Serious Games and the Gamification of Tourism

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Abstract
Gamification has become a focus of attention in an increasing number of fields including business, education, and health care. Through a wide range of applications and support functions, its potential for the tourism industry is significant. Gamification of tourism can contribute to a more rewarding interactions and higher level of satisfaction, as well as increase brand awareness and loyalty to the destination.

As one of the first attempts to conceptualise gamification of tourism, this paper examines gaming in general terms and the application of it in specific tourism fields. It identifies game design elements that can contribute to a meaningful gamification. A few cases of best practices are presented to show how this innovative concept can benefit tourism marketing. Implications for tourism marketing and management are discussed as well as future research recommendations.

Keywords: gamification, serious games, engagement, loyalty, tourism experiences

1 Introduction
Persuasive computing technology has become popular in our daily lives (Bogost, 2007; Shuib, Shamshirband & Ismail, 2015). Serious games, as a type of persuasive technology, are computer/video games with a set of cognitive design properties to focus on changing user behaviour and transferring knowledge, instead of the mere entertainment function of traditional games (Ghanbari, Simila & Markkula, 2015). They are widely used in training, medical applications and leisure activities in the last
decade (Oinas-Kukkonen & Harjumaa, 2008). Researchers (Xu et al., 2015, P2) suggest they could “collect information about consumers, determine behaviour patterns, thought processes, priorities and interests, the aims of these games usually include using gaming technologies and methodologies to engage users at a deeper level and to improve their experiences”. After reviewing 143 papers on games and serious games, Boyle et al. (2016) claim serious games often relate to knowledge and skill acquisition and lead to better performance.

The popularity of video games in the past decade, empowered by the rapid development of smart mobile devices, allowing mobile experiences (Gentes, Guyot-Mbodji & Demeure, 2010) and vibrant on site communication, has made gaming popular and attractive to a broader group of players. Recently, serious games and the application of game elements have drawn a great attention from different fields, including education, heath, and tourism, motivating its adoption in a non-gaming context (Xu, Weber & Buhalis, 2014). The recent 5 years has seen the spread of the terminology ‘gamification’ (Epstein, 2013). It usually refers to the application of game mechanism outside its original domain (Deterding et al., 2011). Through a wide range of applications and support functions, its potential for business is significant, such as engaging customers in experiential co-creation and training service providers for innovative processes and functions.

Seaborn & Fels (2015 p16) state that gamification has its “roots in marketing endeavours”. For example, loyalty cards, stamp books, competition and reward
memberships, are early approaches as customers can collect points to exchange for presents and gifts. Foursquare partners with some restaurants to redeem game players’ virtual rewards or check-ins into free cupcakes and drinks (Frey, 2012). WTM (2011) states gamification is spreading to the travel industry and predicts it to be a popular future trend for travel industry. Research on gamification is emerging with only a few academic papers discussing the use of gamification for marketing and service industry (Huotari & Hamari, 2012; Lucassen & Jasen 2014; Xu et al., 2014). Academic research on the use of gamification in tourism context is still limited with only a few exemptions (Xu et al. 2014; Correa & Kitano 2015; Negrusa et al. 2015; Sigala 2015a). The recently published book on ‘gamification in tourism’ (Bulencea & Egger, 2015) is a welcome addition to the theoretical development.

The aim of this study is to investigate how gamification could support tourism marketing. The objectives of this paper therefore include: 1) systematically review the concept of gamification; 2) explore game design elements that are applicable in the tourism industry; 3) review best case practices on the adoption of gamification in the tourism industry; 4) discuss the benefits of gamification for tourism marketing.

In order to investigate how gamification can benefit tourism marketing, this research has been conducted with an exploratory research nature based on mini case studies. A case study is a research strategy which usually studies one or multiple cases, often used when research is still in its early formative stage (Punch 2005). Gamification is a new research field with multidisciplinary attention, although some scholars have focused on this topic. In addition, this field is typically
characterised by the constant change in innovation and technology (Boes, Buhalis &Inversini 2015). Therefore, the case study method enables researchers to gain knowledge and to explore how the established cases use gamification for tourism marketing. A multiple case study research strategy has been used (Yin 1994) as it enables a more general overview of the results (Bonama 1985).

