathway shows how important brand-user interactions are in challenging gaming settings and how they might affect users' emotional health. Lastly, the inclusion of rewarding experiences in games increases user engagement with companies, which contributes to overall happiness. This mediation route emphasises the importance of brand-user engagement in rewarding gaming environments and their potential impact on users' emotional well-being. The outcomes of this research are relatable to the findings of existing studies. The study investigating the mediation effect of user engagement with brands between gamified features and user satisfaction has produced several significant findings.

According to Lu's (2020) research, self-challenge, self-benefit, and social connection play crucial roles in enhancing brand attachment. Tsou (2023) highlighted challenges, points, and enjoyment as crucial gamification components that have a favorable impact on customer engagement, leading to an increase in brand love. In addition, customer brand engagement positively mediates the relationship between challenge, rewards, enjoyment, and brand happiness. Permana (2021) conducted a more in-depth investigation into the effects of gamification on brand engagement and awareness. The study emphasized the significant role played by achievement, immersion, and social interaction gamified elements and their impact on user happiness through the mediator role of brand engagement. Alvi (2022) highlighted the results indicated that engaging with gamified achievement elements such as rewards and points had a favorable and significant impact on brand engagement. Conversely, interactions with others had a minimal beneficial impact on brand engagement, which contradicts the findings of our current study. Further Brand engagement has a positive and significant impact on Brand Trust, Commitment, and Happiness.

5.4.3 **Mediating effect of self-brand connection on the relationship between user happiness and continuance intention of gamified travel applications.**

The third aim of this study is to examine the mediating role of self-brand connection between user happiness and continuance intention of gamified travel applications. Furthermore, this objective of the study is considered by the H8 hypothesis. An analysis of the correlation demonstrates a favorable impact on both direct and indirect relationships. Therefore, the H8a Hypothesis is confirmed through empirical analysis. The presence of a self-brand connection acts as a mediator in the relationship between user happiness and continuation intention. This implies that the influence of user happiness on continuance intention is either partially or completely influenced by the strength of the consumer's connection with the brand. The correlation between user satisfaction and the intention to continue using a product or service is sophisticated and can be affected by multiple factors.

Recent research has started to investigate how self-brand connection influences customer behavior in different situations. Yang (2022) established that there are indirect effects of brand attributes and self-congruity on revisit intention. This link is mediated by self-consistency. Köksal (2012) provided more evidence for the mediating influence of self-brand congruence, demonstrating its impact on brand loyalty through the mechanisms of love/passion and commitment. Li (2018) further developed this concept by combining

attachment theory with the expectation-confirmation model. The study revealed that brand attachment and satisfaction have a favorable impact on the intention to continue using the brand and that brand-self connection plays a role in promoting brand attachment. These findings indicate that the connection between a person's happiness and their intention to continue using a product or service may be influenced by their strong connection with the brand. One another study has demonstrated that self-brand connection has a role in influencing the relationship between customer perceptions and behavioral outcomes. Escalas and Bettman (2015) showed that self-brand connection acts as a mediator in the link between brand personality and consumer behavior.

In our study, self-brand connection serves as a mediating variable that maintains or increases the desire to continue interacting with the app as a result of the individual's identification with the brand. As a result, self-brand connection acts as a link between the user's immediate, emotionally positive feelings and their long-term behavioural intention, such as continuing use of the app.

5.4.4 Moderating role of flow experience on the relationship between travel applications' gamified features and user brand engagement

The fourth objective of this study is to investigate the function of Flow experience as moderating the relationship between gamified features in travel applications and user brand engagement. Furthermore, H9a, H9b, and H9c hypotheses take into account the study's purpose. Surprisingly, the results showed that the flow experience did not have a substantial impact on the relationship between gamified features and user brand engagement. Although customers reported delightful and immersive experiences, the state of flow did not increase their engagement with the travel brand. However, some earlier investigations have produced contradictory findings about the proposed association. A study on smartphones found a significant association between cognitive and emotional brand engagement and the multidimensional construct flow provided by gamified components. These two ways of interacting with a brand also contribute to enhance consumers' emotional engagement in the product and motivate them to continue using it (Sangroya et al., 2021). Based on previous research conducted by Ho and Kuo (2010), individuals who are completely immersed in a task feel a psychological drive to perform at their highest level. Consistent exposure to flow states, which are inherently satisfying, results in the formation of a psychological mechanism that promotes deep engagement (Nakamura & Csikszentmihalyi, 2002). Similarly, a study conducted by Uhm et al. (2023) found that the motivation to continue using fitness

applications is influenced by flow, which acts as a mediator between gamified features and user engagement. Several studies (Koivisto and Hamari, 2014; Robson et al., 2014; Steffen et al., 2013) have demonstrated that consumers can be induced into a state of flow by engaging in gamified activities. The research on gamified branded apps discovered that flow acts as a mediator between gamified characteristics and a brand's emotional connection.

However, the results of this study contradict the widely accepted belief that flow experience plays a key role in moderating the relationship between gamified features and user brand engagement in gamified applications. The insignificant findings indicate that there may be other influential aspects may play a more substantial role in influencing brand engagement. These considerations could include the perceived value of gamified features, users' prior attitude towards the brand, or the usability of the application as flow experience studies have been conducted on various areas such as fitness apps, shopping apps, and food apps, which are frequently used by users. However, travel apps are not used as regularly, as there are only a few individuals who travel or book flights, trains, buses, and hotels regularly. So, these could be reasons why flow does not significantly affect user engagement in this context. In this setting, further research is necessary to determine how effect the user engagement of gamified travel apps flows.

5.4.5 Comparison of the hypothesized relationships of the proposed conceptual framework between age cohorts of ‘Gen X’ and ‘Gen Y’.

The fifth objective of this study is to compare the hypothesized relationships of the proposed conceptual framework between the age cohorts of 'Gen X' and 'Gen Y'. Additionally, the purpose of the investigation is considered in the H10 hypotheses. The study results provide critical insights into how various factors influence a variety of outcomes across Gen X and GenY. It is important to note that the impact of challenges on user brand engagement varies considerably among the generations. GenY exhibits a positive relationship, while Gen X exhibits a negative one. This result aligns with a previous study conducted by Reisenwitz (2019) found that Gen Y is less risk-averse than Gen X and relies more on technology-based information sources. Sociality exerts a favourable influence on user brand engagement among individuals belonging to Generation Y, whereas it exerts an unfavourable influence on user brand engagement among those belonging to Generation X. Conversely, there are no significant differences between generations in terms of the connections between user happiness, rewards, sociality, challenge, user brand engagement,

and self-brand engagement. This finding agrees with a prior investigation carried out by Soeswoyo (2020), which highlights that although there are resemblances in traits and travel patterns, disparities exist in terms of social media preferences and user brand involvement between Generation X and Generation Y. Interestingly, self-brand engagement has a more substantial impact on continuance intention in Gen X than in Gen Y. These results emphasize the necessity of customizing interventions to meet specific generations' unique requirements to enhance engagement and continuance intention. Understanding these subtleties can assist in the development of more effective strategies to promote community engagement and well-being among various age groups.

5.5 Theoretical implications:

The study "Examining the Role of Gamified Mobile Apps on Inducing Continuance Intention among Gen X and Gen Y in the Hospitality Industry" has numerous theoretical implications that can make a substantial contribution to the existing literature in various ways. The framework of this investigation is established due to a lack of previous research.

The theoretical implications of the study are significant, contributing to both academic research and practical application in the hospitality business. The study uses the Stimulus-Organism-Response (S-O-R) framework to develop the conceptual framework, drawing on recognized psychological principles to better understand the relationship between gamified elements in mobile applications and user behavior. The following are the theoretical consequences for each objective:

The Effect of Gamified Features on User Brand Engagement and Happiness: The findings support the idea that gamified features operate as stimulus in travel applications, causing user engagement and happiness. This is consistent with the S-O-R framework, in which stimuli (gamified features) influence the internal state of the organism (user), resulting in a positive reaction (brand engagement and happiness). Theoretical implications include a better understanding of how specific design aspects in mobile apps might influence user opinions and emotions, hence shaping brand engagement.

The study found that user brand engagement acts as a mediator between gamified features and user happiness. This shows that gamification-induced engagement contributes to users' overall emotional state, influencing their degrees of happiness. Theoretical implications

include emphasising the necessity of cultivating brand engagement as a means of increasing user happiness and loyalty in the setting of mobile applications.

The study found that self-brand connection mediates the association between user happiness and continuance intention. This emphasises the importance of customers developing a strong emotional bond with the brand as a result of their pleasant experiences with the application. Theoretical implications include highlighting the importance of self-identity and connection to brand in gamified mobile app retention and usage.

Although the study did not find support for the moderating role of flow experience theoretical implications include investigating user experience dynamics within the S-O-R paradigm. While flow experience may not directly regulate the association between gamified features and user engagement, future research could look into other potential moderators that influence this relationship, adding to our understanding of user behaviour in interactive digital environments.

Generational Comparison: By examining the hypothesised relationships between Gen X and Gen Y, this study adds to generational research within the S-O-R paradigm. Theoretical implications include detecting similarities and contrasts in how different age groups react to gamified elements in mobile applications, offering light on the complex aspects that influence user behaviour across generations.

Overall, the study's theoretical implications highlight the importance of the S-O-R framework in comprehending the complex interaction of stimuli, user experiences, and behavioural reactions in the context of gamified mobile applications in the hospitality industry.

5.6 Practical Implication

This study offers important practical implications for introducing gamified features into travel booking apps, providing meaningful insights for stakeholders in the hospitality industry and beyond. A better understanding of these findings is required to ensure their successful use in real-world contexts. The study's findings show the different effects of gamified components such as challenges, sociality, and rewards on user brand engagement and retention intention across generational cohorts, notably Generation X and Generation Y. These findings highlight the need to adapt gamified elements to each generation's distinct preferences and behaviors.

To begin, the study finds that challenges have a favorable link with user brand engagement in Gen Y but a negative relationship in Gen X. This suggests that travel apps aimed at Generation Y might include competitive features like achievement badges, progress monitoring, or time-bound tasks (e.g., "Complete 5 bookings in 3 months to unlock a reward"). For Gen X, however, challenges should be reduced or reframed as non-competitive, self-paced tasks (e.g., "Explore 5 new destinations to earn a bonus"). Similarly, social elements such as leaderboards, shared achievements, and friend recommendations benefit Gen Y while having a detrimental impact on Gen X. As a result, apps for Gen Y could include social sharing options, group challenges, or community forums, however for Gen X, social components could be optional or replaced with private, personalized features such as tailored trip recommendations based on past behavior. Rewards, on the other hand, benefit both generations, however their design should differ. Gen Y may favor immediate, digital rewards like discount codes or virtual badges, whereas Gen X may appreciate real, long-term benefits like loyalty points redeemable for free stays or upgrades.

Secondly, the mediating function of user-brand engagement highlights the need to develop personalised experiences. Apps for Generation Y could include dynamic, interactive content, such as gamified vacation plans in which users complete tasks to reveal secret places or activities. Incorporating storytelling elements, such as a "travel adventure" concept, can help captivate this demographic. Apps for Generation X should be simple and practical, with clear value propositions such as exclusive bargains or personalized travel suggestions based on user preferences. A gamified loyalty program with progressive benefits may also appeal to this demographic. Furthermore, the study emphasizes the importance of self-brand connection, particularly among Generation X, in generating continuance intention. Hospitality companies can foster this connection by developing emotionally resonant brand narratives that align with Gen X values, such as family-oriented travel or sustainable tourism, as well as providing personalized experiences such as chosen travel packages or destination recommendations based on previous behavior.

Thirdly, while the moderating influence of flow experience was not confirmed in this study, the results highlight the necessity of creating smooth and immersive app experiences. Apps can attract users by incorporating straightforward navigation, visually appealing interfaces, and interactive aspects such as interactive destination galleries or virtual tours. To reduce friction, apps should offer fast loading times, simple booking processes, and clear directions for gamified features. Furthermore, the study's comparison between Gen X and

Gen Y yields valuable information for marketing and content initiatives. Marketing strategies targeting Generation Y should prioritize social proof, user-generated content, and peer recommendations. For example, a campaign encouraging people to share their vacation experiences on social media in exchange for rewards could appeal to this demographic. Marketing efforts for Generation X should emphasize dependability, trust, and value, with testimonials from credible sources, extensive information about safety precautions, and clear benefits of loyalty programs.

Fourthly, to ensure that gamified mobile apps are as effective as possible, hospitality organizations should prioritize user-centric design concepts and conduct regular usability testing to gather feedback and develop app features. For example, A/B testing various gamified aspects, such as point systems versus achievement badges, can aid in determining which resonates most with each generation. Involving consumers in the development process, such as beta testing or surveys, can help ensure that the app matches their needs and preferences. A case study from a popular trip-booking app demonstrates the efficacy of these approaches. **Booking.com** uses a tiered loyalty program called "Genius," which offers discounts and perks for frequent users, appealing to both younger and older generations. Booking.com's Genius Loyalty Program's design and user feedback suggest significant positive impacts on user engagement, repeat bookings, and customer satisfaction. By appealing to both Gen Y and Gen X users with its tiered structure and tangible rewards, the Genius program has become a key driver of Booking.com's success in the competitive travel booking industry.

