

Games and Tourism: An Evaluation of Gamification in the Iranian Tourism Industry

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Abstract: Gamification as an innovative concept has become more emphasized in some fields, including business, education and training, and healthcare. Recently, gamification has been considered in other fields such as tourism. Tourism-based games are becoming increasingly popular and beneficial in various tourism sectors, ranging from marketing and advertising to lodging. These experiences are more rewarding, creating a higher level of satisfaction while increasing loyalty to the destination. This paper outlines the fundamentals of gamification and discusses its application in specific tourism fields. It describes the framework and game design elements that can aid in the achievement of realistic gamification. Finally, a few best practices from Iran and other countries show how this innovative concept will aid tourism marketing.

Keywords: gamification, serious games, tourism, Iran, education

Introduction

Computer technology, such as video gaming in virtual reality, augmented reality and mixed reality platforms, has become popular in people's daily lives (Bogost, 2010; Isaacs et al., 2021; Shuib et al., 2015). As a form of persuasion technology, serious games are computer/video games with cognitive design properties that focus on changing consumer behaviour and exchanging information rather than pure entertainment featured in traditional games (Ghanbari et al., 2015). The term 'serious games' has been defined in various ways, such as digital games "used for purposes other than mere entertainment" (Susi et al., 2007, p.1) or "games with a set of cognitive properties that provide individuals with new ways of thinking and transferring knowledge" (Ghanbari et al., 2015, p.8).

The rapid development of smart mobile devices has fueled the popularity of video games over the last decade or more (Gentes et al., 2010; Xu & Buhalis, 2021b). Moreover, gaming has become popular and increasingly appealing to a

broader group of players due to its vibrant on-site communication ability. Serious games and the incorporation of game elements have recently sparked significant interest in various fields, including education, wellness, and tourism, fueling their acceptance in non-gaming contexts (Xu et al., 2013; Xu & Buhalis, 2021b). However, much of the research into serious gaming and tourism has focused overwhelmingly on describing the games themselves and their intended uses and expected outcomes and benefits (Bampatzia et al., 2016; Georgopoulos et al., 2017; Xu et al., 2017), such as a tourism stimulator.

This report aims to look at how gamification can help enhance tourism promotion. First, the paper outlines gamification fundamentals in considerable depth to provide a solid underpinning, elucidates the gamification process and game elements in general, and then addresses gamification in tourism, with a specific application to Iran's tourism sector. To accomplish this goal, we first examine the literature on gamification and how serious games are used in tourism in particular to promote environmental education. After looking at several serious games in the tourism industry, the paper illustrates games that have been developed for the tourism industry in Iran.

Gamification and tourism

Definition of Gamification

Many scholars have defined gamification from a variety of perspectives. What all of these definitions have in common is a focus on gaming mechanisms that can be applied to non-game contexts, daily activities, and ordinary tasks. Gamification can influence behavior, motivate change or action (e.g., greater acceptance of technology), and enhance engagement between people or between people, places, and events through rewards and by incorporating other game elements (Baptista & Oliveira, 2017; Conejo, 2014; Deterding et al., 2011; Duggan & Shoup, 2013; Johnson et al., 2014; Morford et al., 2014; Pasca et al., 2021; Robson et al., 2014). Werbach (2014, p. 266) proposes a definition focused on the notion of gamification as a process: "The process of making activities more game-like is known as gamification". Werbach believes that his definition smooths the lines between academic perspectives and practitioners' practices.

Benefits of Gamification

The adoption of smartphones and mobile devices has grown exponentially in the last several years. This has made it easier for any application, task, process, or context to be gamified (Brigham, 2015; Xu & Buhalis, 2021a). With the decrease in the cost of making and miniaturizing sensors, it is now possible to track all kinds of previously difficult-to-track activities. The ability to track various daily interactions or activities at any time provides an opportunity to give each action value. In education, technology is not essential to gamification, but it

can make it easier to manage. The use of smartphones and mobile devices can also allow educators to track learning inside and outside the classroom.

The greatest benefit of applying gamification to an activity or a course is that it encourages increased involvement and engagement. These qualities are not only desirable for most businesses but also educators and librarians. Gamification can create an ongoing relationship between users and libraries; gamification provides an innovative model for creators or librarians to enliven their content and instruction. Furthermore, learners, particularly millennials, desire team-based interaction and immediate feedback, and gamification can provide the context needed to satisfy those requirements. Gamification can also provide users and students with a sense of accomplishment and progress. Some aspects of gamification take advantage of human competitiveness and the ambition to do better. Usually, gamification will outline clear goals but not necessarily always explain the process (Brigham, 2015).