From Feb, 2014 to April, 2014, the researchers used search engine Google (google.co.uk) and Android (UK market) and Apple (UK market) app stores, and academic resources (Elsevier dataset) to check tourism/tourist games. Key words ‘tourism game’, ‘travel game’, ‘gamification’ ‘tourism gamification’ ‘location based game’ ‘treasure hunt game’ ‘augmented reality game’ ‘gamified app’ were used. Then a careful screening of each game/app was carried out, only those related to tourists/tourism games were saved. A content analysis was used for the case studies. A coding scheme is developed based on the analysis of secondary research on gamification and gaming elements. Each game was then coded by each researcher respectively based on the coding scheme. There was no obvious disparity at this stage and any ambiguity was discussed between the researchers. Key gaming elements were identified for each case. This process is followed by a cross-case examination and within-case examination along with literature review to develop coding clusters and to support external validity. From the final results, best practices are based on the following criteria: 1) respond not only to the extrinsic elements but also to the intrinsic elements; 2) use at least three gaming mechanism; 3) been awarded best gamification application or recommended by other researchers.
This paper starts with a discussion of the gaming theories, the concept of games, serious games and gamification, game design elements and framework. The second part includes how gamification has been used in the tourism context with case practises to explain how gamification may benefit tourism marketing. Finally, the paper ends up with a conclusion and possible research direction in the future.

2 Gamification Theory

2.1 The Concept of Games

Avedon & Sutton-Smith (1971) conclude game features include: voluntary participation, having certain rules, different parties may have conflicts and usually generate unequal results. Although different definitions have been used, researchers agree a set of game characteristics can be used to define games, such as rules, uncertain outcomes, conflict etc. (Juul, 2003; Salen & Zimmerman, 2004). After reviewing several definitions of games, Seaborn & Fels (2015 p16) summarize that the characteristics of games usually include “rules, structure, voluntary play, uncertain outcomes, conflict, representation, resolution, etc.’’. Rules build up boundaries and set up instructions of game play (Huizinga, 2000). Conflict includes both competition and cooperation between different parties and the game system itself (Xu et al., 2014). The uncertain outcome refers to winning, losing or scoring against the game goals or other players (Crawford, 2011; Reiser, 2012). Some games include an element of luck as a random value determining next movement of the process, while other games are driven by preference, knowledge, skill or collaboration between different players. Gaming can be very addictive as players are motivated to reach a higher goal, to score
points against each other and gain either material or non-material gains such as inclusion to the hall of honour (McGonigal, 2011).

2.2 Conceptualizing Gamification

Although there is no universal definition of gamification, Deterding et al.’s (2011) definition is widely accepted that refers gamification as contextualizing game design outside its original domain. Zichermann & Cunningham (2011) suggest gamification is to establish brand, engage users and influence their behaviour by using game mechanics in areas other than traditional gaming context. As Deterding et al. (2011, p10) suggest “gamification involves applying elements of gamefulness, gameful interaction, and gameful design with a specific intention in mind”. For example, designing a treasure hunt in a tourism destination will help visitors to explore various areas and to collect points, photos, memories and experiences but may not have winners or losers. Seaborn & Fels (2015 p16) further explain “gamefulness refers to the lived experience, gameful interaction refers to the objects, tools and contexts and gameful design refers to the practice of crafting a gameful experience”. The end result of gamification may or may not be a fully-fledged game and players may use it in a different way. Gamification is more about motivating people to take actions (Deterding et al., 2011) perhaps in a structured way and follow specific rules to achieve variable outcomes. Games are more about fun and entertainment, although they share the same concept of funware (Azadegan & Riedel, 2012). However, Seaborn & Fels (2015) argue that sometimes it is not easy to identify game elements. Therefore, it is inevitable to subjectively differentiate a fully fledged game and a gamified system which uses some game mechanics but not to create a whole game.
Nevertheless, gamification differs with games at the purpose of play. Gamification focuses on changing players’ behaviour, engagement with their environment and co-players who may also be fellow customers or service providers towards achieving meaningful interaction and engagement and potentially achieve rewards. In contrast, games focus more on entertainment and pleasure.

Alternative terms have also been used to gamification, such as ‘game based learning’, ‘serious games’ or ‘pervasive games’ (Bogost 2007; Kapp, 2012). This also makes it difficult to differentiate the concept of ‘games’ and ‘gamification’. Serious games often focus on changing behaviour and influence the user. Researchers consider those serious games as ‘alternative reality games’ (McGonigal, 2011) due to the fact that reality has been added into the fantasy world (Seaborn & Fels, 2015). The incoherent use of the terminology needs more academic clarity, particularly on how to differentiate gamified systems and fully-fledged games.

2.3 Theoretical Foundation of Game Design Elements

The MDA model (Mechanics-Dynamics-Aesthetics) can be used to explain game design from a systematic point of view (Hunicke et al. (2004). It divides game systems by breaking them into three different components, Mechanics, Dynamics and Aesthetics, which work together to create functional and hedonistic value of the game play and influence player’s experience.