Finally, the practical implications of this research give hospitality organizations precise recommendations for improving user experiences, increasing brand engagement, and driving loyal customers among both Gen X and Gen Y consumers. Companies may build more engaging and rewarding experiences that foster loyalty and long-term success in an increasingly competitive digital landscape by personalizing gamified aspects to each generation's distinct tastes and implementing user-centric design principles.

5.7 **Limitations and Future Directions**

This research, like many other studies, is vulnerable to some limitations. Several components of this research have limitations. First, data was collected using a non-probability

convenience sampling technique, that prevents the possibility of random participant selection; thus, caution should be exercised when generalizing the study's conclusions. Additionally, the survey questionnaire is self-contained, which means that only those who elect to participate will be able to submit feedback on their perspectives on gamified travel applications. The study also used cross-sectional data, which does not consider how users' perceptions evolve.

A further limitation is that this study focuses exclusively on two generational cohorts—Gen X and Gen Y—while excluding other generations such as Baby Boomers and Gen Z. This narrow focus may limit the generalizability of the findings, as the preferences and behaviors of these excluded cohorts could differ significantly. For instance, Baby Boomers may prioritize ease of use and reliability over gamified elements, while Gen Z might be more drawn to highly immersive and interactive features. Future research could expand the scope to include these generations to provide a more comprehensive understanding of how gamified elements impact user behavior across all age groups.

Moreover, the study does not consider other factors that may influence post-adoptive behavior of continuation intention. Variables like Mobile data accessibility, network bandwidth, loyalty to brands, and individual qualities may all influence user behavior. Moreover, there are various other gamified elements like- immersive elements that have not been considered in our study and can be adopted in future studies.

Another methodological constraint is the limited geographical scope of the study, as data collection was limited to individuals in India, so the findings may not apply to other countries. This raises questions about the applicability of the findings to other cultural or regional contexts, where user preferences and technological adoption rates may differ. For example, users in Western countries or other Asian markets might respond differently to gamified travel apps due to varying cultural norms, technological infrastructure, or travel behaviors. Future research could address this limitation by replicating the study in different countries or regions, allowing for cross-cultural comparisons and a more nuanced understanding of gamified app deployment globally.

Furthermore, the study relies entirely on quantitative data, leaving out qualitative insights that could provide greater context to the findings. Incorporating qualitative methodologies, such as interviews or focus groups, could assist in identifying the underlying causes of user preferences and behaviors, complementing the study's findings. Furthermore, while the sample size was sufficient for initial analysis, it might be increased in future studies to

improve the robustness of the findings and assure higher representativeness.

In conclusion, while this study provides significant insights into the impact of gamified components on user behavior in travel apps, its shortcomings underscore the importance of exercising caution when generalizing the findings. Future research could address these limitations by broadening the generational scope, including new variables, investigating other gamified characteristics, and broadening the study's geographical and methodological reach. This approach allows scholars to expand their understanding of gamification in the travel business.

.5.8 Conclusion

In conclusion, the empirical support from data analysis demonstrated that the theoretical assumptions of this research are supported, except for the moderating hypotheses. Based on its remarkable findings, this work has theoretical, methodological, and practical implications.

Indeed, studies in the literature have revealed a link between gamification in applications and user continuance use intention. However, this study addresses the theoretical gap by including user brand engagement as a significant mediating variable between gamified elements and user happiness, as well as self-brand connection as another significant mediating variable between user happiness and continued use intention. The research provides considerable empirical and theoretical support for the mediation function of user brand engagement and user happiness.

Furthermore, the study demonstrated the moderating role of flow experience in the literature for user brand engagement. Previous research has explored the beneficial moderating impact of flow experience, however, our study discovered that flow experience had an insignificant impact on user brand engagement. To support this theorized hypothesis, the study has provided empirical pieces of evidence based on its findings. Along with it, two generations Gen Y and Gen X were also taken as moderators in the study also supported through empirical evidence. This research demonstrated some practical implications for the implementation of gamified features in mobile booking apps with the help of user brand engagement, user happiness, and self-brand connection. The moderation of flow experience also provided practical implications in this research.

From a theoretical standpoint, this study adds to the Stimulus-Organism-Response (SOR) model by incorporating gamified components (stimuli) as drivers of user brand engagement and happiness (organism), which in turn influence continuance intention (response). The findings expand on the SOR paradigm by emphasizing the mediating roles of user brand engagement and self-brand connection, resulting in a more sophisticated view of how gamification affects user behavior. The study specifically shows that gamified components such as challenges, sociality, and rewards serve as stimuli for users' emotional and cognitive reactions, resulting in higher engagement and satisfaction. This is consistent with the SOR model's emphasis on the significance of internal states (organisms) in influencing behavioral outcomes (responses).

Furthermore, the study applies Flow Theory by investigating the moderating influence of flow experience in user brand engagement. While the findings did not show a significant moderating effect, they add to the current discussion of flow theory by implying that flow experience may not always play an important role in gamified contexts, particularly in travel booking applications. This calls into question the widely held belief that flow is a universal enhancer of engagement and emphasizes the importance of using flow theory in context. Future research should investigate additional circumstances or variables that could help explain the link between flow experience and user engagement in gamified environments.

To summarise, the findings of this study provide valuable insights for hospitality developers and marketers into the success of gamification in mobile applications. Understanding the mechanisms by which gamified features influence user behavior and satisfaction enables businesses to better build and modify their applications to match their target audience's changing demands and preferences, resulting in higher user engagement and future use intention. This research increases academic understanding by bridging theoretical gaps in the SOR model and Flow Theory, while also providing practical strategies for hospitality and tourism practitioners.

REFERENCE

- Abou-Shouk, M., & Soliman, M. (2021). The impact of gamification adoption intention on brand awareness and loyalty in tourism: The mediating effect of customer engagement. *Journal of Destination Marketing & Management*, *20*, 100559.
- Abuhamdeh, S., & Csikszentmihalyi, M. (2012). The importance of challenge for the enjoyment of intrinsically motivated, goal-directed activities. *Personality and social psychology bulletin*, *38*(3), 317-330.
- Aebli, A. (2019). Tourists' motives for gamified technology use. *Annals of Tourism Research*, *78*, 102753.
- Agarwal, R., & Karahanna, E. (2000). Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage. *MIS Quarterly*, 665-694.
- Aghdaie, S. F. A., Talaei, H., & Soltanpour, P. (2022). Evaluating the effect of psychological dimensions of gamification strategy on creation of unplanned purchases. *International Journal of Procurement Management*, *15*(1), 20-39.
- Albayrak, T., Rosario González-Rodríguez, M., Caber, M., & Karasakal, S. (2023). The use of mobile applications for travel booking: impacts of application quality and brand trust. *Journal of Vacation Marketing*, *29*(1), 3-21.
- Alčaković, S., Pavlović, D., & Popesku, J. (2017). Millennials and gamification: A model proposal for gamification application in tourism destination. *Marketing*, *48*(4), 207-214.
- Ali, F., A. Terrah, C. Wu, L. Ali, and H. Wu. (2021). Antecedents and consequences of user engagement in smartphone travel apps.Journal of Hospitality and Tourism Technology, 12(2): 355-371.
- Alomar, N., Wanick, V., & Wills, G. (2016). The design of a hybrid cultural model for Arabic gamified systems. *Computers in Human Behavior*, *64*, 472-485.
- Alraimi, K. M., Zo, H., & Ciganek, A. P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. *Computers & Education*, *80*, 28-38.
- Alvi, I. (2022). Gamification Interaction Features in Language Learning Apps, Brand Engagement, and Brand-consumer Relationship Quality. *Journal of Content, Community and Communication*, *15*(8), 210-226.

- Andrade, F. R., Mizoguchi, R., & Isotani, S. (2016). The bright and dark sides of gamification. In *Intelligent Tutoring Systems: 13th International Conference, ITS 2016, Zagreb, Croatia, June 7-10, 2016. Proceedings 13*, 176-186. Springer International Publishing.
- Andreev, P., Heart, T., Maoz, H., & Pliskin, N. (2009). Validating formative partial least squares (PLS) models: methodological review and empirical illustration.
- Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of marketing research*, *14*(3), 396-402.
- Ashford, S., Edmunds, J., & French, D. P. (2010). What is the best way to change self-efficacy to promote lifestyle and recreational physical activity? A systematic review with meta-analysis. *British journal of health psychology*, *15*(2), 265-288.
- Attallah, N., & El-Mawardy, G. (2018). The reciprocal relationship between generation Y (Millennials) and creative tourism with application on Egypt. *Journal of Tourism Research*, *20*, 66-77.
- Aydnlyurt, E. T., Taşkın, N., Scahill, S., & Toker, A. (2021). Continuance intention in gamified mobile applications: A study of behavioral inhibition and activation systems. *International Journal of Information Management*, *61*, 102414.
- Badran, O., & Al-Haddad, S. (2018). The impact of software user experience on customer satisfaction. *Journal of Management Information and Decision Sciences*, *21*(1), 1-20.
- Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative science quarterly*, 421-458.
- Bakar, N. A., Hashim, N. A., Nawi, N. M. M., Rahim, M. A., Muhamed Yusoff, A., Aziz, C., & Ahmad, G. (2020). Travel mobile applications: The use of unified acceptance technology model. *International Journal of Innovative Technology and Exploring Engineering*.
- Bakewell, C., & Mitchell, V. W. (2003). Generation Y female consumer decision-making styles. *International journal of retail & distribution management*, *31*(2), 95-106.
- Bányai, F., Griffiths, M. D., Demetrovics, Z., & Király, O. (2019). The mediating effect of motivations between psychiatric distress and gaming disorder among esport gamers and recreational gamers. *Comprehensive psychiatry*, *94*, 152117.

- Bányai, F., Griffiths, M. D., Király, O., & Demetrovics, Z. (2019). The psychology of esports: A systematic literature review. *Journal of gambling studies*, *35*, 351-365.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, *51*(6), 1173.
- Baumeister, R. F., & Leary, M. R. (2017). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Interpersonal development*, 57-89.
- Belk, R. W. (1988). Possessions and the extended self. *Journal of consumer research*, *15*(2), 139-168.
- Benlian, A., Koufaris, M., & Hess, T. (2011). Service quality in software-as-a-service: Developing the SaaS-Qual measure and examining its role in usage continuance. *Journal of management information systems*, *28*(3), 85-126.
- Berger, A., Schlager, T., Sprott, D. E., & Herrmann, A. (2018). Gamified interactions: whether, when, and how games facilitate self–brand connections. *Journal of the Academy of Marketing Science*, *46*(4), 652-673.
- Berger, J., & Heath, C. (2008). Who drives divergence? Identity signaling, outgroup dissimilarity, and the abandonment of cultural tastes. *Journal of personality and social psychology*, *95*(3), 593.
- Bertan, S., Bayram, M., Ozturk, A. B., & Benzergil, N. (2016). Factors influencing hotel managers'perceptions regarding the use of mobile apps to gain a competitive advantage. Asia-Pacific. *Journal of Innovation in Hospitality and Tourism*, 5(1), 59–74.
- Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS quarterly*, 351-370.
- Bhattacherjee, A. (2001a). An empirical analysis of the antecedents of electronic commerce service continuance. Decision Support Systems, 32(2), 201–214.
- Bhattacherjee, A. (2001b). Understanding information systems continuance: An expectation-confirmation model. MIS Quarterly, 25(3), 351–370.
- Bista, S. K., Nepal, S., Paris, C., & Colineau, N. (2014). Gamification for online communities: A case study for delivering government services. *International Journal of Cooperative information Systems*, *23*(02), 1441002.