Current Uses of Gamification

There are many areas in which gamification has been applied. Healthcare and wellness, enterprise and business, and education and training are among the most prominent (Lee & Hammer, 2011). Gamification in enterprise and business contexts primarily deals with a company's human resources and marketing departments. An early example of external gamification in a website is Samsung Nation from Samsung Electronics. On the company's website, customers can engage with new products, leave reviews, socialize, participate in discussions with other users, and watch videos. Customers are rewarded with points and badges for their participation and can be ranked on leaderboards. The company's goal is to increase customer time on site, user-generated content, and online sales.

As another example, Step21 Company, LLC, produces preschool and toddler toys, and has a vibrant loyalty program. Customers can earn points by leaving reviews and interacting with other users. Customers can use their points to advance to higher levels, which are denoted by badges. There is also a leaderboard that ranks users according to their status and influence. Furthermore, Waze is a GPS-based geographical navigational application for mobile devices. It offers turn-by-turn information and uses crowdsourcing to update traffic conditions by allowing users to earn points that define a user's status and rank. On the other hand, Salesforce¹, a cloud-based customer relations management (CRM) application, uses gamification to motivate sales teams. Manual procedures have been replaced by a user-friendly sales program that displays a team leaderboard, a progress bar, and featured challenges, motivating team members to meet their short- and long-term sales targets.

1 <https://www.salesforce.com>

In health and wellness, one of the most cited successful gamification applications is Nike+², which is a community of Nike+ app users. Nike is a manufacturer of athletic shoes and sports equipment. Members of this community, numbering nearly 100 million users, use the Nike+ website to track their athletic performance in running fitness. Zamzee³ is a similar application that targets a younger audience. This application is designed to motivate, measure and manage physical activity among children and teenagers. Likewise, Zombies, Run!⁴ is a fitness app for mobile phones that adds an audio narrative to the running workout where the user must flee from pursuing zombies. The application responds to how the user performs. This application also makes the underlying activity (running) appear to be a game. In the field education and training, gamification can help some students thrive better in learning environments (Huang & Soman, 2013; Simões et al., 2015). Many teachers and schools are now incorporating game elements into their lessons, with or without the assistance of ICT (Dicheva et al., 2015).

Gamification Frameworks

Since gamification began attracting the attention of the academy and industry, attempts were proposed to systematize its application in several domains. Most of those attempts were called frameworks. Several processes and guideline proposals referred to as frameworks are discussed in the sections that follow. First, Charles (2010, pp. 429-430) proposed GOLF (Game-Oriented Learning Framework), which is comprised of six vital and engaging components: 1) Fun: "engagement is made easier if the experience is enjoyable"; 2) Social: "engagement is reinforced by the social support of others who are experiencing the same thing"; 3) Identity: "engagement can be encouraged if everyone in the learning environment has a visible role"; 4) Challenge: "Engagement can be based on the human competitive drive, which is heightened by social pressure"; 5) "engagement is more likely when objectives and constraints are clear and acceptable," according to structure; and 6) Feedback: "engagement is reinforced when achievement is made explicit".

Charles' (2010) work makes no mention of gamification (the concept was first used in digital media later in 2010), but it does state that students' e-learning success can be heightened through interaction strategies from digital games. In this way, learning environments can be enhanced with exciting game features (Simões et al., 2015). It is crucial that GOLF considers essential features like competition and collaboration as part of the experience's social component. Social recognition, transparent and acceptable goals, feedback and fun, are other essential elements. Werbach and Hunter (2012) propose a five-step design framework for developing gamified systems: 1) Define business objectives; 2)

2 <http://nikeplus.nike.com/>

3 Zamzee Physical Activity Program for Families

4 Zombies, Run! (zombiesrungame.com)

Delineate target behaviours; 3) Describe the players; 4) Devise activity cycles; 4) Do not forget the fun; and 5) Deploy the appropriate tools. This framework focuses on players and their behaviours concerning some objectives in the non-game context. The proposal also focuses on activity cycles, emphasizing the importance of fun and choosing the proper game elements (Simões et al., 2015). Werbach and Hunter (2012) distinguish between two kinds of action cycles: engagement loops and progression stairs. Engagement loops emphasize the importance of feedback, which can be seen in all game components. The progression stairs reflect the players' skill progression (Simões et al., 2015). Marczewski (2013) proposed a series of steps (eight questions that the system designer must ask themselves) to create a gamified system: 1) What is being gamified?; 2) Why is it gamified?; 3) Who are the users?; 4) How is it gamified?; 5) Have analytics been set up?; 6) Have users been tested?; 7) Has feedback been acted upon?; and 8) Has the solution been published? This framework considers an iterative development process where steps six and seven are part of a loop and, as a whole, steps five to eight can be repeated in a circle (Simões et al., 2015). Marczewski (2013) also mentions the importance of intrinsic motivation, more powerful than extrinsic motivation, and the importance of thinking like a game designer. Huang and Soman (2013) claim that their five-step process to apply gamification in education must consider understanding the target audience and the context, defining learning objectives, structuring the experience, identifying resources, and applying gamification elements. This proposal also considers the breakdown of the learning program into separate milestones and the use of a currency-based tracking mechanism, where the currency is a unit of measurement like points or time.