Hunicke et al. (2004) define game mechanics as game tools which describe the specific components, which usually include achievements, collections, badges etc. Game dynamics connect the player with the system, such as the freedom of making
choices, progression to the next level, team work or competition with other players. Serious games include competitions against other players as part of the gaming experience whilst often concentrate on individual experience. Game dynamics work together to create a meaningful game experience, or in other words, aesthetics (Werbach & Hunter, 2012). Aesthetics describe emotional responses from the player, such as feelings (fantasy, sensation), emotions, and fun. The MDA works together towards the range of meaningful game experiences. Players experience game play from aesthetics which is influenced by game dynamics, which in effect is guided by game mechanics. From another point of view, through a set of carefully designed game mechanics, game designers can create the game dynamics, which will in turn generate unique game experiences for players. See Table 1.

Game dynamics, mechanics and components constitute game elements (Werbach & Hunter, 2012; Seaborn & Fels, 2015). A set of game elements have been proposed by Cunningham & Zichermann (2011) such as presents, collection, achievement, team work, feedback etc. However, these mechanics have been criticised by other researchers about whether they are crucial (Bogost, 2011; Robertson, 2010). Some researchers confirm achievements, avatars, badges, leader boards, levels, points, team working, unlocking and virtual goods are common game elements (Robertson, 2010; Bogost, 2011; Xu et al. 2014). Yee (2006) put gaming elements into three groups, namely behaviour, feedback and progress. Due to different types of games, some...
components may be more powerful than others (Werbach & Hunter, 2012; Xu et al., 2014; Seaborn & Fels, 2015).

However, some researchers state extrinsic gaming elements, such as points, badges and other rewards may de-motivate people. Zichermann (2011) points out some commonly used rewards, such as money, can de-motivate the player. Moreover, Werbach & Hunter (2012) criticise rewards may increase short term activity, while intrinsic motivation contributes to long term engagement and enjoyment. Hamari (2013) reports that extrinsic motivation such as reward has no effect on increased playing activity. Researchers suggest both intrinsic and extrinsic motivation need to be considered to create a meaningful gamification experience.

2.4 User input in gamification

User Centred Design (UCD) approach is a widely used approach in game design. It considers the end user’s needs and wants, identifies the player’s interests, emphasizing user involvement in the design process (Norman, 1988; Nicholson, 2012). Emphasizing user input, the carefully designed gamification system should identify the individual player’s needs, wants, abilities and limitations, and lead to the change of player’s behaviour.

The intrinsic motivation of game play refers to playing games for the pure enjoyment of game play (Ryan & Deci, 2000) and for the hedonistic value of game play. Successful gamification should address this intrinsic motivation by using game mechanics to respond to the players’ inner call, attracting them to the pure enjoyment
of the activities; to the hedonic function rather than the utilitarian function of gaming.

Holbrook & Hirschman (1982) propose that goods and services have both utilitarian and hedonic functions. From a marketing point of view, consumers can be divided into two groups: 1) people who look for the utilitarian function of the product; 2) people who search for hedonic value of the product, such as fun, enjoyment, fantasy feelings and sensory simulation. Utilitarian functions focus on what the product does, whereas, the hedonic function represents the aesthetic, intangible and subjective aspects of consumption. Meaningful gamification focuses on the hedonic function of gaming, addresses the intrinsic motivation of a person, leading to deep engagement and great satisfaction (Deci, Koestner & Ryan, 1999; Schell, 2008; Ryan, 2012).

Zichermann (2011) suggests that both intrinsic and extrinsic motivation should be considered in gamification and both monetary and non-monetary incentives should be used. To achieve a deep engagement and high satisfaction, gamification needs to respond to the players’ inner call (Nicholson, 2012).

Three groups of intrinsic rewards have been identified according to self-determination theory (Ryan & Deci, 2000): namely relation, competence and autonomy (Schell, 2008; Deterding, 2011; McGonigal, 2011).

1) Relation involves interacting and connecting with other players (Schell, 2008; Deterding, 2011). Groups, messages, blogs, chat, connection to social networks are usual representations of relation (McGonigal, 2011). In the tourism context, ‘relation’ associates with socialization as an important motivation for tourists (Pearce & Lee, 2005). Tourists go on holiday to socialize with friends and family, to develop new friendship and share their experiences or memories with friends connected via internet.
This is similar with the intrinsic reward of ‘relation’ in gaming experiences. Players can interact with co-players and share their playing experiences with connected friends in the gamification system.

2) Competence usually includes game player’s feeling of having the ability to master the system and achieving goals, such as instant feedback, progression, leader boards and levels (Csikszentmihalyi, 2008). Similarly, tourists’ leisure motivation also includes challenge and mastery (Beard & Ragheb, 1983). Tourists go on adventure holidays to look for self-challenge and tourists go on special holidays to learn new skills and abilities. Through gamification, tourist players can also gain competence virtually and have the feeling of achievement in the gamified system.

3) Autonomy is the personal will to action, such as the use of avatars in games (Schell, 2008; McGonigal, 2011).