- Bitrián, P., Buil, I., & Catalán, S. (2021). Enhancing user engagement: The role of gamification in mobile apps. *Journal of Business Research*, *132*, 170-185.
- Blohm, I., & Leimeister, J. M. (2013). Gamification: design of IT-based enhancing services for motivational support and behavioral change. *Business & Information System Engineering (BISE)*, *5*(4), 275–278.
- Blumberg, B., Cooper, D., & Schindler, P. (2014). *EBOOK: Business research methods*. McGraw Hill.
- Bölen, M. C., & Özen, Ü. (2020). Understanding the factors affecting consumers' continuance intention in mobile shopping: the case of private shopping clubs. *International Journal of Mobile Communications*, *18*(1), 101-129
- Boniface, M. R. (2000). Towards an understanding of flow and other positive experience phenomena within outdoor and adventurous activities. *Journal of Adventure Education & Outdoor Learning*, *1*(1), 55-68.
- Booking.com Genius Program
- Bouarar, A. C., Mouloudj, S., Makhlouf, A., & Mouloudj, K. (2022). Predicting intentions to continue using travel apps in the post COVID-19 crisis. *University of South Florida (USF) M3 Publishing*, *16*(9781955833080), 19.
- Bouchrika, I., Harrati, N., Wanick, V., & Wills, G. (2021). Exploring the impact of gamification on student engagement and involvement with e-learning systems. *Interactive Learning Environments*, *29*(8), 1244-1257.
- Brodie, R. J., Ilic, A., Juric, B., & Hollebeek, L. (2013). Consumer engagement in a virtual brand community: An exploratory analysis. *Journal of business research*, *66*(1), 105-114.
- Brusch, I., & Rappel, N. (2020). Exploring the acceptance of instant shopping–An empirical analysis of the determinants of user intention. *Journal of Retailing and Consumer Services*, *54*, 101936.
- Bryman, A. (2016). *Social research methods*. Oxford university press.
- Buhalis, D., & Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet—the state of eTourism research. *Tourism management*, *29*(4), 609-623.
- Buil, I., De Chernatony, L., & Martínez, E. (2013). Examining the role of advertising and sales promotions in brand equity creation. *Journal of business research*, *66*(1), 115-122.

- Çakıroğlu, Ü., Başıbüyük, B., Güler, M., Atabay, M., & Memiş, B. Y. (2017). Gamifying an ICT course: Influences on engagement and academic performance. *Computers in human behavior*, *69*, 98-107.
- Calder, B. J., Malthouse, E. C., & Schaedel, U. (2009). An experimental study of the relationship between online engagement and advertising effectiveness. *Journal of interactive marketing*, *23*(4), 321-331.
- Car, T., Pilepić, L., & Šimunić, M. (2014). Mobile technologies and supply chain management -Lessons for the hospitality industry. *Tourism and Hospitality Management*, 20(2), 207–219.
- Cauberghe, V., & De Pelsmacker, P. (2010). Advergames. *Journal of advertising*, *39*(1), 5-18.
- Çera, G., Pagria, I., Khan, K. A., & Muaremi, L. (2020). Mobile banking usage and gamification: the moderating effect of generational cohorts. *Journal of Systems and Information Technology*, *22*(3), 243-263.
- Chand, V. S., & Fei, C. (2021). Self-brand connection and intention to purchase a counterfeit luxury brand in emerging economies. *Journal of Consumer Behaviour*, *20*(2), 399-411.
- Chen, C. F., & Chen, F. S. (2010). Experience quality, perceived value, satisfaction and behavioral intentions for heritage tourists. *Tourism management*, *31*(1), 29-35.
- Cheung, C. M., Chiu, P. Y., & Lee, M. K. (2011). Online social networks: Why do students use facebook?. *Computers in human behavior*, *27*(4), 1337-1343.
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research*, *295*(2), 295-336.
- Chiu, W., & Cho, H. (2021). The role of technology readiness in individuals' intention to use health and fitness applications: a comparison between users and non-users. *Asia Pacific Journal of Marketing and Logistics*, *33*(3), 807-825.
- Cho, V. (1998). World Wide Web resources. *Annals of Tourism Research*, *25*(2), 518-521.
- Choi, D., & Kim, J. (2004). Why people continue to play online games: In search of critical design factors to increase customer loyalty to online contents. *CyberPsychology & behavior*, *7*(1), 11-24.

- Choi, K., Wang, Y., & Sparks, B. (2019). Travel app users' continued use intentions: it's a matter of value and trust. *Journal of Travel & Tourism Marketing*, *36*(1), 131-143.
- Choi, S. M., & Rifon, N. J. (2007). Who is the celebrity in advertising? Understanding dimensions of celebrity images. *The journal of popular Culture*, *40*(2), 304-324.
- Chung, N., Lee, H., Lee, S. J., & Koo, C. (2015). The influence of tourism website on tourists' behavior to determine destination selection: A case study of creative economy in Korea. *Technological Forecasting and Social Change*, *96*, 130-143.
- Churchill Jr, G. A. (1979). A paradigm for developing better measures of marketing constructs. *Journal of marketing research*, *16*(1), 64-73.
- Coghlan, A., & Carter, L. (2020). Serious games as interpretive tools in complex natural tourist attractions. *Journal of Hospitality and Tourism Management*, *42*, 258-265.
- Cohen, J. (1992). Statistical power analysis. *Current directions in psychological science*, *1*(3), 98-101.
- Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. Routledge.
- Collins, G. R. (2010). Usable mobile ambient intelligent solutions for hospitality customers. *Journal of Information Technology Impact*, *10*(1), 45-54.
- Corrêaa, C., & Kitanoa, C. (2015, February). Gamification in tourism: Analysis of Brazil quest game. In *Proceedings of ENTER* (Vol. 2015).
- Cresswell, J. (2013). Qualitative inquiry & research design: Choosing among five approaches.
- Creswell, J. W. (2011). Controversies in mixed methods research. *The Sage handbook of qualitative research*, *4*(1), 269-284.
- Csikszentmihalyi, M. (1975). Beyond boredom and anxiety. San Francisco. *CA, US: Jossey-Bass*.
- Csikszentmihalyi, M. (1975). Play and intrinsic rewards. *Journal of Humanistic Psychology*, *15*(3), 41-63.
- Csikszentmihalyi, M. (1988). The flow experience and its significance for human psychology. *Optimal experience: Psychological studies of flow in consciousness*, *2*, 15-35.
- Csikszentmihalyi, M., & Csikzentmihaly, M. (1990). *Flow: The Psychology of Optimal Experience* (Vol. 1990). New York: Harper & Row.

- Csikszentmihalyi, M., & LeFevre, J. (1989). Optimal experience in work and leisure. *Journal of Personality and Social Psychology*, *56*(5), 815.
- Csikszentmihalyi, M., Abuhamdeh, S., & Nakamura, J. (2005). Flow. In C. S. Dweck (Ed.), *Handbook of competence and motivation* 598–608.New York: Guilford.
- Cutright, K.M., A. Samper, and G.J. Fitzsimons. (2013). We are what we buy. In The Routledge companion to identity and consumption (Chapter 9). 1st ed., ed. A.R. Ayalla and R.W. Belk, 918. New York: Routledge
- Czikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience* (pp. 75-77). New York: Harper & Row.
- Dam, S. M., & Dam, T. C. (2021). Relationships between service quality, brand image, customer satisfaction, and customer loyalty. *The Journal of Asian Finance, Economics and Business*, *8*(3), 585-593.
- Davis, K., & Singh, S. (2015). Digital badges in afterschool learning. Documenting the perspectives and experiences of students and educators. *Computers & Education*, *88*, 72–83.
- De Freitas, A. A., & de Freitas, M. M. (2013). Classroom Live: a software-assisted gamification tool. *Computer Science Education*, *23*(2), 186-206.
- Deci, E. L., & Ryan, R. M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry*, *11*(4), 227-268.
- DeFranco, A., & Morosan, C. (2017). Coping with the risk of internet connectivity in hotels: Perspectives from American consumers traveling internationally. *Tourism Management*, *61*, 380-393.
- Demangeot, C., & Broderick, J. A. (2016). Engaging customers during a website visit: a model of website customer engagement. *International Journal of Retail & Distribution Management*, *44* (8), 814-839.
- Demetrovics, Z., Urbán, R., Nagygyörgy, K., Farkas, J., Zilahy, D., Mervó, B., & Harmath, E. (2011). Why do you play? The development of the motives for online gaming questionnaire (MOGQ). *Behavior research methods*, *43*, 814-825.
- Denny, P. (2013). The effect of virtual achievements on student engagement. Paper presented at the *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 763-772.
- Deterding, S. (2015). The lens of intrinsic skill atoms: A method for gameful design. *Human–Computer Interaction*, *30*(3-4), 294-335.

- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011, September). From game design elements to gamefulness: defining" gamification". In *Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments* (pp. 9-15).
- Deterding, S., Sicart, M., Nacke, L., O'Hara, K., & Dixon, D. (2011). Gamification using game-design elements in non-gaming contexts. In *CHI'11 extended abstracts on human factors in computing systems*, 2425-2428.
- Dichev, C., & Dicheva, D. (2017). Gamifying education: what is known, what is believed and what remains uncertain: a critical review. *International journal of educational technology in higher education*, *14*, 1-36.
- Diener, E., & Seligman, M. E. (2002). Very happy people. *Psychological science*, *13*(1), 81-84.
- Djohan, S. A., Handhana, D., Castafiore, V. B., & Hendriana, E. (2022). Can gamification stimulate customers to repurchase in the E-Marketplace? The mediation effect of customer experience and engagement. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, *5*(1), 4781-4796.
- Dolich, I. J. (1969). Congruence relationships between self images and product brands. *Journal of marketing research*, *6*(1), 80-84.
- Dorcic, J., Komsic, J., & Markovic, S. (2019). Mobile technologies and applications towards smart tourism–state of the art. *Tourism Review*, *74*(1), 82-103.
- Dwivedi, A., Johnson, L. W., & McDonald, R. (2016). Celebrity endorsements, self-brand connection and relationship quality. *International Journal of Advertising*, *35*(3), 486-503.
- Eckhaus, E. (2018). Measurement of organizational happiness. In *Advances in Human Factors, Business Management and Leadership: Proceedings of the AHFE 2017 International Conferences on Human Factors in Management and Leadership, and Business Management and Society, July 17− 21, 2017, The Westin Bonaventure Hotel, Los Angeles, California, USA 8* (pp. 266-278). Springer International Publishing.
- Edelman/StrategyOne. (2010). The 8095 Exchange: Millennials, their actions surrounding brands, and the dynamics of reverberation. *Edelman Digital*.
- Egger, R., & Bulencea, P. (2015). *Gamification in tourism: Designing memorable experiences*. BoD–Books on Demand.

- Eisingerich, A. B., Marchand, A., Fritze, M. P., & Dong, L. (2019). Hook vs. hope: How to enhance customer engagement through gamification. *International Journal of Research in Marketing*, *36*(2), 200-215.
- El Shoubashy, H., Abdel-Azim, M., Abd ElKader, H., & Khalifa, N. (2020). Gamification Effect on Brand Engagement: A Pilot Study. *Australian Journal of Basic and Applied Sciences*, *14*(11), 37-56.
- Elgarhy, S. D., Abdel Rahieem, W. M. A. N., & Abdulmawla, M. (2024). Influences of gamification on repurchase intention and intrinsic motivations in Egyptian hotels and travel agencies: The mediating role of customer engagement. *Journal of Quality Assurance in Hospitality & Tourism*, *25*(2), 397-419.
- Engeser, S., & Rheinberg, F. (2008). Flow, performance and moderators of challenge-skill balance. *Motivation and emotion*, *32*, 158-172.
- Eppmann, R., Bekk, M., & Klein, K. (2018). Gameful experience in gamification: Construction and validation of a gameful experience scale [GAMEX]. *Journal of interactive marketing*, *43*(1), 98-115.
- Erawan, T. (2016). Tourists' intention to give permission via mobile technology in Thailand. *Journal of Hospitality and Tourism Technology*, 7(4), 330–346.
- Eriksson, N. (2014). User categories of mobile travel services. *Journal of Hospitality and Tourism Technology*, 5(1), 17–30.
- Eroglu, S. A., Machleit, K. A., & Davis, L. M. (2003). Empirical testing of a model of online store atmospherics and shopper responses. *Psychology & marketing*, *20*(2), 139-150.
- Escalas, J. E. (2004). Narrative processing: Building consumer connections to brands. *Journal of consumer psychology*, *14*(1-2), 168-180.
- Escalas, J. E., & Bettman, J. R. (2003). You are what they eat: The influence of reference groups on consumers' connections to brands. *Journal of consumer psychology*, *13*(3), 339-348.
- Escalas, J. E., & Bettman, J. R. (2005). Self-construal, reference groups, and brand meaning. *Journal of consumer research*, *32*(3), 378-389.
- Escobar-Rodríguez, T., & Carvajal-Trujillo, E. (2014). Online purchasing tickets for low cost carriers: An application of the unified theory of acceptance and use of technology (UTAUT) model. *Tourism management*, *43*, 70-88.

- Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling*. University of Akron Press.
- Faßbender, V. (2021). *The determinants for Continuance Intention in Mobile Fitness Apps adopting a Gamification approach* (Master's thesis, ISCTE-Instituto Universitario de Lisboa (Portugal).
- Featherstone, M., & Habgood, J. (2019). UniCraft: Exploring the impact of asynchronous multiplayer game elements in gamification. *International Journal of Human-Computer Studies*, *127*, 150-168.
- Feng, Y., Ryan, U. M., & Xiao, L. (2018). Genetic diversity and population structure of Cryptosporidium. *Trends in parasitology*, *34*(11), 997-1011.
- Filep, S., & Deery, M. (2010). Towards a picture of tourists' happiness. *Tourism Analysis*, *15*(4), 399-410.
- Filieri, R., Acikgoz, F., Ndou, V., & Dwivedi, Y. (2021). Is TripAdvisor still relevant? The influence of review credibility, review usefulness, and ease of use on consumers' continuance intention. *International Journal of Contemporary Hospitality Management*, *33*(1), 199-223.
- Fiske, A. P., Haslam, N., & Fiske, S. T. (1991). Confusing one person with another: what errors reveal about the elementary forms of social relations. *Journal of personality and social psychology*, *60*(5), 656.
- Fisz, M. (1963). Probability theory and mathematical statistics. *(No Title)*.
- Floh, A., and M. Madlberger. (2013).The role of atmospheric cues in online impulse-buying behavior. *Electronic Commerce Research and Applications* 12 (6):425–39.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, *18*(1), 39-50.
- Foroughi, B., Iranmanesh, M., & Hyun, S. S. (2019). Understanding the determinants of mobile banking continuance usage intention. *Journal of Enterprise Information Management*.
- Foroughi, B., Iranmanesh, M., Kuppusamy, M., Ganesan, Y., Ghobakhloo, M., & Senali, M. G. (2023). Determinants of continuance intention to use gamification applications for task management: an extension of technology continuance theory. *The Electronic Library*, *41*(2/3), 286-307.

- Foroughi, B., Sitthisirinan, S., Iranmanesh, M., Nikbin, D., & Ghobakhloo, M. (2023). Determinants of travel apps continuance usage intention: extension of technology continuance theory. *Current Issues in Tourism*, 1-17.
- García-Jurado, A., Castro-González, P., Torres-Jiménez, M., & Leal-Rodríguez, A. L. (2018). Evaluating the role of gamification and flow in e-consumers: millennials versus generation X. *Kybernetes*, *48*(6), 1278-1300.
- Garson, G. D. (2016). Partial least squares. Regression and structural equation models.
- Gatautis, R., & Vaiciukynaite, E. (2013). Website Atmosphere: Towards Revisited Taxonomy of Website Elements. *Economics and Management*, *18*(3), 537–544.
- Gatautis, R., Vitkauskaite, E., Gadeikiene, A., & Piligrimiene, Z. (2016). Gamification as a mean of driving online consumer behaviour: SOR model perspective. *Engineering Economics*, *27*(1), 90-97.
- Gong, T., & Yi, Y. (2018). The effect of service quality on customer satisfaction, loyalty, and happiness in five Asian countries. *Psychology & Marketing*, *35*(6), 427-442.
- Graham, M., & Zook, M. (2013). Augmented realities and uneven geographies: Exploring the geolinguistic contours of the web. *Environment and Planning A*, *45*(1), 77-99.
- Greenwood-Nimmo, M., & Shin, Y. (2013). Taxation and the asymmetric adjustment of selected retail energy prices in the UK. *Economics Letters*, *121*(3), 411-416.
- Griffiths, M. D., & Hunt, N. (1995). Computer game playing in adolescence: Prevalence and demographic indicators. *Journal of community & applied social psychology*, *5*(3), 189-193.
- Groot, A. D., & Naerssen, R. V. (1969). *Studietoetsen: Construeren, afnemen, analyseren* [Educational testing: Construction, administration, analysis.]. The Hague, Netherlands: Mouton.
- Guo, J. (2021). *An Investigation of the Intrinsic Motivational Factors that Affect Intention to Continue Using Smart Tourism Applications*. University of Northumbria at Newcastle (United Kingdom).
- Guo, J., Liu, Z., & Liu, Y. (2016). Key success factors for the launch of government social media platform: Identifying the formation mechanism of continuance intention. *Computers in Human Behavior*, *55*, 750-763.

- Guo, Y. M., & Poole, M. S. (2009). Antecedents of flow in online shopping: a test of alternative models. *Information Systems Journal*, *19*(4), 369-390.
- Gupta, A., & Gomathi, S. (2017). A review on gamification and its potential to motivate and engage employees and customers: Employee engagement through gamification. *International Journal of Sociotechnology and Knowledge Development (IJSKD)*, *9*(1), 42-52.
- Gupta, A., Dogra, N., & George, B. (2018). What determines tourist adoption of smartphone apps? An analysis based on the UTAUT-2 framework. *Journal of Hospitality and Tourism Technology*, *9*(1), 50-64.
- Gurău, C. (2012). A life-stage analysis of consumer loyalty profile: comparing Generation X and Millennial consumers. *Journal of consumer Marketing*, *29*(2), 103-113.
- Hair Jr, J., Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.
- Hair, Jr, J. F., Sarstedt, M., Matthews, L. M., & Ringle, C. M. (2016). Identifying and treating unobserved heterogeneity with FIMIX-PLS: part I–method. *European business review*, *28*(1), 63-76.
- Haji, S., Surachman, S., Ratnawati, K., & Rahayu, M. (2021). The effect of experience quality on behavioral intention to an island destination: The mediating role of perceived value and happiness. *Accounting*, *7*(5), 1221-1230.
- Hallifax, S., Serna, A., Marty, J. C., &Lavoué, É. (2018, April). A design space for meaningful structural gamification. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems*, 1-6.
- Hallifax, S., Serna, A., Marty, J. C., Lavoué, G., & Lavoué, E. (2019, October). Factors to consider for tailored gamification. In *Proceedings of the annual symposium on computer-human interaction in play* (pp. 559-572).
- Hamari, J. (2013). Transforming homo economicus into homo ludens: A field experiment on gamification in a utilitarian peer-to-peer trading service. *Electronic commerce research and applications*, *12*(4), 236-245.
- Hamari, J., & Koivisto, J. (2013). Social motivations to use gamification: an empirical study of gamifying exercise.

- Hamari, J., & Koivisto, J. (2015). Why do people use gamification services?. *International Journal of Information Management*, *35*(4), 419-431.
- Hamari, J., & Lehdonvirta, V. (2010). Game design as marketing: How game mechanics create demand for virtual goods. *International Journal of Business Science & Applied Management*, *5*(1), 14-29.
- Hamari, J., Koivisto, J., & Sarsa, H. (2014, January). Does gamification work?--a literature review of empirical studies on gamification. In *2014 47th Hawaii international conference on system sciences* (pp. 3025-3034). Ieee.
- Hamed, H. M. (2017). Marketing destinations to millennials: Examining the compatibility between the destination marketing organization website and the millennial tourist prospects. *Journal of Tourism and Recreation*, *3*(1), 1-20.
- Hardesty, D. M., & Bearden, W. O. (2004). The use of expert judges in scale development: Implications for improving face validity of measures of unobservable constructs. *Journal of business research*, *57*(2), 98-107.
- Harrigan, P., Evers, U., Miles, M. P., & Daly, T. (2018). Customer engagement and the relationship between involvement, engagement, self-brand connection and brand usage intent. *Journal of Business Research*, *88*, 388-396.
- Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). Business-Unit-Level relationship between employee satisfaction, employee engagement, and business outcomes: A Meta-Analysis. Journal of Applied Psychology, 87, 268–279.
- Harwood, T., & Garry, T. (2015). An investigation into gamification as a customer engagement experience environment. *Journal of Services Marketing*, *29*(6/7), 533-546.
- Hassan, L., Dias, A., & Hamari, J. (2019). How motivational feedback increases user's benefits and continued use: A study on gamification, quantified-self and social networking. *International Journal of Information Management*, *46*, 151-162.
- Hausman, Angela V., and Jeffery S. Siekpe (2009), "The Effect of Web Interface Features on Consumer Online Purchase Intentions," *Journal of Business Research*, 62 (1), 5–13.
- Haynes, S. N., Richard, D., & Kubany, E. S. (1995). Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological assessment*, *7*(3), 238.

- Henseler, J. (2007). A new and simple approach to multi-group analysis in partial least squares path modeling.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, *43*, 115-135.
- Herrewijn, L., &Poels, K. (2013). Putting brands into play: How game difficulty and player experiences influence the effectiveness of in-game advertising. *International Journal of Advertising*, *32*(1), 17-44.
- Herrmann, L. K., & Kim, J. (2017). The fitness of apps: a theory-based examination of mobile fitness app usage over 5 months. *Mhealth*, *3*.
- Hew, T. S., & Syed A. Kadir, S. L. (2017). Applying channel expansion and self-determination theory in predicting use behaviour of cloud-based VLE. *Behaviour & Information Technology*, *36*(9), 875-896.
- Ho, L. A., & Kuo, T. H. (2010). How can one amplify the effect of e-learning? An examination of high-tech employees' computer attitude and flow experience. *Computers in Human Behavior*, *26*(1), 23-31.
- Ho, R. C., Amin, M., Ryu, K., & Ali, F. (2021). Integrative model for the adoption of tour itineraries from smart travel apps. *Journal of Hospitality and Tourism Technology*, *12*(2), 372-388.
- Hoehle, H. and Venkatesh, V. (2015), "Mobile application usability: conceptualization and instrument development*", MIS Quarterly*, 39(2), 435-472.
- Hofacker, C. F., De Ruyter, K., Lurie, N. H., Manchanda, P., & Donaldson, J. (2016). Gamification and mobile marketing effectiveness. *Journal of Interactive Marketing*, *34*(1), 25-36.
- Hoffman, D. L., & Novak, T. P. (1996). Marketing in hypermedia computer-mediated environments: Conceptual foundations. *Journal of Marketing*, *60*(3), 50-68.
- Högberg, J., Ramberg, M. O., Gustafsson, A., & Wästlund, E. (2019). Creating brand engagement through in-store gamified customer experiences. *Journal of Retailing and Consumer Services*, *50*, 122-130.
- Hollebeek, L. D. (2011). Demystifying customer brand engagement: Exploring the loyalty nexus. *Journal of marketing management*, *27*(7-8), 785-807.

- Hollebeek, L. D., & Macky, K. (2019). Digital content marketing's role in fostering consumer engagement, trust, and value: Framework, fundamental propositions, and implications. *Journal of interactive marketing*, *45*(1), 27-41.
- Hollebeek, L. D., Glynn, M. S., & Brodie, R. J. (2014). Consumer brand engagement in social media: Conceptualization, scale development and validation. *Journal of interactive marketing*, *28*(2), 149-165.
- Hong, S. J., & Tam, K. Y. (2006). Understanding the adoption of multipurpose information appliances: The case of mobile data services. *Information systems research*, *17*(2), 162-179.
- Hong, S.-J., Thong, J. Y. L., & Tam, K. Y. (2006). Understanding continued information technology usage behavior: A comparison of three models in the context of mobile internet. Decision Support Systems, 42(3), 1819–1834.
- Hsiao, C.-H., Chang, -J.-J., & Tang, K.-Y. (2016). Exploring the influential factors in continuance usage of mobile social Apps: Satisfaction, habit, and customer value perspectives. Telematics and Informatics, 33(2), 342–355.
- Hsu, C. L., & Chen, M. C. (2018). How does gamification improve user experience? An empirical investigation on the antecedences and consequences of user experience and its mediating role. *Technological Forecasting and Social Change*, *132*, 118-129.
- Hsu, C. L., & Lin, J. C. C. (2008). Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation. *Information & management*, *45*(1), 65-74.
- Hsu, C. L., & Lu, H. P. (2004). Why do people play on-line games? An extended TAM with social influences and flow experience. *Information & management*, *41*(7), 853-868.
- Huang, C. K., Chen, C. D., & Liu, Y. T. (2019). To stay or not to stay? Discontinuance intention of gamification apps. *Information Technology & People*, *32*(6), 1423-1445.
- Hunicke, R., LeBlanc, M., & Zubek, R. (2004, July). MDA: A formal approach to game design and game research. In *Proceedings of the AAAI Workshop on Challenges in Game AI*, *4*(1), 1722).
- Hunter, W. C., Chung, N., Gretzel, U., & Koo, C. (2015). Constructivist research in smart tourism. *Asia Pacific Journal of Information Systems*, *25*(1), 105-120.