The Gamification Sensing Framework proposed by Fitz-Walter (2015) is a triple-layered framework that adds video game-like achievements to university students' mobile application. The system is based on sensors found in mobile technology, which serve as the connection between the gamified device and the non-game environment. This proposal divides gamification design into three parts: goals (what the designers hope to address), sensing (triggers that use accessible sensing to connect goals to game elements), and game (the game design elements supporting the plans). González González and Mora Carreño (2014) used a five-step method to gamify an activity in the educational context: analyzing users and environment, defining learning objectives, designing the experience, identifying resources, and ensuring that gamification features are being used. The approach was put to the test in a university environment. To direct the design of gamified systems, Kapp (2012) proposed a methodology (Gamification Design Process) based on a series of steps. This suggestion, however, is a more limited approach since the gamified systems under consideration are serious games.

Gamification Design

Gamification design has varied from study to study and continues to be a focus of ongoing research. Some studies have used user-centred design

techniques, some have been inspired by video game design, and some have created their gamification framework to aid design (Fitz-Walter, 2015). Applying these various fundamental game and gamification design principles is critical to consider, according to Hunicke et al.'s (2004) well-cited Mechanics, Dynamics, and Aesthetics (MDA) framework (Matallaoui et al., 2017). Following the structure of the MDA framework, we now introduce these concepts.

Game mechanics

Game mechanics describes the game's particular components at the data representation level and algorithms (Hunicke et al., 2004). Game mechanics can have a significant impact on a user's motivation and engagement (Matallaoui et al., 2017). The common game mechanics include five key elements: 1) Points are used to reward the users through different dimensions of the system, 2) Leaderboards offer the opportunity to compare themselves to other users in the system, 3) Levels play the role of indicators showing the user's activity through the system, 4) An achievement system can be seen as meta- tasks that provide further goals to the system users, independently of the actual main goals (Matallaoui et al., 2017), 5) A reward compensates users for completing the achievement. According to Hamari and Eranti (2011), achievements are goals in a reward/achievement scheme that are determined by actions and events in other systems (Hamari & Eranti, 2011).

Game dynamics

The run-time behavior of the mechanics acting on player inputs and each other's outputs over time is described as game dynamics (Hunicke et al., 2014). Thus, dynamics form the reason behind the user's motivational behaviour towards game mechanics (Matallaoui et al., 2017). Designers of games and gamification must target and satisfy the common desires of various users. The common desires include the following (Bunchball Inc, 2010) :1) Rewards are given to human beings after performing an action or showing some behaviour to motivate them to repeat it; 2) Most humans inherently need status, attention, recognition and so on. People must engage in some activities to gain the desired prestige and respect of other humans; 3) Achievement and the need to accomplish a given task and to have most people require goals. Hence, people usually tend to look for new challenges and set new achievable goals to reach; 4) Self-expression makes it possible for people to show that they are unique and distinguishable from others; 5) Competitions help people achieve higher levels of performance. People get motivated and satisfied when they line up and compare themselves to others; 6) Altruism can be satisfied by making it possible for the community to give and receive gifts.

Aesthetics

The players' desired emotional responses are the result of game interaction, as a product of dynamics, desirable emotional responses. Aesthetics represent a hedonic aspect of games. Context aesthetics in gamification should represent the goal of the gamified system. For example, the user feels satisfied if a task is completed using gamified systems (Matallaoui et al., 2017). Aesthetics encompass the following (Hunicke et al., 2004): 1) Sensation: Game as sensory pleasure; 2) Fantasy: the game as a make-believe world; 3) Narrative: the game as a drama; 4) Challenge: the game as an obstacle course; 5) Fellowship: Game as a Social Structure; 6) Discovery: Game as uncharted territory; 7) Expression: The game as a means of self-discovery; 8) Submission: Game as a pastime.