Table 2 summarizes the extrinsic and intrinsic gaming elements.

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Aparicio et al. (2012) develop a framework of gamification using those intrinsic motivational forces. They suggest four steps, 1) identify the reasons of using gamification; 2) find out what intrinsic motivation can be addressed; 3) identify useful game elements; 4) consider evaluating the framework in applied system. However, as Seaborn & Fels (2015) point out the framework has not been applied yet, therefore,
more research work is needed. Burke (2014) proposes ‘player experience design process’ which consists of seven steps, namely 1) business outcomes and success metrics; 2) potential user; 3) player goals; 4) engagement model; 5) play space and journey; 6) test; 7) repeat. Werbach & Hunter (2012) suggest a design framework with Define-Delineate-Describe-Devise-Deploy. Yet, the above mentioned frameworks have been criticised by Bulencea & Egger (2015) as they argue that gamification design should not be a linear process. They argue (p58) “It should rather be a multi-stage design approach that aims to enhance experiences as the nature of experience design process is non-linear and unclear”. This view is supported by Tung & Ritchie (2011) that the formation of experiences is a complicated process. In recognition of the complicated formation process of experiences, Huotari & Hamiri (2012) argue designed experience can not be assured for everyone.

Nevertheless, more attention should be given in exploring the design framework of meaningful gamification, particularly the application and validation of those frameworks, considering the nature of tourist experiences. Research on leisure experiences usually includes the following aspects: fantasy and fun (Holbrook & Hirschman, 1982), escape and relaxation (Beard & Ragheb, 1983), entertainment (Pine & Gilmore, 1999; Farber & Hall, 2007), novelty and surprise (Dunman & Mattila, 2005). Tourist experiences are full of individual significance and can be emotional and subjective (Uriely, 2005; Kim, Ritchie & McCormick, 2012). Therefore, the design frameworks need to consider different dimensions of tourist experiences.
The wide use of gamification is evidenced in education applications (Denny, 2013; Domoingez et al., 2013), health industry (Cafazzo et al., 2012; Hori et al., 2013), business training and marketing campaign (Barata et al., 2013), sustainable behaviour applications (Gnauk et al., 2012; Negrusa et al., 2015) and tourism industry (Xu et al., 2014; Correaa & Kitano, 2015; Sigala, 2015a).

WTM (2011) predicts gamification as a popular trend for tourism. Chaffey & Ellis-Chadwick (2012) propose gamification as an important trend for marketing. There is an emerging academic attention to this topic. A new book ‘Gamification in Tourism’ has just been published (Bulencea & Egger, 2015), and discusses how gamification can contribute to memorable tourist experiences.

Vargo & Lusch (2008) introduce the customer’s role in value co-creation. Tourism experiences are co-created by both the tourists and the service providers (Neuhofer, Buhalis & Ladkin, 2012). Tussyadiah & Fesenmaier (2009) believe these experiences can be mediated by technology. With the fast development of new technology, tourists are now seeking more personal, unique and memorable experiences, which require a deeper engagement and a multi-sensory stimulation. New technology such as virtual reality (Gretzel & Jamal, 2009), augmented reality (Yovecheva et al., 2013), offer technology mediated experiences, making experiences richer and more participatory. Neuhofer et al. (2012) discuss how technology including gaming can help co-create experiences, a term as ‘technology enhanced tourism experiences’. A number of tourism destinations and organizations have already experienced
gamification for marketing, sales and customer engagement. Research on

gamification suggests it can influence user experiences at the following aspects: social,
emotional, and create an immersive experience of the user (Xu, 2011; Hamari et al.,
2014). Sigala (2015b p202) verifies these functions through a recent questionnaire
survey with users of Trip Adviser, proving that gamification can enhance tourists
experiences by “getting tourists immersed into a simulated travel world”, which is
fantasy and fun in nature.

Gamification can benefit tourism marketing at the following areas:

3.1 Raise brand awareness

One of the biggest areas in tourism gamification is destination marketing. Celtek
(2010) discusses how games can contribute to advertising: (1) Specifically designed
advergames. They are created to promote the brand, aiming at the association and
recall of the brand (Celtek, 2010; Sigala, 2015). Irish National Tourism Development
Authority is the first national tourism organization to sponsor an advergame based on
social media (Correa & Kitano, 2015). “Ireland town” is a game based on Facebook,
where potential tourists can explore Ireland’s tourist attractions, complete challenges
based on given tasks and win trips to Ireland; (2) Integrating the brand with a live
game. The brand becomes part of the game (Celtek, 2010, P269). Foursquare has
successful partnerships with many brands, such as Starwood, Pizza Hut, which
promotes these brands during the game play for check-ins and share their experiences
via social media (Xu et al., 2014); (3) On-site advertisements refer to banners and
other media in games to remind users of the brand to recall a message. Research suggests people who choose the brand in the game tend to make a purchase for the same brand in the real world (Çeltek, 2010). This work is on car purchasing behaviour and therefore further investigation is needed in the tourism context. Afshar, Jones & Banerjee (2004) suggest compared with traditional forms of advertisements, mobile advergames are non-intrusive, providing a good opportunity for marketing and branding. Sigala (2015a) observes advergames can be easily distributed on websites or mobile phones and tourists can play them repeated while travelling, fostering an interaction with the brand.

