The Effects of Design Elements on Location-Based Gamification: A Case Study of the ChengChi Adventure App

[Shari S. C. Shang, Vincent Y. C. Lai]

Abstract—**The rapid growth in the use of location-based gamification by enterprises will provide the motivation for the proposed research. In this research, I first focus on the positive consequences of the incredible growth of this trend, and show that it is worthy of analysis. Second, I attempt to address the negative aspects of the trend by examining the questions raised and difficulties encountered when enterprises use location-based gamification. Third, I identify the design elements of location-based gamification and define brand experience and brand loyalty. Fourth, I outline hypotheses regarding the relationships between the design elements of location-based gamification and brand experience, and between brand experience and brand loyalty. The objective of the proposed research is to help enterprises to better understand the use of location-based gamification to enhance brand experience and brand loyalty**

Keywords—**location-based, gamification, experience, loyalty, design element,**

I.   Introduction

There are three key reasons for the rapid growth of location-based gamification. 1. Mobile-device functionality is comprehensive and in an advanced stage of development. 2. Enterprises regard location-based gamification as capable of enhancing brand experience and increasing users' engagement. 3. The location-based services provided by mobile devices have reached a mature stage of development, and are used frequently.

According to Constellation(2011), gamification yields positive outcomes for enterprises. Constellation predicts that more than 50% of all social business initiatives will have implemented a gamification component by 2013[1]. In addition, Gartner(2012) predicts that 40% of 1000 organizations around the world will be using gamification by 2015[2]. It can be concluded from the foregoing predictions that gamification will be used increasingly by enterprises to

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assist their market planning. Enterprises should thus implement gamification to avoid falling behind their competitors.

However, Gartner(2012) also states that 80% of existing gamified applications will fail to meet businesses' objectives in 2014, primarily due to poor design. This suggests that although gamification has limitless potential, enterprises do not understand how best to use this method to increase customer benefits or loyalty.

After identifying these trends and forecasts, I think that enterprises' primary goal in using gamification is to increase customers' contact with brand-related items and thereby increase customer loyalty. Therefore, I plan to analyze the characteristics of individual elements of gamification design to provide enterprises with clear information on gamification and show them how best to deploy their limited marketing budgets for this purpose.

After examining the evidence provided by case studies and previous research, I will investigate gamification in greater depth by adding a location-based element to the gamification process, because location-based services provide gamification with interesting features, and it is very important for enterprises to know the locations of their customers[3][4]. My aim will be to to help enterprises to achieve their original aims in implementing gamification.

II.   LITERATURE REVIEW AND HYPOTHESES

A.   *Gamification*

. The word "gamification" may be unfamiliar, and its meaning unclear. The word was a term originated in the digital media industry, and has been used widely since 2010 [5]. However, the principle of gamification is not new [6].

A simple definition of "gamification" is the use of game thinking, game dynamics and game mechanics in the service process—via websites, campaigns and applications (apps), for example—to make users feel cheerful and thereby increase their engagement with a product [7].

"Gamification" may also be considered an umbrella term for the use of game elements to create gamefulness, gameful interaction, and gameful design [6]. It can be used to enhance the service experience and users' engagement with non-game services through gameful processes [6][8][9].

Coca-Cola's sponsorship campaign for the movie Skyfall, "Unlock the 007 in You," is an excellent example of gamification. Customers who bought Coca-Cola from a particular vending machine were given a 007-style mission with a reward for successful completion (tickets to watch Skyfall). This act of gamification enabled customers to experience the life of a secret agent, and gave them a new image of Coca-Cola (e.g. the perception that "Coca-Cola is cool and will make me stronger, faster and more handsome, like James Bond").

The case studies and literature on this topic all indicate that gamification is a broad concept that can be used by any industry in any medium (telephones, watches, mirrors, computers, monitors, etc.) and anywhere (home, restaurants, schools, parks, streets) to increase users' brand engagement or experience through enjoyment. By transforming users into players, gamification increases their brand loyalty and/or their desire to buy brand-related items [10][11].

The distinction between "game" and "gamification" is not always clear-cut, and the two words are much similar [6]. However, there are still some differences between the two concepts. From the perspective of vendors and consultants, gamification is related to benefits and customers' engagement[5].Overall, gamification was born for the brand's reputation and more concerned about the adoption of game thinking, game mechanics, game technology and game-design methods [5].

In terms of commercial value, gamification is also an effective marketing tool that can be used to engage customers with a particular brand through gameful processes. Gamification has a social function that engages users and increases their loyalty to a brand (Wireless News, 2013).

B. *Location-Based Apps*

Location-based applications use information on the geographical positions or physiological states of mobile-device users [12][13]. For example, players may be able to see enemies' locations within a limited range and access their partners' locations from any other locations. With advanced functionality, players may also obtain information on their partners' bodily states, moods and tactics [14]. Due to their convenience and potential advantages, location-based services have become central to the expansion of the mobile-device market [12][13].