Gamification Elements

Hunicke et al.'s (2004) MDA games system considers mechanics and dynamics as game design elements. Within the gamification community of researchers and practitioners, Codish and Ravid (2014, p. 36) mention that "game elements are also referred to as game mechanics and dynamics", and Werbach and Hunter (2012) consider dynamics and mechanics as categories of game elements. According to Fitz-Walter's (2015) research, some systems used more than one game design element. Extrinsic reward-based game elements have been widely used in previous gamification design studies (Fitz-Walter, 2015). According to Fitz-Walter (2015), the top reoccurring game design elements are listed in Table 1.

Table 1. Game design elements used in reviewed gamified systems (Source: Fitz-Walter, 2015)

The primary game element used	Number of systems using the element
Points	13
Leaderboards	12
Competition	10
Level	10
Avatars	9
Feedback/rewards	4
Achievement/badges	4
Virtual currency	3
Teamwork	3
Minigame	3
Challenge	3
Fantasy	3
Roleplaying	2
Quiz	2
Tangible rewards	2
Narrative	2
Virtual pet	1
Goals	1
Experience points	1
Curiosity	1

Hamari et al. (2014) examined several research studies on gamification and discovered that the most commonly used game elements were precisely points, leaderboards, achievements/badges, levels, and rewards. Further, Thiebes et al.'s (2014) review classifies game elements used in information system gamification (IS). According to their report, the most commonly used game elements were achievements, point systems, badges, leaderboards, and user levels. Similarly, Seaborn and Fels (2015) conducted a review of 31 gamified systems (including educational strategies) and concluded that the most employed game elements were points (mentioned in 18 papers), badges (15 articles), rewards and leaderboards (both with 11 mentions), challenges (6 documents), achievements, and avatars (both mentioned in 3 papers).

Gamification in the Tourism Industry

Gamification for the first time was considered a trend in tourism by Euromonitor International at the World Travel Market in 2011. After that, the industry started to deal with it in the context of tourism in a more serious and focused way. Gamification in tourism tries to create a fun experience for tourists while serving the primary purpose of travel, which can be educational, leisure, entertainment, or business (Pasca et al., 2021). In relating gamification to tourism, Weber (2014) indicates ten different applications for pre-travel, the trip itself, and after visiting a destination. These applications aim to create innovative products and services, such as augmented reality games, gamified travel tours, and gamified virtual travel experiences. According to Xu et al. (2013), not all games are created for tourism purposes; therefore, they can be used by the tourism industry in general. The travel and tourism industry is dominated by two types of games: online/offline games and location-based mobile games, which promote interaction and enhance tourists' on-site encounters with the destination in a fun and informative way (see Table 2). For example, Pokémon Go is an augmented reality (AR) mobile game released in 2016 by Niantic in collaboration with Nintendo and The Pokémon Company for iOS and Android devices. It employs GPS-enabled mobile devices to locate, capture, train, and battle virtual creatures known as Pokémon, which appear to be in the player's real-world location (Woods, 2021).

One example of a location-based game is REXplorer—an augmented reality game for which players must have cell phones and internet access to play. This game also aims to educate tourists about their intended destinations. REXplorer, a part of the Regensburg Experience (REX) museum in Regensburg, Germany, was designed for visitors to the city, a UNESCO World Heritage Site and Germany's best-preserved medieval city. In 2007, the game was released in Regensburg. The serious game concept is applied to the tourism domain in REXplorer, which combines education and entertainment to help visitors engage with their destination's history and culture. The game was created in response to younger tourists becoming bored by tour guides presenting historical facts to them in a mechanical manner. The game attempts to engage tourists in exploring

the city while providing a medieval experience and making learning a more enjoyable process.

Another example of a location-based game is Brazil Quest's game, which was elaborated to diversify its marketing promotion through new technologies (Corrêa & Kitano, 2015). The game was inspired by the 2014 FIFA World Cup host cities, whose images of tourist attractions are passively shown as the game's backdrop, along the path traversed by the main character, Yep, an alien who used to live on a depressing planet but had the opportunity to visit a different place: Brazil. The player must guide Yep through a series of Brazilian cities, gathering orbs and making him happy while avoiding the obstacles the villains face to ruin the fun. The aim was to give the game a feeling of happiness, to express that Brazilians are a happy people with a rich culture (Corrêa & Kitano, 2015).