The tourism industries may place specific tourism brands when designing games. In fact, some games are specifically designed to raise brand awareness, to encourage travellers to visit a place. The ‘Smiled Land Thailand’ game is specifically designed by Tourism Authority Thailand (TAT) as part of its digital marketing strategy, based on the tourism attractions of Thailand. The game aims at potential young tourists who use Facebook to generate brand awareness of Thailand as a tourist destination (Fig 1) and also to increase user frequency to TAT’s social networking media and mobile applications. Thailand’s iconic attractions, branded restaurants and shops are set up as the virtual background for players. The Brazil Quest game was launched by the Brazilian Tourist Board to promote the hosting cities of FIFA (Correa & Kitano, 2015). The images of tourism attractions and brands in each city as well as characteristics of local culture are placed in the game. Lufthansa has developed an online game that allow players to view some of their destinations (Canada, Thailand,
Brazil) virtually and through interactive involvement players can get to know the tourism attractions and their brands (Sigala, 2015b). Such an innovative way of tourism marketing uses some popular gaming elements, such as avatars, rewarding, gifting, sharing and fun. It also offers an opportunity for tourists to experience the destination virtually. Discover Hong Kong city walk is a gamified mobile app that offers city walks structured around four different topics, such as travel through time, adventure in architecture, etc (Bulencea & Egger, 2015). Tourists will be encouraged to take these city walks and will be awarded a stamp when they finish at least 50% of their walk, which can be shared on Facebook (Stadler & Bilgram, 2016). This app is one of a few mobile apps initiated by Hong Kong Tourism Board for the purpose of promoting sites and encouraging tourists to visit more places in the city.

Besides, these games can also be used as a virtual community between players to communicate information about the destination. The effect of online communities can not be ignored due to their influence on the ‘world of mouth’ marketing (Buhalis & Law, 2008). Researchers suggest the benefits for service providers of using online communities maybe include brand awareness and feedback collection (Buhalis & Law, 2008). In fact, the online gaming community of ‘second life’ has been used by Starwood Hotels to test their new hotel brand W- hotel as a platform to collect game players’ opinions about the hotel design (Huang et al., 2013). After reviewing 10 advergames in tourism related context, Çeltek (2010) suggests the advantages of using games for advertising include building brand loyalty and capturing data about
players, allowing understanding the preference of the customers. Although currently tourism related games are still limited, Guttentag (2010) state virtual gaming community might become an important form of online community in tourism marketing. Gamification, as a new technological tool, could contribute to tourism marketing.

Middleton, Fyall & Morgan (2009) propose experiential information can generate interest in marketing. Williams (2006) and Bogdanovych et al. (2007) also suggest virtual environments can provide a stimulating, entertaining and immersive experience when marketing tourism destinations. The widely used technology in gaming, such as virtual reality and augmented reality, provides players an opportunity to get to know the destination and experience the destination in the virtual world, contributing to a memorable experience, and generate visiting interests (Berger et al., 2007; Hay, 2008). Therefore gamification as a form of virtual experiential marketing, offers an opportunity to experience the destination virtually in an entertaining setting, increases the brand awareness, provides meaningful experience to market the tourist attractions and encourages deeper engagement for tourists with the destination.

3.2 Enhance tourist experiences

In recent years, tourism experiences have become a research focus. Researchers believe that tourism industry should provide a multi-dimensional and multifaceted experience for tourists (Ritchie & Hudson, 2009; Kim et al., 2012). Not only can gamification bring a new, innovative way of marketing, raise brand awareness, but it
can also be used to enhance tourist on site experiences. Gamification can add to on
site experiences at the following areas: fantasy, immersion and fun.

The fantasy experiences and the freedom to act in a virtual world are important
motives for game players (Xu et al., 2015). In video games, the environment has been
used to stimulate this fantasy, for example, location, weather, and a specific season,
which all add to stimulate fantasy emotions (Bulencea & Egger, 2015). In a carefully
designed gamified system, tourists can choose their avatars and have the freedom to
play someone else, to enhance their fantasy experiences in a fun, and more
stimulating way, leading to a higher level of satisfaction.