C. *The Influence of Mobile Apps*

Most people carry their personal telephones with them at all times. With the development of 3G and 4G networks, mobile phones have become an important social habit, and we are accustomed to interacting with others on our mobile devices[4]. Credit Suisse (2012) estimates that 1 billion smartphone devices will be sold in 2014 alone [15]. Such predictions suggest that the number of smartphone users is increasing at an incredible rate, and that mobile apps thus have huge potential to help businesses improve brand experience, collect data and offer more interesting services.

Branded apps shape brand experience by exposing users to branded logos, slogans, icons and identities. As a method of "pull" advertising, they have a natural advantage:"pull" advertising is better than "push" advertising because it allows customers to choose which apps to download, and to control how much information will be revealed by the apps [16]. According to Hutton and Rodnick (2009), branded apps may be the most powerful and useful advertisement tool yet developed [17].

D. *Location-Based Gamification*

"Location-based gamification" is the combination of location-based services and gamification to create a better brand experience that engages more users. Innovatively combining location-based services with gamification can make any street corner or ordinary object meaningful and memorable [4]. Location-based gamification represents a new generation of both gamification and location-based service provision [3][14].

As location-based gamification is used more widely and considered more valuable than gamification in enhancing brand experience, collecting data and increasing profit; it is not merely an entertainment medium. Enterprises can combine location-based services with gamification to allow customers to access gamified apps anywhere and use them with ease. Location-based services help to make customers aware of the enterprise providing the gamified service, foster their commitment to the relevant brand and encourage them to spread positive information about the brand by word of mouth [3][18].

A simple example of the location-based gamification design is Foursquare, which combines a location-sharing service with gamification. Players receive points and awards for "check-ins," and compete with other players for rewards. The user with the highest number of "check‐ins" receives recognition and an honorary title. McKenzie(2011) argues that the use of location-based gamification to collect data and engage customers is surely worthy of additional study, as research on this topic is still at an early stage [3].

E. *Brand Experience*

Brand experience is created when customers come into contact with, shop for, receive and/or consume brand-related services, products or websites. The nature of brand experience is determined by brand-related stimuli such as logo, design, color, name, store environment and packaging [19].

According to Brakus, Schmitt and Zarantonello(2009), brand experience has four dimensions (sensory, affective, behavioral and intellectual), each of which can be evoked by particular brand-related stimuli [19].

1) The sensory dimension of brand experience:

The sensory dimension of brand experience comprises the "visual, auditory, tactile, gustative, and olfactory stimulations provided by a brand" [19]. Strong sensory impressions create a powerful sensory brand experience.

2) The affective dimension of brand experience:

The affective dimension of brand experience comprises the feelings or sentiments elicited by the brand and customers' emotional connection to the brand [19].

3) The intellectual dimension of brand experience:

"Intellectual brand experience" refers to the brand's ability to make customers think or elicit their curiosity [19].

4) The behavioral dimension of brand experience:

"Behavioral brand experience" reflects the brand's ability to make customers physically active and interact bodily with the brand [19].

A review of the existing evidence leads to two key observations on brand experience.1.The quality of brand experience produced by brand stimuli has a real effect on consumers' satisfaction, personal response and loyalty[19][20]. 2.Lee et al.(2011) define experiential marketing as the provision of memorable and compelling brand-related experiences[21]. Therefore, brand experience can be regarded as closely related to memory. According to Brakus, Schmitt and Zarantonello (2009), effective brand experiences are stored in customers' brains for longer, and continue to affect consumer satisfaction and loyalty after the experiences themselves have ended [19][22][23].

It can be concluded that the use of appropriate stimuli in location-based gamification to provide customers with more impressive or long-lasting brand experiences and memories will increase consumers' satisfaction and loyalty.

F. *Design Elements of Location-based Gamification*

As discussed previously, gamification entails the use of game-design elements to create gameful experiences [5], and there is no clear-cut distinction between game and gamificatio[6]. Therefore, understanding game-design elements is a good way of optimizing gamification design strategy. Taking a cognitive-psychological approach, Demetrovics et al.(2011) categorized 129 motives into the following 7 motivational(1.Escape 2. Coping 3.Fantasy 4.Skill development 5.Recreation 6. Competition 7. Social) areas to give 56 questionnaire items [24].

Following Sotamaa (2002), I will add a "location-based element" to my research to gain more in-depth insight into the trend of location-based gamification[4].

Based on the characteristics of the above game-design elements and existing research on the roles of various brand-related stimuli in shaping different dimensions of brand experience [19],I offer some hypotheses concerning each location-based gamification design element.

1) Design elements relating to "Escape":

Users exhibiting the "escape" motivation wish to escape reality, especially real-world problems [24].