Table 2. Examples of gamification in the tourism industry

Sectors	Company	Description	Gamification elements
Airline	Air Canada	Gamified app for loyalty programs,	Leaderboard, rewards, gifting, progress bar, points
DMO	Rexplorer	Gamified mobile app showing tourists around the historic city of Regensburg, using fantasy role play, tourist play as scientific assistant to help professor Rex understand Regensburg's perpetual magic	Roleplay, fantasy, fun, rewards
Partnership with the tourism sectors	Brazil Quest	Gamified app for providing information in a fun way by travelling across cities and learning more about a country full of colour and excitement. This app is founded on gamification, and advergames seen as tactics to advertise a service or product focused on electronic games to enhance the reputation of a specific brand among consumers.	Fantasy, leaderboard, Level
Pokémon GO	Niantic	Pokémon GO is a mobile augmented reality game based on the Pokémon franchise and provides researchers a good opportunity to examine user responses and experiences with mobile AR games	Level, battle, augmented reality, feedback, social networking, catch high level

In 2011, the World Travel Market predicted that gamification would become a popular trend in tourism from the perspective of visitor interaction and destination marketing. According to Xu et al. (2016), gamification can assist in marketing by raising brand awareness, enhancing the tourist experience, engagement, improving customer loyalty, providing entertainment, and managing employees. Each of these is discussed below.

Raising brand awareness

When designing games, the tourism industries may include specific tourism brands. In fact, some games are specifically designed to increase brand awareness and encourage visitors to visit a location. The 'Smiled Land Thailand' game was created specifically for the Tourism Authority of Thailand (TAT) as

part of its digital marketing strategy and is based on Thailand's tourist attractions. The game is aimed at potential young tourists who use Facebook or other social media to raise brand awareness of the country as a destination and to increase user frequency on TAT's social networking media and mobile applications. Likewise, the Brazilian Tourist Board created the Brazil Quest game to promote FIFA host cities (Corrêa & Kitano, 2015). Images of tourist attractions and brands from each city, as well as aspects of local culture, are included in the game.

Enhance tourists' experiences

Tourist experiences have gained popularity as a research focus, with most findings suggesting that the tourism industry should provide tourists with multidimensional and multifaceted experiences (Kim et al., 2012; Pasca et al., 2021; Xu et al., 2017). Gamification can not only educe new and innovative ways of marketing and raising brand awareness, but it can also be used to improve tourists' on-site experiences in areas of fantasy, immersion, and fun. Fantasy experiences and the ability to act freely in a virtual world are important motivators for gamers (Xu et al., 2016, 2017). Tourists can choose their avatars and have the freedom to pretend to be someone else in a carefully designed gamified system, enhancing their fantasy experiences in a fun and stimulating way, leading to a higher level of satisfaction.

A mobile app called 'REXplorer' was developed to improve tourists' active learning about the destination's history. Tourists can explore the destination by acting as assistants to a virtual figure named 'Rex' using fantasy role play to see the sights, guided by the mobile app, and interact with historical buildings and characters. When they finish the game, they can take pictures and receive a personalized geo-referenced weblog of their walk.

Immersion through gaming can also be used to improve tourists' experiences. Immersion is defined by McMahan (2003) as the psychological components of concentration, emotion, and cognitive evaluation of the game. Ermi and Mäyrä (2004) distinguish three types of immersion: 1) sensory immersion (game stimuli such as sound); 2) challenge-based immersion (challenges and abilities); and 3) imaginative immersion (imagination, fantasy and empathy). According to Kim, Ritchie, and McCormick (2012) and Xu et al. (2017), tourists' immersion in the destination contributes to their memorable experiences. Players can immerse themselves in sensory, challenge-based, and imaginative immersion through the stimulation of augmented surroundings, virtual sounds, imaginative stories, and challenges brought by game tasks/missions, all of which contribute to a deeper level of personal experience.

Engagement

Xu et al. (2017) believe that high customer engagement contributes to the formation of positive attitudes toward the brand. In service management, engagement is also an important aspect of co-creation—a concept that places a

premium on the role of tourists. Pine and Gilmore (2011) conclude that there are four levels of engagement for tourists, including emotional, physical, intellectual, and spiritual engagement as part of their personal experiences.

Improve customer loyalty

Gamification has the potential to improve loyalty programs by adding fun and relatedness, as well as bringing dynamic interactions between different players through teamwork, sharing, and between the player and the game itself through challenge and achievement (Clanton, 1998). Gamification can respond to both the behavioral and psychological needs of the customer, link to both behavioral and attitudinal loyalty, and stimulate a more dynamic and fun process towards building behavior loyalty, attitudinal loyalty, and composite loyalty by using game mechanisms such as points, rewards, leader boards, sharing, and competition (Abou-Shouk & Soliman, 2021; Xu et al., 2017).

Entertainment

Fun is a fundamental element of all gaming. Marketing will become more enjoyable and entertaining as a result of the use of games (Xu et al., 2016; Zichermann & Linder, 2010). Games can be used as an entertainment tool before, during, and after a trip. From the perspective of tourists, pre-trip games are primarily used to pass the time, whereas during-trip games are used to enhance on-site experiences, particularly location-based games (Xu et al., 2015).