Regensburg is a UNESCO World Heritage Site in Germany. In order to improve
tourists’ active learning about the history at the destination, a mobile app ‘REXplorer’
has been developed (Waltz & Ballagas, 2007). Using fantasy role play, tourists can
act as assistants to a virtual figure ‘Rex’ to explore the destination. Tourists, guided
by the mobile app, play the game whilst seeing the sights, interact with historical
buildings and characters. They can take pictures and receive a personalized geo-
referenced webblog of their walk when they finish the game (Fig.2). This game offers
the virtual avatar, allowing tourists to play someone else to experience Regensburg.
The nature of this experience becomes fantasy and personal, and adds fun to the
visitor. Rather than passively seeing the historical buildings, the game encourages
tourists to actively explore the history behind each building and attraction, to engage
with the destination in a fun way, offering a deeper understanding and meaningful
experience.
The concept of immersion from gaming can also be used to enhance tourist experiences. McMahan (2003) defines immersion as the psychological components of concentration, emotion and cognitive evaluation of the game. Takatalo et al. (2010) propose immersion as an important part of the game experience. Ermi & Mayra (2004) categorize three types of immersion, namely: 1) sensory immersion (the stimulate of the game, such as sound); 2) challenge-based immersion (challenges and abilities); 3) imaginative immersion (imagination, fantasy and empathy). In the tourism literature, Pine & Gillmore (1999) explain the feeling of getting immersed and emotionally attached to the environment/destination can be part of the tour experiences. Kim, Ritchie & Macornic (2013) suggest tourists’ immersion within the destination contributes to their memorable experiences. Through the stimulating of augmented surrounding environment, the virtual sound, the imaginative stories, and the challenges brought by the game tasks/missions, players could immerse themselves in sensory, challenge-based and imaginative immersion, which all contribute to a deeper level of personal experiences.

For example, 3D technology, virtual technology and Augmented Reality as main technology tools in games, can offer a stimulating and immersive experience to the tourist players. Some tourism destinations offer augmented reality tours for their mobile apps such as Tuscany, Hong Kong and Scotland. The pop up text, sound stimulation and the virtual pictures, augmented with the surrounding environment, encourages the visitor to interact with his surrounding attractions, providing an even
more stimulating and immersive experiences with the real environment. The foundation of Hellenic World in Athens (Foundation of the Hellenic World 2016) offers a 3D virtual tour to Ancient Miletus, providing an immersive experience of attractions including theatre, harbour, Tholos etc. to tourists. Through this sensory immersion, a gaming enhanced aesthetic experience is delivered to tourists.

3.3 Engagement

In the gaming literate, a set of gaming mechanisms work together to improve the players’ engagement with the game system (Ermi & Mayra, 2004). Player’s high engagement contributes to their game experiences (Klimmt, 2003; Jennett et al., 2008; Brown & Vaughn, 2009), and the emotional enjoyment of playing leads to more engagement of game play. In the marketing literature, researchers believe customer engagement with the brand will improve brand loyalty (So et al., 2016). Vivek, Beatty & Morgan (2012) believe a high engagement with the customer contributes to the formation of positive attitudes towards the brand. Engagement is also an important dimension of co-creation in services management. The concept of co-creation emphasise the role of tourists, focusing on the user involvement in the dynamic design process of experiences. How to encourage tourists to engage more with the destination is critical for destination competitiveness. Researchers believe that the tourism industry should provide a multi-dimensional and multi-faceted experience for tourists (Ritchie & Hudson, 2009; Kim et al., 2012). Experiences could happen through all contact points (Hoarau & Kline, 2014). Pine & Gilmore (1999) conclude four levels of engagement for tourists, such as emotional, physical, intellectual and spiritual engagement, which is part of their personal experiences. Games provide a
means of dynamic interaction through suggested tasks/missions, and link with surrounding physical locations (location based games), challenge the player virtually, providing instant feedback for the player’s achievements, responding to the players emotions in a fun and rewarding way before, during and after trip.

Goecatching is a popular outdoor game based on the classic treasure hunt (Fig 3). Players use GPS enabled devices (such as smart phones) to find treasure boxes on site. Initially, it was not specifically designed for tourism, but now Goecatching also partners with local tourism associations to create special treasure hunt tours. Based on the location and description provided, players look for the hidden treasure (Bulencer & Egger, 2015). Through this engagement, players are encouraged to interact with the destination on site. Sighter is another location based game developed by Waterways Ireland. Players select a sight, find it and snap a photo of it to win points, they can unlock the sight description and discover other photos related to that sight. Both games are typical location based treasure hunt games, providing a way of vividly experiencing the destination, encouraging tourists to engage with the destination. Linaza, Gutierrez & Garcia (2014) suggest tourists could learn about the destination when they follow recommended attractions/treasure in those games, which will improve their on site experiences. Involving tourism organizations can also create awards such as free tickets, food and engage local enterprises in co-creation.