- Huotari, K., & Hamari, J. (2017). A definition for gamification: anchoring gamification in the service marketing literature. *Electronic markets*, *27*(1), 21-31.
- Hwang, J., & Choi, L. (2020). Having fun while receiving rewards?: Exploration of gamification in loyalty programs for consumer loyalty. *Journal of Business Research*, *106*, 365-376.
- Ibhadode, O., Adekunle, A., Nwafor, C. O., & Umanah, I. I. (2019, December). Interference mitigation among indoor phone subscribers in lte based heterogeneous networks using fast response frequency reuse technique. In *Journal of Physics: Conference Series*, *1378* (3), 032019. IOP Publishing.
- Ibrahim, N. F., Wang, X., & Bourne, H. (2017). Exploring the effect of user engagement in online brand communities: Evidence from Twitter. *Computers in Human Behavior*, *72*, 321-338.
- Im, J., & Hancer, M. (2017). What fosters favorable attitudes toward using travel mobile applications?. *Journal of Hospitality Marketing & Management*, *26*(4), 361-377.
- Insley, V., & Nunan, D. (2014). Gamification and the online retail experience. *International Journal of Retail & Distribution Management*, *42*(5), 340-351.
- Iskandar, Y. H. P., & Sia, P. Y. H. (2020). Mobile travel apps and generation y in malaysia: An empirical evidence to understanding the factors influencing the intention to use. In *Impact of mobile services on business development and e-commerce* (pp. 186-210). IGI Global.
- Islam, J. U., Rahman, Z., & Hollebeek, L. D. (2018). Consumer engagement in online brand communities: A solicitation of congruity theory. *Internet Research*, *28*(1), 23-45.
- J., Shernoff, D. J., Rowe, E., Coller, B., Asbell-Clarke, J., & Edwards, T. (2016). Challenging games help students learn: An empirical study on engagement, flow and immersion in game-based learning. *Computers in Human Behavior*, *54*, 170-179.
- Jackson, V., Stoel, L., & Brantley, A. (2011). Mall attributes and shopping value: Differences by gender and generational cohort. *Journal of retailing and consumer services*, *18*(1), 1-9.

- Jami Pour, M., Rafiei, K., Khani, M., & Sabrirazm, A. (2021). Gamification and customer experience: The mediating role of brand engagement in online grocery retailing. *Nankai Business Review International*, *12*(3), 340–357.
- Jang, S., Kitchen, P. J., & Kim, J. (2018). The effects of gamified customer benefits and characteristics on behavioral engagement and purchase: Evidence from mobile exercise application uses. *Journal of Business Research*, *92*, 250-259.
- Jarrar, Y., Awobamise, A., & Sellos, P. (2020). Technological Readiness Index (TRI) and the intention to use smartphone apps for tourism: A focus on inDubai mobile tourism app. *International Journal of Data and Network Science*, *4*(3), 297-304.
- Jarvis, C. B., MacKenzie, S. B., & Podsakoff, P. M. (2003). A critical review of construct indicators and measurement model misspecification in marketing and consumer research. *Journal of consumer research*, *30*(2), 199-218.
- Jensen Schau, H., & Gilly, M. C. (2003). We are what we post? Self-presentation in personal web space. *Journal of consumer research*, *30*(3), 385-404.
- Johnson, D., & Wiles, J. (2003). Effective affective user interface design in games. *Ergonomics*, *46*(13-14), 1332-1345.
- Jose, P. E. (2013). *Doing statistical mediation and moderation*. Guilford Press.
- Juliana, J., Jayanto, I., Wulansari, M., Santoso, M. H., & Apriyono, T. (2023). The Implementation of Expectation-Confirmation Model (ECM) in Analyzing the Relationship Between Gamification and Continuance Use Intention in Online Travel Industry. *JEMSI (Jurnal Ekonomi, Manajemen, dan Akuntansi)*, *9*(3), 943-948.
- Jung, C. G., & Shamdasani, S. (2013). *The undiscovered self*. Routledge.
- Jung, S., Kim, J., & Farrish, J. (2014). In-room technology trends and their implications for enhancing guest experiences and revenue. *Journal of Hospitality and Tourism Technology*, 5(3), 210–228.
- Kamboj, S., Rana, S., & Drave, V. A. (2020). Factors driving consumer engagement and intentions with gamification of mobile apps. *Journal of Electronic Commerce in Organizations (JECO)*, *18*(2), 17-35.
- Kang, S. (2014). Factors influencing intention of mobile application use. *International Journal of Mobile Communications*, *12*(4), 360-379.
- Kaur, J., Lavuri, R., Parida, R., & Singh, S. V. (2023). Exploring the impact of gamification elements in brand apps on the purchase intention of consumers. *Journal of Global Information Management (JGIM)*, *31*(1), 1-30.

- Kaur, P., Dhir, A., Chen, S., & Rajala, R. (2016). Flow in context: Development and validation of the flow experience instrument for social networking. *Computers in Human Behavior*, *59*, 358-367.
- Kavaliova, M., Virjee, F., Maehle, N., & Kleppe, I. A. (2016). Crowdsourcing innovation and product development: Gamification as a motivational driver. *Cogent Business & Management*, *3*(1), 1128132.
- Kemp, S. (2018). Social media use jumps in Q1 despite privacy fears. Retrieved from https://wearesocial.com/blog/2018/ 04/social-media-use-jumps-in-q1-despite-privacy-fears .
- Khan, S., & Hussain, M. (2012). Determinants of consumer happiness and its role in customer loyalty. *Available at SSRN 2269677*.
- Khan, Z., Bali, R. K., & Wickramasinghe, N. (2007). Developing a BPI framework and PAM for SMEs. *Industrial Management & Data Systems*, *107*(3), 345-360.
- Kiili, K. (2005). Content creation challenges and flow experience in educational games: The IT-Emperor case. *The Internet and higher education*, *8*(3), 183-198.
- Kiili, K. (2005). Digital game-based learning: Towards an experiential gaming model. *The Internet and higher education*, *8*(1), 13-24.
- Kim, J., & Kizildag, M. (2011). M-learning: Next generation hotel training system. *Journal of Hospitality and Tourism Technology*, 2(1), 6–33.
- Kim, S. H., Bae, J. H., & Jeon, H. M. (2019). Continuous intention on accommodation apps: integrated value-based adoption and expectation–confirmation model analysis. *Sustainability*, 11(6), 1578.
- Kim, S., & Baek, T. H. (2018). Examining the antecedents and consequences of mobile app engagement. *Telematics and Informatics*, *35*(1), 148-158.
- Kim, Y., Chang, K., & Kim, T. (2022). The Impact of Gamification on Flow and Continuous Use Intention on Fitness App Users. *Available at SSRN 4244764*..
- Kırcova, İ., Enginkaya, E., & Yılmaz, H. (2015). Influence of consumers' self-brand connections on purchase intentions. In *Annual International Conference on Social Sciences*.
- Kivikangas, J. M., Chanel, G., Cowley, B., Ekman, I., Salminen, M., Järvelä, S., & Ravaja, N. (2011). A review of the use of psychophysiological methods in game research. *journal of gaming & virtual worlds*, *3*(3), 181-199.

- Kline, P. (2015). *A handbook of test construction (psychology revivals): introduction to psychometric design*. Routledge.
- Kock, N. (2016). Hypothesis testing with confidence intervals and P values in PLS-SEM. *International Journal of e-Collaboration (IJeC), 12*(3), 1-6.
- Koivisto, J. and Hamari, J. (2014) 'Demographic differences in perceived benefits from gamification', *Computers in Human Behavior, 35*, 179–188.
- Koivisto, J., & Hamari, J. (2019). The rise of motivational information systems: A review of gamification research. *International journal of information management, 45*, 191-210.
- Köksal, C. D., & Demir, M. Ö. (2012). The Impacts of Self-Brand Congruence on Brand Loyalty: A Study on Cellular Phone Users. *International Journal of Social Sciences and Humanity Studies*, *4*(2), 91-100.
- Korn, O., Boffo, S., & Schmidt, A. (2015). The effect of gamification on emotions-the potential of facial recognition in work environments. In *Human-Computer Interaction: Design and Evaluation: 17th International Conference, HCI International 2015, Los Angeles, CA, USA, August 2-7, 2015, Proceedings, Part I 17* (pp. 489-499). Springer International Publishing.
- Kotler, P., & Keller, K. (2021). *Marketing Management (15th global edition)*. Pearson Education Limited.
- Koufaris, M. (2002). Applying the technology acceptance model and flow theory to online consumer behavior. *Information systems research*, *13*(2), 205-223.
- Kovačević, I., Zečević, B., & Veljković, S. (2014). 'Gamification'concept: Theoretical framework and destination marketing management practice. *Ekonomika preduzeća*, *62*(5-6), 315-322.
- Kozinets, R. V., Sherry, J. F., DeBerry-Spence, B., Duhachek, A., Nuttavuthisit, K., & Storm, D. (2008). Themed flagship brand stores in the new millennium. *Räume des Konsums*, 87-118.
- Kumar, A. (2021). Analysing the drivers of customer happiness at authorized workshops and improving retention. *Journal of Retailing and Consumer Services*, *62*, 102619.
- Kuo, A., & Rice, D. H. (2015). Catch and shoot: The influence of advergame mechanics on preference formation. *Psychology & Marketing*, *32*(2), 162-172.

- Kuo, Y. F., Wu, C. M., & Deng, W. J. (2009). The relationships among service quality, perceived value, customer satisfaction, and post-purchase intention in mobile value-added services. *Computers in human behavior*, *25*(4), 887-896.
- Kwon, E. & Mattila, A. S. (2015). The effect of self–brand connection and self-construal on brand lovers' word of mouth (WOM). *Cornell Hospitality Quarterly*, *56*(4), 427-435.
- Kwon, J. M., Bae, J. I. S., & Blum, S. C. (2013). Mobile applications in the hospitality industry. *Journal of hospitality and tourism technology*.Kwon, J. M., Bae, J. I. S., & Blum, S. C. (2013). Mobile applications in the hospitality industry. *Journal of hospitality and tourism technology*.
- Laffan, D. A., Greaney, J., Barton, H., & Kaye, L. K. (2016). The relationships between the structural video game characteristics, video game engagement and happiness among individuals who play video games. *Computers in Human Behavior*, *65*, 544-549.
- Landers, V. M., Beatty, S. E., Wang, S., & Mothersbaugh, D. L. (2015). The effect of online versus offline retailer-brand image incongruity on the flow experience. *Journal of Marketing Theory and Practice*, *23*(4), 370-387.
- Landicho, C. M., Amada, B. A., Flores, S., Mendoza, A., Ramos, S. E., & Borbon, N. M. (2021). Customer Satisfaction Measurement (CSM): Basis for Student Support Services Enhancement Plan. *Asia Pacific Journal of Academic Research in Business Administrational*, *7*(2).
- Law, R., Buhalis, D., & Cobanoglu, C. (2014). Progress on information and communication technologies in hospitality and tourism. *International journal of contemporary hospitality management*, *26*(5), 727-750.
- Law, R., Chan, I. C. C., & Wang, L. (2018). A comprehensive review of mobile technology use in hospitality and tourism. *Journal of Hospitality Marketing & Management*, *27*(6), 626-648.
- Lee, B. C. (2019). The effect of gamification on psychological and behavioral outcomes: Implications for cruise tourism destinations. *Sustainability*, *11*(11), 3002.
- Lee, J., Park, H., & Wise, K. (2014). Brand interactivity and its effects on the outcomes of advergame play. *new media & society*, *16*(8), 1268-1286.

- LEE, S. K., & MIN, S. R. (2021). Effects of Information Quality of Online Travel Agencies on Trust and Continuous Usage Intention: An Application of the SOR Model. *The Journal of Asian Finance, Economics and Business*, *8*(4), 971-982.
- Lee, S., Hwang, J., & Hyun, M. Y. (2010). Mobile services as a marketing tool to enhance restaurant revenue: An exploratory study. *Journal of Hospitality Marketing and Management*, 19(5), 464–479.
- Lee, Y. C. (2015). Factors influencing effects of location-based EMS advertising: different situational contexts for both genders. *International Journal of Mobile Communications*, *13*(6), 619-640.
- Lee, Y. C., & Ho, Y. L. (2022). Effects of gamification incorporated in branded apps on brand responses. *International Journal of Mobile Communications*, *20*(1), 53-72.
- Leimeister, J. M., Huber, M., Bretschneider, U., & Krcmar, H. (2009). Leveraging crowdsourcing: activation-supporting components for IT-based ideas competition. *Journal of Management Information Systems*, *26*(1), 197–224.
- Leung, D., Law, R., Van Hoof, H., & Buhalis, D. (2013). Social media in tourism and hospitality: A literature review. *Journal of travel & tourism marketing*, *30*(1-2), 3-22.
- Li, H., & Liu, Y. (2014). Understanding post-adoption behaviors of e-service users in the context of online travel services. Information & Management, 51(8), 1043-1052.
- Liao, C., Palvia, P., & Chen, J. L. (2009). Information technology adoption behavior life cycle: Toward a Technology Continuance Theory (TCT). *International Journal of Information Management*, *29*(4), 309-320.
- Liao, W., Liu, Y., & Qiao, H. (2020). No Fun no Use? The Impact of Gamification on User's Continuous Usage Intention toward E-Business App.
- Lieberoth, A. (2015). Shallow gamification: Testing psychological effects of framing an activity as a game. *Games and Culture*, *10*(3), 229-248.
- Limayem, M., & Cheung, C. M. (2008). Understanding information systems continuance: The case of Internet-based learning technologies. *Information & management*, *45*(4), 227-232.
- Lin, H., Gursoy, D., Zhang, M., 2020. Impact of customer-to-customer interactions on overall service experience: a social service escape perspective. Int. J. Hospit. Manag. 87, 102376.
- Lin, Y. L., Lin, H. W., & Jiang, Y. W. (2015). The structure and cluster of value in social network games. *Xing Xiao Ping Lun*, *12*(3), 263.