Employee management

Gamification also has the potential to help manage and train employees (Xu et al., 2016). 'Marriot my hotel' is a Facebook game developed by the Marriott Hotel Group. Players can take on the role of managers of a 'virtual' restaurant in the hotel (Xu et al., 2016). They can open their own restaurant, where they can buy equipment and ingredients on the cheap, hire and train employees, and serve customers. They will be able to play other roles in the hotel as they progress.

Gamification in the Iranian Tourism Industry

Many destinations in many countries have started to implement more creative ways of managing positive tourist experiences (Michalkó, Irimiás & Timothy, 2015). One such way, as noted above, is to provide engaging and enjoyable experiences through gamification.

Iran has had a flourishing domestic tourism industry, although current turmoil and the COVID-19 pandemic have decreased demand somewhat. Likewise, pre-pandemic international tourism in the country had grown significantly in the past decade, despite some major geopolitical obstacles, as the country is seen by many potential visitors as an unspoiled and must-see destination with masses of diverse cultural and natural assets. Tourism-based games are still in their early stages in Iran and they need attention and funding (Bakhsheshi & Ghaziani, 2019). Raze Sange Siah was one of the most valuable

games produced in collaboration with the tourism industry. In a gamified travel tour, the tourist explores a location while participating in a scavenger hunt using a smartphone app. According to Weber (2014), gamified walking themes can range from criminal investigations to literary walks, to games that uncover a destination's secrets. Visitors can even design their tours using gamified applications. These tours aim to discover hidden gems in a well-known or unknown location while competing with other players (Corrêa & Kitano, 2015). Razemaz in Shiraz is a leading community in the creation of tourism-based games in Iran. Razemaz's Escape Rooms Complex opened in 2017 and now has 13 separate escape rooms. The example highlighted in the rest of this paper is Raze Sange Siah, which is a serious game designed by Razemaz for tourists and residents to familiarize them with the Sange Siah district in Shiraz.

Sange Siah is situated in the old part of Shiraz with more than 15 attractions, including Sibouych's Tomb, BiBi Dokhtaran, and Moshir Mosque. Despite its rich built heritage, the region is not well known among visitors or even locals. Razemaz began developing a serious game to educate visitors and residents about the district because it had significant potential for development. The game debuted in 2018 and is currently available in Iran on weekends (Thursday and Friday).

In Raze Sange Siah's case, the game attempts to achieve several goals; it conveys historical facts when targeting a less-visited city centre. As a popular tourist destination, Shiraz has many historical and cultural sites that attract many visitors during the year, such as the Tomb of Hafiz, Tomb of Saadi, Shah Cheragh and Sange Siah. Because of its location in the city's lower tier, it is surrounded by undesirable social behaviours, such as vandalism and drug use. As a result, despite the district's rich history, few tourists visit. One of Raze Sange Siah's goals is to draw attention to the neglected district. This focus and the growing use of the game has decreased undesirable social behaviours, making it far more difficult for addicts to use drugs in public or vandalize historical sites. According to a study by Amanzadegan and Tabibian (2021), the social issues rank second among the six regeneration tactics in the five historical context neighborhoods of Shiraz. It indicates that all regeneration policies, such as gamification and citizen participation, have a significant reduction effect on dangerous social behaviors (e.g., drug use).

After collecting input from participants, the game also drew the attention of local organizations. More people feel at ease visiting the area if there are fewer undesirable behaviours and there is a greater emphasis on the historic environment. By combining the number of players who visit the city each weekend, this app has contributed to local tourism growth. According to the Tourism in Shiraz 2020 report, the number of tourists has increased significantly in the center of Shiraz, particularly in the Sange Siah neighborhood (Abdollahzadeh et al., 2017). This growth has occurred as a result of certain tourism policies, including the use of gaming and the restoration of the area's historical buildings. However, from 2021 to the present, some unexpected issues

have arisen (e.g., COVID-19 and recent protests), which have had an impact on tourism activities in the city. As a result of these incidents, fewer tourists have arrived, and there has been a limited number of tours in the city. Nonetheless, the implications of the game still apply.

The publicity benefits supermarkets, bakeries, gift shops, and other businesses. Residents are attempting to make visitors feel more at ease by acknowledging the publicity and providing hospitality. More people are converting their homes into guesthouses, which brings in more income for locals and, in the long run, increase the quality of life in the city. Also, at the same time, they are allowing tourists to stay in the area and experience the novelty of real life in Shiraz. Furthermore, it offers visitors less expensive lodging. Providing lodging for tourists in the region often allows travelers to see areas that are not immediately used in the game. Participants stop at other attractions along their routes that are not explicitly related to the game, but the game works as a 'conversion' tool, triggering tourists to return to the location to explore in more depth.