Virtual reality (VR) is the technology most commonly used in gamification to enable users to escape the real world. Users experience a virtual environment by such means as body-tracking devices, visual displays or other sensory-input devices [25].

In the process of escaping reality, users gain a visual and sensory connection with virtual reality, leading to the following hypothesis.

H1: The design element of "escape" in location-based gamification positively affects sensory brand experience

2) Design elements relating to "Coping":

The "coping" element of gamification design concerns the use of gamification to help users cope with real problems (such as stress, aggression and anxiety) and manage negative moods and unwanted impulses [24].

The traditional definition of "coping" concerns the management of one's response to distress or other emotions. More recently, scholars have emphasized the connection between coping and controlling one's emotions [26][27][28]. According to the above research, design elements that successfully support the "coping" motivation must be familiar and related to our emotions. Based on the assumption that design elements related to the "coping" motivation help users to manage negative emotions and leave a strong impression in their minds, I offer the following hypothesis.

H2: The design element of "Coping" in location-based gamification positively affects affective brand experience

3) Design elements relating to "Fantasy":

The "fantasy" element of game design enables the user to step out of his/her usual identity into a new identity in a fantasy world, and to experience things that are impossible in real life [24].

According to Myers(1990), the fantasy element engages players, and Garris et al.(2002) add that the fantasy element can motivate users to take part in games and satisfy their individual psychological needs[29][30]. Malone and Lepper (1987) argue that the fantasy element can also fulfill emotional needs. According to this research, the fantasy element is directly tied to users' emotional and mental states [31].

For example, the "Unlock the 007 in You" gamification gave users the opportunity to assume the role of the handsome and charming James Bond: an example of gamification that presumably satisfied the psychological aspirations of many boys and men.

Based on the above research and the particular features of the "fantasy" element of game design, the following hypothesis can be offered.

H3: The design element of "fantasy" in location-based gamification positively affects affective brand experience

4) Design elements relating to "Recreation":

"Recreation" refers to engagement in games or activities for the purposes of enjoyment and relaxation [24].

The enjoyment that naturally arises from a user's mental engagement with a game can be termed the standard emotional response [32].

Recreation is associated with enjoyment, users' basic emotion, which leads to the following hypothesis.

H4: The design element of "recreation" in location-based gamification positively affects affective brand experience

5) Design elements relating to "Social" interaction:

The "social" element of game design gives users the pleasure of getting to know other people while interacting and playing games with them[24].

Nysveen et al.(2005) argue that social interaction is becoming increasingly significant to mobile location-based services and experiential services [33]. Social interaction is positively related to commitment [34][35]. According to the theory of relational cohesion, emotions affect commitment behavior [36].

From the above review, it can be concluded that social elements of game design are related to commitment, which in turn is related to emotion. I thus offer the following hypothesis.

H5:The design element of "social interaction" in location-based gamification positively affects affective brand experience

6) Design elements relating to "Skill development":

Users motivated by "skill development" to play games seek to improve their coordination, concentration or other essential skills [24].

In my research, I will focus on location-based gamification, with particular reference to the ChengChi Adventure app. Location-based gamification always requires users to avoid or search for particular people, buildings or items, and engages their mobile-device operating skills and social competence. Such activities always make users feel curious and seek to improve their skills to successfully complete all of the challenges and receive the best rewards.

The foregoing discussion leads to the following hypothesis.

H6: The design element of "skill development" in location-based gamification positively affects intellectual brand experience

7) Design elements relating to "Competition":

The "competition" element of game design reflects users' motivation to gain a sense of achievement by competing with and defeating others [24].

Frederick-Recascino and Schuster-Smith(2003) argue that competition plays a vital role in intrinsic motivation, and cannot be disregarded [37]. Competition is also unpredictable, and inevitably makes users work hard to win through a discovery process [38].

In location-based gamification, the use of competition in location-based gamification challenges users to find a means of satisfying their curiosity and their desire to win. I thus offer the following hypotheses.

H7: The design element of "competition" in location-based gamification positively affects affective brand experience

H8: The design element of "competition" in location-based gamification positively affects intellectual brand experience

8) Design elements relating to "Location-base":

Location-based design elements require players to move to specific locations, find certain objects/people or avoid other players [4]. Location-based elements have great potential to engage players with their physical environment; for example, setting players the task of going to a particular location [4][39]. Due to the "required mobility" of location-based game design, players gain information on the geography of the area in which the game is played [4].

Location-based gamification merges real-life memories and personal histories with elements of a game, conferring new, brand-related meaning on given locations, buildings or things [4].

It can be concluded that location-based elements of game design can motivate users to physically view or touch real stores or brand-related items, and also to experience new feelings and emotions. I thus offer the following hypotheses.