- Lissitsa, S., & Kol, O. (2016). Generation X vs. Generation Y–A decade of online shopping. *Journal of retailing and consumer services*, *31*, 304-312.
- Little, R. J., & Rubin, D. B. (2019). *Statistical analysis with missing data* (Vol. 793). John Wiley & Sons.
- Littrell, R. F., & Nkomo, S. M. (2005). Gender and race differences in leader behaviour preferences in South Africa. *Women in Management Review*, *20*(8), 562-580.
- Liu, C. R., Wang, Y. C., Huang, W. S., & Tang, W. C. (2019). Festival gamification: Conceptualization and scale development. *Tourism Management*, *74*, 370-381.
- Liu, J., Zhang, X., Meng, F., & Lai, K. H. (2020). Deploying gamification to engage physicians in an online health community: an operational paradox. *International Journal of Production Economics*, *228*, 107847.
- Liu, Y., Alexandrova, T. and Nakajima, T. (2011) 'Gamifying intelligent environments', *ACM Workshop on Ubiquitous Meta User Interfaces*,7–12.
- Liu, Y., Li, Q., Edu, T., & Negricea, I. C. (2023). Exploring the continuance usage intention of travel applications in the case of Chinese tourists. *Journal of Hospitality & Tourism Research*, *47*(1), 6-32.
- Lodes, M., & Buff, C. L. (2009). Are generation Y (Millennial) consumers brand loyal and is their buying behavior affected in an economic recession? A preliminary study. *Journal of Academy of Business and Economics*, *9*(3), 127-134.
- Lohmöller, J. B. (2013). *Latent variable path modeling with partial least squares*. Springer Science & Business Media.
- Long, T., & Suomi, R. (2022). Continuance Intention of Theme Park Apps: An Extended Expectation Confirmation Theory Perspective.
- Lowry, P. B., Gaskin, J., Twyman, N., Hammer, B., & Roberts, T. L. (2013). Proposing the hedonic-motivation system adoption model (HMSAM) to increase understanding of adoption of hedonically motivated systems. *Journal of the Association for Information Systems*, *14*(11), 617-671.
- Lu, H. P., & Ho, H. C. (2020). Exploring the impact of gamification on users' engagement for sustainable development: A case study in brand applications. *Sustainability*, *12*(10), 4169.
- Lucassen, G., & Jansen, S. (2014). Gamification in consumer marketing-future or fallacy?. *Procedia-Social and Behavioral Sciences*, *148*, 194-202.

- Lucia-Palacios, L., Pérez-López, R. and Polo-Redondo, Y. (2016), "Cognitive, affective and behavioral responses in mall experience: a qualitative approach", *International Journal of Retail & Distribution Management*, *44*(1), 4-21.
- Lyubomirsky, S., Tkach, C., DiMatteo, M.R., 2006. What are the differences between happiness and self-esteem. Soc. Indicat. Res. 78 (3), 363–404.
- Maital, S. (1999). "The Experience Economy: Work Is Theatre & Every Business a Stage" by B. Joseph Pine II and James H. Gilmore (Book Review). *Sloan Management Review*, *40*(4), 93.
- Mann, H. B., & Whitney, D. R. (1947). On a test of whether one of two random variables is stochastically larger than the other. *The annals of mathematical statistics*, 50-60.
- Marcucci, E., Gatta, V., & Le Pira, M. (2018). Gamification design to foster stakeholder engagement and behavior change: An application to urban freight transport. *Transportation Research Part A: Policy and Practice*, *118*, 119-132.
- Marczewski, A. (2015). Even Ninja Monkeys like to play. *London: Blurb Inc*, *1*(1), 28.
- MarketsandMarkets**. (2020).** Gamification Market - Global Forecast to 2025.
- Markus, H. (1977). Self-schemata and processing information about the self. *Journal of personality and social psychology*, *35*(2), 63.
- Matthew, D., Hellianto, G. R., Putra, N. S., & Sundjaja, A. M. (2021, October). The Effect of Monthly Promotion, Gamification, User Interface Usability & Attractiveness on the Marketplace Repurchase Intention. In *2021 International Conference on Informatics, Multimedia, Cyber and Information System (ICIMCIS* (pp. 193-199). IEEE.
- Mattke, J., & Maier, C, (2021). Gamification: Explaining brand loyalty in mobile applications. *AIS Transactions on Human-Computer Interaction*, *13*(1), pp. 62-81.
- Matyunina, J. (2020), "How to build a mobile travel application in 2020", Codetiburon, available at: https://codetiburon.com/how-to-create-a-travel-app-travel-app-development/
- Mau, G., Silberer, G., & Constien, C. (2008). Communicating brands playfully: Effects of in-game advertising for familiar and unfamiliar brands. *International Journal of Advertising*, *27*(5), 827-851.

- McMillan, S. J., Hwang, J. S., & Lee, G. (2003). Effects of structural and perceptual factors on attitudes toward the website. *Journal of advertising research*, *43*(4), 400-409.
- Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology.* The MIT Press.
- Mertens, D. M. (2017). Transformative research: Personal and societal. *International Journal for Transformative Research*, *4*(1), 18-24.
- Mo Kwon, J., Bae, J. I., & Blum, S. C. (2013). Mobile applications in the hospitality industry. *Journal of hospitality and tourism technology*, *4*(1), 81-92.m
- Mollen, A., & Wilson, H. (2010). Engagement, telepresence and interactivity in online consumer experience: Reconciling scholastic and managerial perspectives. *Journal of business research*, *63*(9-10), 919-925.
- Mominzada, T., Abd Rozan, M. Z. B., & Aziz, N. A. (2021). Consequences of user experience in a gamified e-commerce platform. *International Journal of Electronic Commerce Studies*, *13*(1), 113-136.
- Moneta, G. B., & Csikszentmihalyi, M. (1996). The effect of perceived challenges and skills on the quality of subjective experience. *Journal of personality*, *64*(2), 275-310.
- Moore, D. J., & Homer, P. M. (2008). Self-brand connections: The role of attitude strength and autobiographical memory primes. *Journal of Business Research*, *61*(7), 707-714.
- Morosan, C., & DeFranco, A. (2015). Disclosing personal information via hotel apps: A privacy calculus perspective. *International Journal of Hospitality Management*, *47*, 120-130.
- Mouakket, S. (2014). Investigating the Motives of Customers' Continuance Intentions towards Online Reservation: The Role of E-Service Quality. Journal of Organizational and End User Computing, 26(2), 18-40.
- Murphy, H.C., Chen, M.-M., Cossutta, M., 2016. An investigation of multiple devices and information sources used in the hotel booking process. Tourism Manage.52, 46–51.
- Musatova, Z., Mkhitaryan, S., Nevostruev, P., Sidorchuk, R., & Komleva, N. (2016). Smart-technologies in public transport and their perception by the youth audience. *Indian Journal of Science and Technology*.

- Nakamura, J., & Csíkszentmihályi, M. (2002). The concept of flow. In C. R. Snyder & S. J. Lopez (Eds.), Handbook of positive psychology, 89–105. New York: Oxford University Press.
- Naqvi, B., Mirza, N., Rizvi, S. K. A., Porada-Rochoń, M., & Itani, R. (2021). Is there a green fund premium? Evidence from twenty seven emerging markets. *Global Finance Journal*, *50*, 100656.
- Nasirzadeh, E., & Fathian, M. (2020). Investigating the effect of gamification elements on bank customers to personalize gamified systems. *International Journal of Human-Computer Studies*, *143*, 102469.
- Negruşa, A. L., Toader, V., Sofică, A., Tutunea, M. F., & Rus, R. V. (2015). Exploring gamification techniques and applications for sustainable tourism. *Sustainability*, *7*(8), 11160-11189.
- Nicholson, S. (2015). A recipe for meaningful gamification. *Gamification in education and business*, 1-20.
- Niedermeier, A., Albrecht, L., & Jahn, B. (2019). "Happy together": Effects of brand community engagement on customer happiness. *Journal of Relationship Marketing*, *18*(1), 54-76.
- Niininen, O., Buhalis, C., & March, R. (2007).Customer empowerment in tourism through consumer centric marketing (CCM). *Qualitative Market Research*, 10(3), 265-282.
- Norum, P. S. (2003). Examination of generational differences in household apparel expenditures. *Family and Consumer Sciences Research Journal*, *32*(1), 52-75.
- Novak, T. P., Hoffman, D. L., & Yung, Y. F. (1999). Measuring the flow construct in online environments: A structural modeling approach. *Wp, Vanderbilt University http://www2000. ogsm. vanderbilt. edu*, 1-48.
- Novak, T. P., Hoffman, D. L., & Yung, Y. F. (2000). Measuring the customer experience in online environments: A structural modeling approach. *Marketing science*, *19*(1), 22-42.
- Nugraha, D., & Suroso, J. S. (2023). Pengaruh Mekanisme Gamifikasi Terhadap Brand Equity Melalui Brand Engagement (Studi Kasus: Jabodetabek). *Jurnal Informasi Dan Teknologi*, 173-183.
- Núñez-Barriopedro, E., Cuesta-Valiño, P., Gutiérrez-Rodríguez, P., & Ravina-Ripoll, R. (2021). How does happiness influence the loyalty of karate athletes? A model of

structural equations from the constructs: consumer satisfaction, engagement, and meaningful. *Frontiers in Psychology*, *12*, 794.

- Nunnally, J. C., & Bernstein, I. H. (1994). Psychometric Theory New York. *NY: McGraw-Hill*.
- O'Donovan, S., Gain, J., & Marais, P. (2013). A case study in the gamification of a university-level games development course. Paper presented at the *Proceedings of the South African Institute for Computer Scientists and Information Technologists Conference*, 242-251.
- Oliver, R. L. (1999). Whence consumer loyalty?. *Journal of marketing*, *63*(4_suppl1), 33-44.
- Onwuegbuzie, A. J. (2003). Effect sizes in qualitative research: A prolegomenon. *Quality and Quantity*, *37*, 393-409.
- Ozturk AB, Bilgihan A, Nusair K, Okumus F (2016) What keeps the mobile hotel booking users loyal? Investigating the roles of self-efficacy, compatibility, perceived ease of use, and perceived convenience. Int J Inf Manag 36(6):1350–1359.
- Pansari, A., & Kumar, V. (2017). Customer engagement: the construct, antecedents, and consequences. *Journal of the Academy of Marketing Science*, *45*, 294-311.
- Parapanos, D., & Michopoulou, E. (2019). Understanding key motivations for using a hotel gamified application. In *Information and Communication Technologies in Tourism 2019: Proceedings of the International Conference in Nicosia, Cyprus, January 30–February 1, 2019* (pp. 411-422). Springer International Publishing.
- Pasca, M. G., Renzi, M. F., Di Pietro, L., & Guglielmetti Mugion, R. (2021). Gamification in tourism and hospitality research in the era of digital platforms: a systematic literature review. *Journal of Service Theory and Practice*, *31*(5), 691-737.
- Patwardhan, U. (2023). *Study of Consumer Perceptions and Usage of Travel Mobile Applications*. http://hdl.handle.net/10603/540420
- Pavlou, P. A., Liang, H., & Xue, Y. (2007). Understanding and mitigating uncertainty in online exchange relationships: A principal-agent perspective. *MIS quarterly*, 105-136.
- Peng, C., and Y. G. Kim. (2014). Application of the stimuli-organism-response (SOR) framework to online shopping behavior. *Journal of Internet Commerce, 13* (3–4), 159–76.
- Peralta, E. Generation X: The Small but Financially Powerful Generation. 2015.

- Permana, F. H., Handayani, P. W., & Pinem, A. A. (2021, October). The influence of gamification on brand engagement and brand awareness in online marketplaces. In *2021 International Conference on Advanced Computer Science and Information Systems (ICACSIS)* (pp. 01-06). IEEE.
- Perro, J. (2018). Mobile apps: What's A good retention rate. *Localytics Blog*, *23*.
- Peterson, C., Park, N., & Seligman, M. E. (2005). Orientations to happiness and life satisfaction: The full life versus the empty life. *Journal of happiness studies*, *6*, 25-41.
- Phang, C. W., Zhang, C., & Sutanto, J. (2013). The influence of user interaction and participation in social media on the consumption intention of niche products. *Information & Management*, *50*(8), 661-672.
- Pilgrim, K., & Bohnet-Joschko, S. (2022). Donating Health Data to Research: Influential Characteristics of Individuals Engaging in Self-Tracking. *International Journal of Environmental Research and Public Health*, *19*(15), 9454.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual review of psychology*, *63*, 539-569.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, *88*(5), 879.
- Prasilowati, S. L., Suyanto, S., Safitri, J., & Wardani, M. K. (2021). The impact of service quality on customer satisfaction: The role of price. *The Journal of Asian Finance, Economics and Business*, *8*(1), 451-455.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior research methods*, *40*(3), 879-891.
- Price waterhouse Coopers, P. W. C. (2011). Millennials at work. Reshaping the workplace. *URL: http://www. pwc. ru/en_RU/ru/hr-consulting/publications/assets/millenials-survey. pdf (дата обращения*.
- Privette, G. (1983). Peak experience, peak performance, and flow: A comparative analysis of positive human experiences. *Journal of personality and social psychology*, *45*(6), 1361.