To promote tourism, the Tabriz University of Islamic Arts' augmented cognitive reality laboratory (Carlab) team created a game design to enhance visits to Sattar Khan House in Tabriz to compete for the 4th Serious Game Award in 2020 (Figure 1). The National Computer Games in Tehran were almost sure that their creative idea could be attractive to the Serious Games Festival judges in 2020. So appealing was the initiative that 'Sardar' eventually took first place in the serious games division of the National Computer Games Foundation in 2020 and was named the 'Serious Game of 2020'. It won the 20 million toman (unit of currency) award from the National Computer Games Foundation in this section.

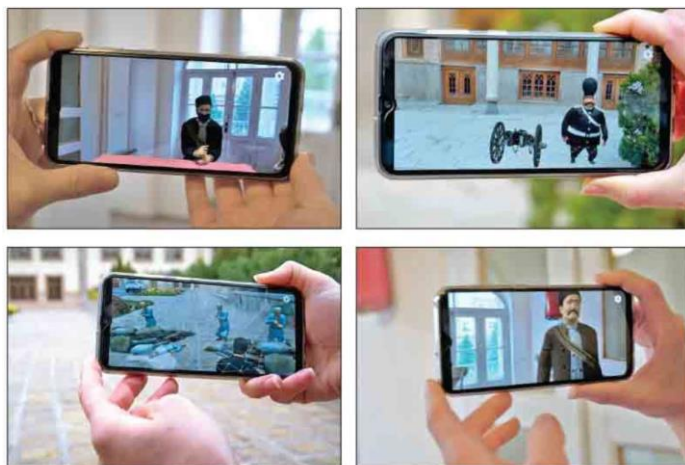


Figure 1: the game environment of Sardar Sattar Khan game

Gameplay is a recent and growing subject that has sought a unique niche by incorporating game-like functionality and characteristics into non-game-like environments. One of the game's applications deals with education and tourism. Various studies have shown that this technology, which increases tourism awareness, appears to have affected economic growth and increased the number of tourists to neglected parts of the country (Sepehri & Pirbazari, 2021). Following the widespread availability of the Internet and the growing use of smartphones, mobile applications with educational purposes and social networks have recently provided new facilities to boost tourism in Iran. According to statistics, there were 88 million active mobile phones in Iran in 2018. The penetration of mobile phones has surpassed 110 percent (Sepehri & Pirbazari, 2021). Furthermore, an average of 4.2 travel-related applications are installed on mobile devices. Iran's application industry grew a great deal in 2018 and 2019. As a result, mobile apps with educational and gaming purposes have considerable potential for increasing tourism in Iran. The Sardar game was developed and introduced for smart phones using augmented reality technologies to familiarize and educate about the events and prominent historical figures of the Qajar era.

SWOT Analysis of Two Games

According to the work of Xu (2016), identifying challenges and opportunities for serious games with the aim of promoting tourism can shed light on the nature of policy-making and executive measures. To assess the tourism potential of gamification in Iran's historic city of Shiraz, a SWOT analysis was conducted of two prominent game applications currently used in the city among domestic tourists in an effort to explain visitors' knowledge and effect change in their tourism behaviours. SWOT analyses (Strengths, Weaknesses, Opportunities, and Threats) are a popular planning and evaluative tool for analyzing internal and external environments as a means of making informed decisions (Kotler, 2001; Wheelen et al., 2017). In what follows, the strengths, weaknesses, opportunities, and threats were identified through observations and documentary data against the marketing concepts of raising brand awareness, enhancing the tourist experience, engagement, improving customer loyalty, providing entertainment, and managing employees, as noted previously (Tables 3 and 4).

Table 3. Matrix of internal and external factors in the Sange Siah game

Factors	Strength	Weakness	Opportunity	Threat
Raise brand awareness	-Tourists can visit attractions and complete challenges based on tasks assigned to them. - The game attempts to convey historical	-Does not have any connection with social media -It doesn't show the local culture	-Encourage travellers to visit a place. -Encourage visitors to participate in city walks, which will be documented and shared on social media. -People who live in the area are attempting to make tourists feel more	