H9: The design element of "location-base" in location-based gamification positively affects affective brand experience

H10: The design element of "location-base" in location-based gamification positively affects intellectual brand experience

H11: The design element of "location-base" in location-based gamification positively affects behavioral brand experience

G. *Brand Loyalty*

Early researchers defined brand loyalty in one dimension, as consumers' inclination to repurchase products based on their satisfaction and accumulated experiences of the brand [40][41]. According to Jacoby and Olson(1970), who took a psychological approach to brand loyalty, brand loyalty is the result of non-random, long-lasting behavioral responses that shape a mental purchase process comprising certain decision units [42].

More recently, researchers have identified two dimensions of brand loyalty: affective loyalty and behavioral loyalty [43]. Chiou and Droge (2006) argue that affective loyalty entails a degree of dispositional commitment to a brand on the part of consumers[44].

In addition, Lin(2010) states that both behavioral loyalty and affective loyalty—which refers to a consumer's preference for and affinity with a specific brand—are revealed in actual purchase behavior[45]. Bennett and Rundle-Thiele (2004) note that recommending a brand to family or friends is another brand-loyal behavioral response [46].

I combine the two dimensions of brand loyalty. As Kuikka and Laukkanen (2012) explain, most of the marketing literature defines brand loyalty as a result of the interplay between the consumer's attitude (affective brand loyalty) and repeat purchase behavior (behavioral brand loyalty) [43][47][48][49][50][51][52][53].

With regard to the relationship between brand experience and brand loyalty, a pleasurable brand experience makes consumers wish to repeat the experience, increases satisfaction and thereby increases existing and future consumer loyalty [19][20].

Other researchers recommend that businesses use consumer satisfaction as an important predictor of consumer behavior [19][54]. Furthermore, Reast(2005) argues that brand loyalty is constructed by consumers' consistent satisfaction. It can be concluded from the findings of these studies that brand experience affects consumers' satisfaction and in turn their brand loyalty [55].

It is clear from the above that brand experience has four dimensions and can affect satisfaction and thereby brand loyalty. Thus, the following hypotheses can be offered.

H12: Positive sensory brand experience positively affects brand loyalty.

H13: Positive affective brand experience positively affects brand loyalty.

H14: Positive intellectual brand experience positively affects brand loyalty.

H15: Positive behavioral brand experience positively affects brand loyalty.

III. METHODOLOGY

A. *Research Framework*

The objective will be to empirically test the hypothesized relationships between the design elements of location-based gamification, brand experience and brand loyalty. The hypotheses are summarized in Figure 1.

Figure 1. Research model
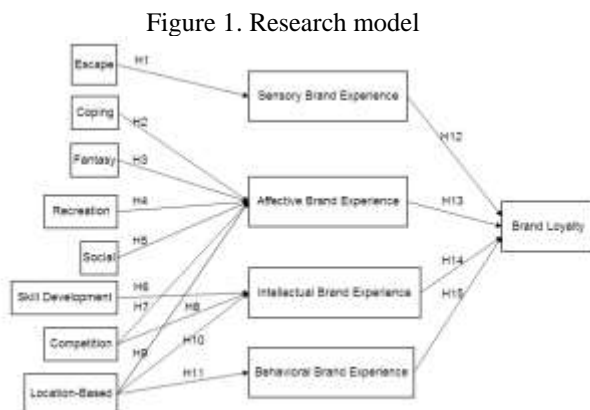
B. *Prototype Design and Data Collection*

This paper describes a study surveying users' responses to the elements of location-based gamification and their opinions of the potential influence of these elements on brand experience and brand loyalty. After we analyzing 11 gamifications ,the ChengChi Adventure app will be the research focus because it contains all of the 8 elements of location-based gamification listed above.

The measures for the design elements of location-based gamification are adapted from Demetrovics et al. (2011) and Sotamaa(2002) [4][24]. The measures used for the four dimensions of brand experience are adapted from Zarantonello and Schmitt (2010) [19]. The measures of brand loyalty are adapted from Jacoby and Chestnut (1978), Bennett and Rundle-Thiele(2004) and Chiou and Droge (2006) [41][44][46]. All of the survey items will be measured on a five-point interval scale. To test the conceptual framework, data will be collected on the users' experiences by questionnaire to verify the hypotheses. All of the subjects will have experienced the ChengChi Adventure app before they fill out the questionnaire. The questionnaires will be sent to the subjects online. An expected 350 surveys will be collected. To ensure the clarity and suitability of the questionnaire items, 30 pre-test questionnaires will be sent to obtain the subjects' opinions of the questionnaire. After discussing and editing any unsuitable content, the formal questionaire survey will be undertaken.

SPSS 17.0 software will be used to verify the validity and reliability of the model. The survey instruments will be used primarily to measure the influence of the design elements of location-based gamification on brand experience and brand loyalty, and to test the hypotheses.

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