- Procci, K., Singer, A. R., Levy, K. R., & Bowers, C. (2012). Measuring the flow experience of gamers: An evaluation of the DFS-2. *Computers in Human Behavior*, *28*(6), 2306-2312.
- Przybylski, A. K., Rigby, C. S., & Ryan, R. M. (2010). A motivational model of video game engagement. *Review of general psychology*, *14*(2), 154-166.
- Raento, M., Oulasvirta, A. and Eagle, N. (2009), "Smartphones: an emerging tool for socialscientists", *Sociological Methods & Research*, 37 (3), 426-54.
- Ramayah, T. J. F. H., Cheah, J., Chuah, F., Ting, H., & Memon, M. A. (2018). Partial least squares structural equation modeling (PLS-SEM) using smartPLS 3.0. *An updated guide and practical guide to statistical analysis*.
- Rani, w. S. B. W. (2019). *Determinants of continuance intention of user on smartphone-based traveller information systems in the greater klang valley* (doctoral dissertation, universiti teknologi malaysia).
- Reeves, B., & Read, J. L. (2009). Total engagement. *Using Games and Virtual Worlds to change the way people work and businesses compete*, 132-133.
- Reisenwitz, T. H., & Fowler, J. G. (2019). Information sources and the tourism decision-making process: An examination of Generation X and Generation Y consumers. *Global Business Review*, *20*(6), 1372-1392.
- Research2Guidance**. (2019).** Gamification in Mobile Applications: Consumer Insights.
- Revaldi, A., Kurniawati, K., Hayuningtyas, L., Suhardi, P. K., & Gantini, A. (2022). The Effects of Brand Experience on Brand Loyalty Mediated By Brand Passion, Self-Brand Connection, Brand Affection, and Customer Satisfaction on Smartphone Users in Indonesia. *Jurnal Ekonomi Bisnis dan Kewirausahaan*, *11*(1), 47-60.
- Richter, G., Raban, D. R., & Rafaeli, S. (2015). *Studying gamification: The effect of rewards and incentives on motivation* (pp. 21-46). Springer International Publishing.
- Ringle, C. M., Wende, S., & Becker, J. M. (2015). SmartPLS 3. SmartPLS GmbH, Boenningstedt. *Journal of Service Science and Management*, *10*(3), 32-49.
- Rini, D. P., Josephat, E., Ririmasse, Y. R., & Sundjaja, A. M. (2021, October). The effect of trust, satisfaction and enjoyment toward repurchase intention in E-commerce. In *2021 3rd International Conference on Cybernetics and Intelligent System (ICORIS)* (pp. 1-6). IEEE.

- Rivera, M., Croes, R., & Zhong, Y. (2016). Developing mobile services: A look at first-time and repeat visitors in a small island destination. *International Journal of Contemporary Hospitality Management*.
- Robson, K., Plangger, K., Kietzmann, J. H., McCarthy, I., & Pitt, L. (2016). Game on: Engaging customers and employees through gamification. *Business horizons*, *59*(1), 29-36.
- Robson, K., Plangger, K., Kietzmann, J., McCarthy, I. and Pitt, L. (2014) 'Understanding gamification of consumer experiences', *Advances in Consumer Research*, 42(2), 352–356.
- Rodrigues, L. F., Oliveira, A., & Rodrigues, H. (2019). Main gamification concepts: A systematic mapping study. *Heliyon*, *5*(7).
- Rogelberg, S. G., & Stanton, J. M. (2007). Introduction: Understanding and dealing with organizational survey nonresponse. *Organizational research methods*, *10*(2), 195-209.
- Rouibah, K., Lowry, P. B., & Hwang, Y. (2016). The effects of perceived enjoyment and perceived risks on trust formation and intentions to use online payment systems: New perspectives from an Arab country. *Electronic Commerce Research and Applications*, *19*, 33-43.
- Rudd, M., Jennifer A., & Norton, M. I. (2012). Leave them smiling: How small acts create more happiness than large acts. Association for Consumer Research North American Conference, Chicago, IL.
- 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.
- Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and emotion*, *30*, 344-360.
- Sai, L., Schuckert, M., Law, R., & Chen, C. -C. (2017). Be a "superhost": The importance of badge systems for peer-to-peer rental accommodations. *Tourism Management*, *60*, 454–465.
- Sailer, M., Hense, J. U., Mayr, S. K., & Mandl, H. (2017). How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. *Computers in human behavior*, *69*, 371-380.

- Saks, A. M. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology*, 21, 600–619
- Sangroya, D., Yadav, R., & Joshi, Y. (2021). Does gamified interaction build a strong consumer-brand connection? A study of mobile applications. *Australasian Journal of Information Systems*, *25*.
- Santos, S. A., Trevisan, L. N., Veloso, E. F. R., & Treff, M. A. (2021). Gamification in training and development processes: perception on effectiveness and results. *Revista de Gestão*, *28*(2), 13.
- Sarstedt, M., & Cheah, J. (2019). Partial least squares structural equation
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Partial least squares structural equation modeling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), Handbook of market research, Heidelberg: Springer.
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modeling. In *Handbook of market research* (pp. 587-632). Cham: Springer International Publishing.
- Sautter, P., Hyman, M. R., & Lukosius, V. (2004). E-tail atmospherics: A critique of the literature and model extension. *J. Electron. Commer. Res.*, *5*(1), 14-24.
- Sayyah Gilani, M., Iranmanesh, M., Nikbin, D., & Zailani, S. (2017). EMR continuance usage intention of healthcare professionals. *Informatics for Health and Social Care*, *42*(2), 153-165.
- Schepers, J., & Wetzels, M. (2007). A meta-analysis of the technology acceptance model: Investigating subjective norm and moderation effects. *Information & management*, *44*(1), 90-103.
- Schlegel, L. (2021). Connecting, Competing, and Trolling. *Perspectives on Terrorism*, *15*(4), 54-64.
- Schmitt, B. (2012). The consumer psychology of brands. *Journal of consumer Psychology*, *22*(1), 7-17.
- Schmitt, B., & Van Zutphen, G. (2012). Happy customers everywhere: How your business can profit from the insights of positive psychology. New York: Palgrave Macmillan.
- Schneider, L. P., & Cornwell, T. B. (2005). Cashing in on crashes via brand placement in computer games: The effects of experience and flow on memory. *International Journal of Advertising*, *24*(3), 321-343.

- Seigneur, J. M. (2011, March). The emotional economy for the augmented human. In *Proceedings of the 2nd augmented human international conference* (pp. 1-4).
- Seligman, M. E. (2002). *Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment*. Simon and Schuster.
- Seligman, M. E. (2011). *Flourish: A visionary new understanding of happiness and well-being*. Simon and Schuster.
- Seminari, N., Rahyuda, I., Sukaatmadja, I., & Sukawati, T. (2023). The role of self-brand connection to mediate the effect of customer satisfaction on repurchase intention in moderation of lovemark. *International Journal of Data and Network Science*, *7*(3), 1295-1302.
- Seongwon Park, & Chihyeong Lee. (2013). A study on factors affecting the satisfaction of social network game users. *Journal of the Korean Computer Game Society* , *26* (1), 198-204.
- Shaffer, D., Squire, K., Halverson, R., & Gee, J. (2005). Video games and the future of learning. *Phi Delta Kappan, 87*(2), 105-111.
- Shankar, A. (2022). Does reward gamification drive brand relationship quality?: An experimental approach. *Journal of Promotion Management*, *28*(4), 443-466.
- Shen, Y. S., Choi, H. C., Joppe, M., & Yi, S. (2020). What motivates visitors to participate in a gamified trip? A player typology using Q methodology. *Tourism Management*, *78*, 104074.
- Shernoff, D. J., Csikszentmihalyi, M., Shneider, B., & Shernoff, E. S. (2003). Student engagement in high school classrooms from the perspective of flow theory. *School psychology quarterly*, *18*(2), 158.
- Sheth, J. N., & Parvatiyar, A. (1995). The evolution of relationship marketing. *International business review*, *4*(4), 397-418.
- Shore, N. (2011). Millennials are playing with you. *Harvard Business Review*, 19-29.
- Shoutern (2016), "Travel apps: the revolution in traveling", Shoutem, available at: https://medium.com/shoutem/travel-apps-the-revolution-in-traveling-cde012e79dd4.
- Sia, P. Y. H., Saidin, S. S., & Iskandar, Y. H. P. (2023). Systematic review of mobile travel apps and their smart features and challenges. *Journal of Hospitality and Tourism Insights*, *6*(5), 2115-2138.

- Sigala, M. (2015). Gamification for crowd sourcing marketing practices: Applications and benefits in tourism. In *Advances in crowd sourcing*, 129-145. Springer, Cham.
- Sigala, M. (2015). The application and impact of gamification funware on trip planning and experiences: the case of TripAdvisor's funware. *Electronic markets*, *25*, 189-209.
- Sillaots, M. (2014, October). Achieving flow through gamification: A study on re-designing research methods courses. In *European Conference on Games Based Learning* (Vol. 2, p. 538). Academic Conferences International Limited.
- Sitthipon, T., Limna, P., Jaipong, P., Siripipattanakul, S., & Auttawechasakoon, P. (2022). Gamification Predicting Customers' Repurchase Intention Via E-Commerce Platforms Through Mediating Effect of Customer Satisfaction in Thailand. *Review of Advanced Multidisciplinary Sciences, Engineering & Innovation*, *1*(1), 1-14.
- Skadberg, Y. X., & Kimmel, J. R. (2004). Visitors' flow experience while browsing a Web site: its measurement, contributing factors and consequences. *Computers in human behavior*, *20*(3), 403-422.
- Smith, D. N., & Sivakumar, K. (2004). Flow and Internet shopping behavior: A conceptual model and research propositions. *Journal of Business Research*, *57*(10), 1199-1208.
- Soeswoyo, D. M., Jeneetica, M., Dewi, L., Dewantara, M. H., & Asparini, P. S. (2021). Tourism potential and strategy to develop competitive rural tourism in Indonesia. *International Journal of Applied Sciences in Tourism and Events*, *5*(2), 131-141.
- Sotiriadis, M. D. (2017). Sharing tourism experiences in social media: A literature review and a set of suggested business strategies. *International Journal of Contemporary Hospitality Management*.
- Sprung, M. J., Chambers, M., & Smith-Pickel, S. (2018). Transportation statistics annual report 2018.
- Steffen, C., Mau, G., & Schramm-Klein, H. (2013). Who is the loser when I lose the game? Does losing an advergame have a negative impact on the perception of the brand?. *Journal of Advertising*, *42*(2-3), 183-195.
- Sthapit, E., Del Chiappa, G., Coudounaris, D. N., & Bjork, P. (2019). Determinants of the continuance intention of Airbnb users: consumption values, co-creation, information overload and satisfaction. *Tourism Review*, *75*(3), 511-531.

- Stopka, U., Pessier, R. and G€unther, C. (2018), “Mobility as a service (MaaS) based on intermodal electronic platforms in public transport”, 20th International Conference, HCI International 2018, Springer, Cham, Las Vegas, NV, pp. 419-439.
- Su, Y. S., Chiang, W. L., Lee, C. T. J., & Chang, H. C. (2016). The effect of flow experience on player loyalty in mobile game application. *Computers in Human Behavior*, *63*, 240-248.
- Suh, A., Wagner, C., & Liu, L. (2018). Enhancing user engagement through gamification. *Journal of Computer Information Systems*, *58*(3), 204-213.
- Sukmaningsih, D. W., Wandoko, W., & Panggati, I. E. (2020, August). Gamification effect between generation x and millennials: Study on e-commerce site. In *2020 International Conference on Information Management and Technology (ICIMTech)* (pp. 812-817). IEEE.
- Supotthamjaree, W., & Srinaruewan, P. (2018). Social media advertising via mobile device to enhance consumer brand engagement, brand loyalty and purchase intention: Literature review. *WMS Journal of Management*, *7*(3), 114-130.
- Susanto, A., Hutama, I. T., Rahajeng, E., & Fitriyani, A. (2020, October). Determinants of continuance use intention of mobile-based electronic ticketing. In *2020 8th International Conference on Cyber and IT Service Management (CITSM)* (pp. 1-6). IEEE.
- Sutanapong, C., & Louangrath, P. I. (2015). Descriptive and inferential statistics. *International Journal of Research & Methodology in Social Science*, *1*(1), 22-35.
- Suthongwan, S. (2020). The Relationship of Digital Post-Purchase Brand Touchpoints on Relationship Quality and Self-Brand Connection in the Context of Repurchase of an Automobile. *มนุษย สังคม สาร (ม ส ส.) คณะ มนุษยศาสตร์ และ สังคมศาสตร์ มหาวิทยาลัย ราชภัฏ บุรีรัมย์*, *18*(3), 215-235.
- Syrjälä, H., Kauppinen-Räisänen, H., Luomala, H. T., Joelsson, T. N., Könnölä, K., & Mäkilä, T. (2020). Gamified package: Consumer insights into multidimensional brand engagement. *Journal of business research*, *119*, 423-434.
- Tak, P., & Gupta, M. (2021). Examining travel mobile app attributes and its impact on consumer engagement: An application of SOR framework. *Journal of Internet Commerce*, *20*(3), 293-318.