	information while focusing on a less-visited area of the city.		welcome by understanding the increased attention.	
Enhance tourist experiences	-In these games, the environment has been used to stimulate a fantasy, such as location, weather, and a specific season, all of which contribute to the stimulation of fantasy emotions. -tourists can interact with historical buildings and characters		-Tourists can take a picture and share it on social media -This game encourages tourists to actively investigate the history of each building and attraction, as well as to interact with the destination in a fun way. -The game serves as a motivator for tourists to return to the location and explore it further.	
Engagement	-Players use smart phones to follow the game's story and find the hidden sites.	-Players of Raze Sange Siah are compelled to visit the locations in a hurry in order to complete the game due to the element of competition and winning.		
Improve customer loyalty		This gamified app does not use any elements such as leaderboards, progress bars, levels, rewards, gifting, or sharing to increase customer loyalty.	-It is possible to include any item such as a leaderboard, progress bar, levels, rewards, gifting, and sharing in this gamified app to increase customer loyalty and help promote the tourist attraction.	
Entertainment	-The game is designed in such a way that tourists can pause at any time, take a break, and eat something.	- It is necessary to visit all locations in order to complete the game. In theory, this could tire or bore some players.		-The amount of time dedicated to games is far greater than what is required to complete the tour.
Employee		-It does not have	-It could add some items	

management		any items to get the get know about the employee management	to generate players to work and participate in some works in this old district. -People can convert their homes into traditional guest houses, which will bring in more money for the residents and, in the long run, improve the living standard in the area, while also providing tourists with the opportunity to live in the area and have another novelty experience of real life while providing them with cheaper accommodation.	
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Table 4. Matrix of internal and external factors in the Sardar Khan game

Factors	Strength	Weakness	Opportunity	Threat
Raise brand awareness	-Tourists can visit tourist attractions and complete challenges based on tasks assigned to them.	-Does not have any connection with social media -It does not show the local culture	-Encourage travellers to visit a place. -Tourists will be encouraged to participate in these city walks, which will be documented and shared on social media.	
Enhance tourist experiences	-In these games, the environment has been used to stimulate this fantasy, such as location, weather, and a specific season, all of which contribute to the stimulation of fantasy emotions. -Visitors are encouraged to interact with their surroundings by being augmented with the surrounding environment.	-Tourists cannot choose their avatars and play as someone else to enhance their fantasy experiences.		
Engagement	-To win points, players must choose a sight, find it, and take a photo of it. They can then unlock the sight description and discover other photos related to that sight. -During the game,		-The player can discover some hidden items and thus interact with the museum's environment.	

	players can discover new items and learn more about them			
Improve customer loyalty		- In this gamified app, no items such as a leaderboard, progress bar, levels, rewards, gifting, or sharing are used to increase customer loyalty.	-It is possible to include any item such as a leaderboard, progress bar, levels, rewards, gifting, and sharing in this gamified app to increase customer loyalty and help promote the tourism attraction.	
Entertainment	-This game guides tourists around and allows them to take photos with virtual figures.		-It provides tourists with fun, interactive, and engaging experiences by incorporating some gaming elements such as reward, story telling, and fun.	
Employee management		-It does not have any items to get the get know about the employee management	-It could be possible to add some items to encourage players to work and participate in some works in this museum.	

Conclusion

Gamification and serious games are relatively recent trends in tourism that necessitate academic research (Pasca et al., 2021; Xu & Buhalis, 2021a). The few initiatives that are using the game platform for more than just creating brand loyalty or promotion, and that are attempting to develop innovative opportunities for visitors, need funding to remain operational. The high maintenance cost of such games, combined with their relatively unknown position in tourism, are working against their development. Nevertheless, once they create their place in the industry, they have the potential to make a difference in learning about and appreciating the cultural and natural assets of the destination. The younger generations are accustomed to dealing with games on a daily basis. Competing against their enjoyment for these games is a challenging task for educators who must combine education and entertainment to create a more aware generation, especially in heritage settings (Timothy, 2021). With less historical knowledge and interest in historical and cultural attractions, Iran and other countries will face undesired consequences. For example, an uninformed populous is often considered the cohort that does the most damage to local landmarks, and historical sites are being replaced with modern structures instead of being protected or restored.

We can see that in the case of REXplorer, the program is supported by an investor in the industry, a museum, and it enjoys the benefit of being widely

advertised. In contrast, Raze Sange Siah and Sardar are private projects with no support from industry investors and were developed in response to a personal desire to guard a city's heritage. These games are operating on a minimal margin of profit and may soon be cancelled if not supported better.

Iran's Ministry of Cultural Heritage, Tourism and Handicrafts (MCTH) should help the private sector improve tourism-based games. These games can bring more Iranian tourists to under-visited attractions and help the younger generation see their country's heritage in a new light. Moreover, these games can be translated into other languages, which will absorb more specialized tourist groups seeking novel experiences abroad. Indeed, given the increased focus on technology in tourism marketing, visitor management, destination development, and heritage protection and interpretation, serious games have a great deal of potential to play a more salient role in heritage tourism in Iran and throughout the world.

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