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3.4 Improve customer loyalty
Marketing researchers suggest customer loyalty include behavioural loyalty, attitudinal loyalty, and composite loyalty (Jacoby & Kyner, 1973; Jacoby & Hestnut, 1978). Gamification could improve loyalty programs by adding fun and relatedness, bringing dynamic interactions between different players through team working, sharing and between the player and the game itself through challenge and achievement (Clanton, 1998; Schiano & White, 1998). By using game mechanism such as points, rewards, leader board, sharing and competition, gamification can respond to both behaviour and psychological needs of the customer, link to both behaviour and attitudinal loyalty, stimulate a more dynamic and fun process towards building behaviour loyalty, attitudinal loyalty and composite loyalty.

Airline frequent flyer programs are mainly designed to create customer loyalty by offering advantages if the customer flies regularly. Air Canada has developed an application ‘earn your wings’ to gamify their loyalty programs. Players could get 200 points with each take-off and landing when flying with Air Canada. To climb up to the top of the leader board, the player needs to fly from designated airports named Pit Stops (http://earnyourwings.aircanada.com/en). Leader board, progress bar, levels, rewards, gifting and sharing are used to increase customer loyalty in this gamified app (Fig 4).

3.5 Entertainment

Fun is a basic gaming element for every game. Games will bring fun and entertainment to marketing (Zichermann & Linder, 2010). Games as an entertainment
tool, can be played before, during and after the trip. From tourists’ point of view, pre-
trip games are mainly played to kill time, while during trip games are played to
enhance on site experiences particularly those location based games (Xu et al., 2015).
Stratford upon Avon, the hometown of Shakespeare, has developed a new app ‘Eye
Shakespeare’. This gamified mobile app, uses augmented reality tool to provide the
tourists with a 3D virtual ‘Shakespeare’, who introduces his birth place, shows
tourists around and allows tourists to take a photo together with this virtual figure (Fig
5). Instead of traditional tour guides, this virtual figure of ‘Shakespear’ telling his own
stories is much more fun. By using some gaming elements such as reward, story
telling, fun, it provides tourists with a fun, interactive, and engaging experiences.

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3.6 Employee management
Gamification can also be used as employee management and training tool, an inward
function of gamification.

‘Marriot my hotel’ is a game based on Facebook launched by Marriot Hotel Group.
Players can play as managers of a “virtual” restaurant in the hotel,
(www.news.marriott.com). They can create their own restaurant, where they can buy
equipment and ingredients on a budget, hire and train employees, and serve guests.
When they proceed, they can also play other roles in the hotel. Points will be given
when they satisfy a customer’s need. In the end, players will get rewards if they make
a profit (http://news.marriott.com/2011/06/my-marriott-hotel-opens-its-doors-on-
facebook.html). The aim of this game is to get people to know the operation of hotels,
generate interests to work in hotels, and stimulate new staff training for human resources (Xu et al., 2014).

Table 3 summarizes some of the best practice cases in the tourism industry.

In addition, some of the useful gaming elements have also been used in tourism sectors without developing a specific game. For example, KLM uses the gaming element of surprise and gifting, to deliver a surprise gift to KLM travellers using data generated from Foursquare and Twitter (Bulencea & Egger, 2015).

Table 4 identifies the benefits of tourism gamification. Generally speaking, the benefits of tourism gamification include two aspects: the outward function and inward function of gamification. The outward function refers to tourists’ experiences before, during and after trip. Before the trip, tourism specific games (Online games; mobile games) feed tourism information to potential tourists, generate interests, and stimulate visiting inspiration. Useful tourism information may convert to sales/purchases. During the trip, location based games as an entertainment tool can encourage tourist engagement, enhance on site experiences. After the trip, on line games can recall memories, invite friends to share experiences and advocate the destination. Rewards/coupons in the game and gamified loyalty programs may encourage repeat visits. The inward function of gamification mainly includes the use of games to
familiarize the employee, and the use for staff training programs such as in the case of Marriot hotel.

**4 Conclusion and Further Research**

Gamification has become a focus of attention in an increasing number of fields including business, education, and health care. This paper reviews the trend of gamification, systematically conceptualizes gaming and gamification in general terms and in specific tourism fields. Drawn on MDA model, it identifies game design elements, and discusses intrinsic and extrinsic motivational factors that contribute to meaningful gamification. It recommends some of the best practices of gamification in the tourism context and discusses the benefits of gamification in tourism marketing. Extensive literature review demonstrates that gamification is a vital movement for business in general, and it is also emerging as a future trend for tourism. A wide range of tourism sectors are applying gamification into tourism marketing practices, co-creating tourism experiences and training employees.