- Tam, C., D. Santos, and T. Oliveira. (2020). Exploring the influential factors of continuance intention to use mobile Apps: Extending the expectation confirmation model Information Systems Frontiers, 22(1): 243-257.
- Tan, G. W. H., Lee, V. H., Lin, B., &Ooi, K. B. (2017). Mobile applications in tourism: the future of the tourism industry?. *Industrial Management & Data Systems*.
- Tao, M., Nawaz, M. Z., Nawaz, S., Butt, A. H., & Ahmad, H. (2018). Users' acceptance of innovative mobile hotel booking trends: UK vs. PRC. *Information Technology & Tourism*, *20*, 9-36.
- Tavitiyaman, P., Qu, H., Tsang, W. S. L., & Lam, C. W. R. (2021). The influence of smart tourism applications on perceived destination image and behavioral intention: The moderating role of information search behavior. *Journal of Hospitality and Tourism Management*, *46*, 476-487.
- Temme, D., Kreis, H., & Hildebrandt, L. (2009). A comparison of current PLS path modeling software: Features, ease-of-use, and performance. In *Handbook of partial least squares: Concepts, methods and applications* (pp. 737-756). Berlin, Heidelberg: Springer Berlin Heidelberg.
- Thanh, N. N. D., Thanh, N. D., Thao, N. T. T., & Thanh, T. N. P. (2020). The mediating role of self-brand connection and brand identity in the relationship between brand credibility and brand loyalty. *HO CHI MINH CITY OPEN UNIVERSITY JOURNAL OF SCIENCE-ECONOMICS AND BUSINESS ADMINISTRATION*, *10*(2), 112-129.
- Thiebes, S., Lins, S., & Basten, D. (2014) Gamifying information systems. A synthesis of gamification mechanics and dynamics. *European Conference on Information Systems (ECIS)*. Tel-Aviv, Israel.
- Thomson, M., MacInnis, D. J., & Whan Park, C. (2005). The ties that bind: Measuring the strength of consumers' emotional attachments to brands. *Journal of consumer psychology*, *15*(1), 77-91.
- Torres-Delgado, A., & Palomeque, F. L. (2014). Measuring sustainable tourism at the municipal level. *Annals of Tourism Research*, *49*, 122-137.
- Trivedi, J. P., Kumar, S., & Kundu, S. (2014). A Study Of Mobile Application Preferences Of Youth And Future Scope. *Journal of Marketing*.

- Tsai, W. H. S., & Men, L. R. (2013). Motivations and antecedents of consumer engagement with brand pages on social networking sites. *Journal of Interactive Advertising*, *13*(2), 76-87.
- Tsou, H. T., & Putra, M. T. (2023). How gamification elements benefit brand love: the moderating effect of immersion. *Marketing Intelligence & Planning*, *41*(7), 1015-1036.
- Tu, R., Hsieh, P., & Feng, W. (2019). Walking for fun or for "likes"? The impacts of different gamification orientations of fitness apps on consumers' physical activities. *Sport Management Review*, *22*(5), 682-693.
- Tussyadiah, I. P., & Wang, D. (2016). Tourists' attitudes toward proactive smartphone systems. *Journal of Travel Research*, 55(4), 493–508.
- Uhm, J. P., Kim, S., & Lee, H. W. (2023). Stimulating suspense in gamified virtual reality sports: Effect on flow, fun, and behavioral intention. *International Journal of Human–Computer Interaction*, *39*(19), 3846-3858.
- Van den Brink W., Mellenbergh G. J. (1998). *Testleer en testconstructie* [Test theory and test construction]. Amsterdam, Netherlands: Boom, 1-447.
- Van der Westhuizen, L. M. (2018). Brand loyalty: exploring self-brand connection and brand experience. *Journal of Product & Brand Management*, *27*(2), 172-184.
- Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157-178.
- Verleye, K., Gemmel, P., & Rangarajan, D. (2014). Managing engagement behaviors in a network of customers and stakeholders: Evidence from the nursing home sector. *Journal of service research*, *17*(1), 68-84.
- Voorhees, C. M., Brady, M. K., Calantone, R., & Ramirez, E. (2016). Discriminant validity testing in marketing: an analysis, causes for concern, and proposed remedies. *Journal of the academy of marketing science*, *44*, 119-134.
- Waiguny, M. K., Nelson, M. R., & Marko, B. (2013). How advergame content influences explicit and implicit brand attitudes: When violence spills over. *Journal of Advertising*, *42*(2-3), 155-169.
- Waiguny, M. K., Nelson, M. R., &Terlutter, R. (2012). Entertainment matters! The relationship between challenge and persuasiveness of an advergame for children. *Journal of Marketing Communications*, *18*(1), 69-89.

- Walpole, R. E. (2006). Probability & statistics for engineers and scientists (7th ed.). New Delhi: Pearson.
- Wang, D., Park, S., & Fesenmaier, D. R. (2012). The role of smartphones in mediating the touristic experience. *Journal of Travel Research*, *51*(4), 371-387.
- Wang, D., Xiang, Z., Law, R., & Ki, T. P. (2016). Assessing hotel-related smartphone apps using online reviews. *Journal of Hospitality Marketing & Management*, *25*(3), 291-313.
- Wang, H. Y., & Wang, S. H. (2010). Predicting mobile hotel reservation adoption: Insight from a perceived value standpoint. *International Journal of Hospitality Management*, *29*(4), 598-608.
- Wang, S., Beatty, S. E., & Mothersbaugh, D. L. (2009). Congruity's role in website attitude formation. *Journal of Business Research*, *62*(6), 609-615.
- Webster, J., Trevino, L. K., & Ryan, L. (1993). The dimensionality and correlates of flow in human-computer interactions. *Computers in human behavior*, *9*(4), 411-426.
- Weng, G. S., Zailani, S., Iranmanesh, M., & Hyun, S. S. (2017). Mobile taxi booking application service's continuance usage intention by users. *Transportation Research Part D: Transport and Environment*, *57*, 207-216.
- Werbach, K., Hunter, D., & Dixon, W. (2012). *For the win: How game thinking can revolutionize your business* (Vol. 1). Philadelphia: Wharton digital press.
- White, K., Argo, J. J., & Sengupta, J. (2012). Dissociative versus associative responses to social identity threat: The role of consumer self-construal. *Journal of Consumer Research*, *39*(4), 704-719.
- Wirtz, J., Den Ambtman, A., Bloemer, J., Horváth, C., Ramaseshan, B., Van De Klundert, J., & Kandampully, J. (2013). Managing brands and customer engagement in online brand communities. *Journal of service Management*, *24*(3), 223-244.
- Wong, K. K. K. (2013). Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS. *Marketing bulletin*, *24*(1), 1-32.
- Wu, Y., Cui, T., Liu, N., Deng, Y., & Guo, J. (2018). Demystifying continuous participation in game applications at social networking sites: A social playfulness design perspective. *Internet Research*.
- Wünderlich, N. V., Gustafsson, A., Hamari, J., Parvinen, P., & Haff, A. (2020). The great game of business: Advancing knowledge on gamification in business contexts. *Journal of Business Research*, *106*, 273-276.

- Xi, N., & Hamari, J. (2019). Does gamification satisfy needs? A study on the relationship between gamification features and intrinsic need satisfaction. *International Journal of Information Management*, *46*, 210-221.
- Xi, N., & Hamari, J. (2019). The relationship between gamification, brand engagement and brand equity.
- Xi, N., & Hamari, J. (2020). Does gamification affect brand engagement and equity? A study in online brand communities. *Journal of Business Research*, *109*, 449-460.
- Xiang, Z., Du, Q., Ma, Y., & Fan, W. (2017). A comparative analysis of major online review platforms: Implications for social media analytics in hospitality and tourism. *Tourism Management*, *58*, 51-65.
- Xu, F., Buhalis, D., & Weber, J. (2017). Serious games and the gamification of tourism. *Tourism management*, *60*, 244-256.
- Xu, F., Tian, F., Buhalis, D., Weber, J., & Zhang, H. (2016). Tourists as mobile gamers: gamification for tourism marketing. *Journal of Travel & Tourism Marketing*, *33*(8), 1124-1142.
- Xu, Y. (2011). Literature review on web application gamification and analytics. 888 CSDL Technical report, 11–05
- Yang, P., Zhao, Y., Xu, T., & Feng, Y. (2019, July). The impact of gamification element on purchase intention. In *2019 16th International Conference on Service Systems and Service Management (ICSSSM)* (pp. 1-6). IEEE.
- Yang, S., Mohd Isa, S., Ramayah, T., Anuar, N. N. A., & Blanes, R. (2022). Effects of brand personality dimensions and self-congruity on revisit intention: a structural equation modeling approach. *Journal of Tourism, Hospitality and Environment Management*, *7*(29), 1-7.
- Yang, Y., Asaad, Y., & Dwivedi, Y. (2017). Examining the impact of gamification on intention of engagement and brand attitude in the marketing context. *Computers in Human Behavior*, *73*, 459-469.
- Yang, Z., Kong, X., Sun, J., & Zhang, Y. (2018). Switching to green lifestyles: Behavior change of ant forest users. *International journal of environmental research and public health*, *15*(9), 1819.
- Yoo, C. W., Sanders, G. L., & Cerveny, R. P. (2018). Exploring the influence of flow and psychological ownership on security education, training and awareness effectiveness and security compliance. *Decision Support Systems*, *108*, 107-118.

- Yoo, C., Kwon, S., Na, H., & Chang, B. (2017). Factors affecting the adoption of gamified smart tourism applications: An integrative approach. *Sustainability*, *9*(12), 2162.
- Yu, J. H., Ku, G. C. M., Lo, Y. C., Chen, C. H., & Hsu, C. H. (2021). Identifying the antecedents of university students' usage behaviour of fitness Apps. *Sustainability*, *13*(16), 9043.
- Yu, J., & Cooper, H. (1983). A quantitative review of research design effects on response rates to questionnaires. *Journal of Marketing research*, *20*(1), 36-44.
- Zang, Z. (2022). Exploring the impact of extrinsic motivation on users' intention to continue using a gamified tourism commerce platform. In *SHS Web of Conferences* (Vol. 148, p. 03036). EDP Sciences.
- Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of marketing*, *60*(2), 31-46.
- Zeithaml, V. A., Parasuraman, A., & Malhotra, A. (2002). Service quality delivery through web sites: a critical review of extant knowledge. *Journal of the academy of marketing science*, *30*(4), 362-375.
- Zhan, G., & Zhou, Z. (2018). Mobile internet and consumer happiness: the role of risk. *Internet Research*, *28*(3), 785-803.
- Zhao, L., & Lu, Y. (2012). Enhancing perceived interactivity through network externalities: An empirical study on micro-blogging service satisfaction and continuance intention. *Decision support systems*, *53*(4), 825-834.
- Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of consumer research*, *37*(2), 197-206.
- Zhong, Z., Luo, J., & Zhang, M. (2015). Understanding antecedents of continuance intention in mobile travel booking service. International Journal of Business and Management, 10(9), 156.
- Zhou, F., Mou, J., & Kim, J. (2022). Toward a meaningful experience: an explanation of the drivers of the continued usage of gamified mobile app services. *Online Information Review*, *46*(2), 285-303.
- Zhou, T. (2011). An empirical examination of users' post-adoption behaviour of mobile services. *Behaviour & Information Technology*, *30*(2), 241–250. https://doi.org/ 10.1080/0144929X.2010.543702.

- Zhou, T. and Lu, Y. (2011) ‘The effect of interactivity on the flow experience of mobile commerce user’, *International Journal of Mobile Communications*, 9(3), 225–242.
- Zhou, T., Li, H., & Liu, Y. (2010). The effect of flow experience on mobile SNS users' loyalty. *Industrial Management & Data Systems*, *110*(6), 930-946.
- Zhou, T., Song, Y., & Zhou, P. (2022). Continued use intention of travel apps: from the perspective of control and motivation. *Technology Analysis & Strategic Management*, *34*(6), 703-716.
- Zichermann, G., & Cunningham, C. (2011). *Gamification by design: Implementing game mechanics in web and mobile apps*. " O'Reilly Media, Inc.".