A set of gaming elements has been identified, such as, the commonly used badges, rewards, points (extrinsic elements), relation, autonomy and competence (intrinsic elements). As intrinsic elements respond to the players’ inner call, focusing on the hedonistic function of gaming, it is often found to be more influential, and will contribute to a deep engagement and great satisfaction (Deci et al., 1999; Ryan, 2012). Meaningful gamification should not only emphasize extrinsic elements but also focus on intrinsic elements (Zicherman, 2011). Based on the self-determination theory

**INSERT TABLE 4 NEAR HERE**
(Ryan & Deci, 2000), some design frameworks of gamification have been proposed (Aparicio et al., 2012; Werbach & Hunter, 2012; Burke, 2014).

Through a wide range of applications and support functions, the potential of gamification for the tourism industry is significant, such as engaging tourists in experiential co-creation and training service providers for innovative processes and functions. Gamification can be used to enhance tourist on site experiences, and also to be used as an innovative marketing tool before the trip or to share experiences and stimulate repeat visit after the trip. Gamification is emerging as an innovative way of marketing that can attract potential tourists, build up unfamiliar tourism brands, particularly for those less well known destinations. A few best practice cases show the innovative concept of gamification has been widely used within the industry, including Destination Management Organizations (DMOs), airlines, hotels etc.

Gamification of tourism can contribute to a more rewarding interactions and higher level of satisfaction, as well as increase brand awareness and loyalty to the destination. Based on game design elements, tourist players will experience challenges, rewards, competition, story telling, fantasy, role play etc, enhancing their on site experiences at the destination. The gamified system creates fun, engaging, rewarding tourist experiences, contributes to a deeper engagement, understanding and learning, higher satisfaction with the tourism company, establishes a fun and personal experience, which contributes to increased brand awareness, built up customer loyalty, and enlarged profit for the tourism company. To the tourists, the benefits of gamification include both the hedonistic value of the game play, such as the enjoyment and fun of playing games, and utilitarianistic value of the game, for
example, the tourism information provided in the game, the rewards (free tourism tickets and sales coupons) generated from gameplay. To the tourism company, the benefits also include a dynamic engagement with the customer, increased brand awareness and promotion and added customer loyalty. However, gamification has its own weakness and limits, for example, it usually appeals to younger generation and the results of gamification maybe context specific, therefore, a careful design is needed.

Nevertheless, gamification is an emerging research topic in many fields, such as education, business management, marketing, health, sustainability and computer science. Academic research on the application of gamification in specific tourism field is still scarce. As tourism gamification is still in its infancy, only a limited amount of existing research is relevant. This paper is only an exploratory research that tries to conceptualize gamification in the tourism context with a few case examples. Besides, gamification is involving rapidly in the industry and new games and new applications are emerging everyday, such as the popularity of Pokémon GO. Research on gamification of tourism needs to be constantly re-validated and a continuous investigation is needed. Based on the results in the paper, the researchers would like to suggest the following research directions: 1) the difference between a fully fledged game and the gamified system and whether this would influence user experiences; 2) the design process of gamification in the tourism context based on the nature of tourist experiences; 3) the successful implication of useful gaming elements in different sectors in tourism; 4) in-depth case studies and empirical research on the
effectiveness of gamification’s influence on sales and purchase behaviour in the
tourism context. 5) tourists’ and service providers’ preference on tourism gamification
from a user perspective.

References
Macromedia Flash MX 2004 and Director MX. Hingham, MA: Charles River
Media.
application of gamification. In Proceedings of the13th International Conference
on Interacción Persona-Ordenador. Presented at INTERACCION’12, ACM,
Elche, Spain, p.17.
Wiley.
International Conference on Advanced Learning Technologies. Presented at
students with gamification. VS gaming conference proceedings. Bournemouth,
UK.
Research, 15 (3), 219-228.
Berger, H., Dittenbach, M., Merkl, D., Bogdanovych, A., Simoff, S., & Sierra, C.
dimensions. In Tussyadiah L., & Inversini, A. eds. Information and
Communication Technologies in Tourism 2015 (pp. 391-403). Wien: Springer.
Proceedings of the International Conference in Lugano. Springer
The role of online travel agents in the experience economy. In Proceedings of
the 14th international conference on information technology in tourism ENTER,
Ljubljana, Slovenia, January 24–26.
Press.
Brown, S. L., & Vaughan, C. C. (2009). Play: How it shapes the brain, open the


Kapp, K. M. (2012) The Gamification of Learning and Instruction: Game Based Methods and Strategies for Training and Education. Pfeiffer: San Francisco. CA.


Sigala, M. (2015a) Gamification for crowdsourcing marketing practices: applications and benefits in tourism p129-145 in F.J. Garrigos-Simon et al. (eds) Advances in Crowdsourcing. DOI: 10.1007/978-3-319-18341-1_11


