Feature Article

Heterogeneous utilizations of homogeneous tourism resources:
Application of gamification

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1. Introduction

In a visit to a destination, tourism resources are regarded to be essential as a pull factor in the studies related to tourism motivations.[1] In the analysis of tourism competitiveness, the uniqueness of tourism resources is regarded as one of the vital elements for the evaluation.[2] The development of a tourist destination significantly depends on the utilization of tourism resources so that tourism products and service can stand out in the market. Transformation of resources is one of the key concepts in the tourism planning and operation process. Research topics related to the utilization and presentation of tourism resources are unfortunately overlooked.

Battlefield resources dominate a significant part of tourism resources in the world map. Castles, forts, relics, palaces, monuments, tunnels, warrior statues, museums, and other similar kinds are all common to see in today's journeys. Theme tours are also not uncommon as a distinct package in the market for tourists to choose. Dark tourism which focuses on sites which had mass kills, genocide, and assassination catches scholars' attention and it has also become a popular research stream in literature.[3, 4] Nevertheless, the transformation and utilization of battlefield resources, as a member of dark tourism, for tourism development need more discussions. In a study on the site around the Verdun battlefield, Virgili et al. have shown the evolution of the studied site from the flames to the light in the time spectrum.[5] They have particularly indicated the progress from patriotic tourism, to pilgrimage tourism, to memory tourism, and then to entertainment tourism of the studied site. More specifically, target customers, orientation, perception, infrastructure, attendance, and stakeholders at different stages are all distinct. As a result, the transformation of a destination is not only dynamic but also essential to attract tourists' attention over time.

Kinmen is a small island of about 150 km^2, approximately 300 km off mainland Taiwan and located off the southeastern coast of Fujian Province of the People's Republic of China (Figure 1). During the Cold War era, the Nationalist (Kuomintang) Army retreated from mainland China to Taiwan in a civil war and it was stationed in Kinmen (of Taiwan). Since 1949, battles and conflicts have occasionally occurred between the People's Liberation Army and the Nationalist Army. Meanwhile, the order of martial laws was implemented on the Island, and not until 1993 was the ban on tourists from Taiwan to Kinmen lifted. Since then, Kinmen has developed tourism as an economic development approach. Overall speaking, Kinmen is unique with a focus on preservation of historical sites, war monuments and natural resources, and therefore the government has taken steps to preserve the war reserves and primitive zones so that visitors can observe its vibrant landscape.

Nevertheless, tourist spots related to the transformation and utilization of battlefield resources are not well arranged and organized on the studied island. Battlefield resources are almost presented in similar ways through the form of artillery exhibition, war museum, fort reopening, etc. Figure 2 shows four different bunkers open for tourists in Kinmen. These bunkers are looked at differently from the eyes of veterans; however, they are categorized as the same type of attractions from tourists' perceptions. Tourists easily get bored in their journeys if simply just one bunker or fort after another without differentiated arrangements or activities as marginal utility of the war-site visit is decreasing in nature. The problem here is then highly related to the transformation of homogeneous resources to provide heterogeneous visit experiences.

Gamification, as a novel idea in the past decade, aims to provide incentives based on multiple dimensions and to increase involvement with consumers via the form of fun, reward, reputation, adventure, achievement, and so on. In this article, the use of gamification as a vehicle to differentiate the utilization of homogeneous resources is addressed and discussed.

2. Transformation and gamification

Regarding the transformation, as tourists behave differently and possess different perceptions toward tourism service/products in terms of their attitude, values, and experiences, homogeneous utilizations without considering tourists' expectations will lead to idle status of these honourable sites.[6, 7] As
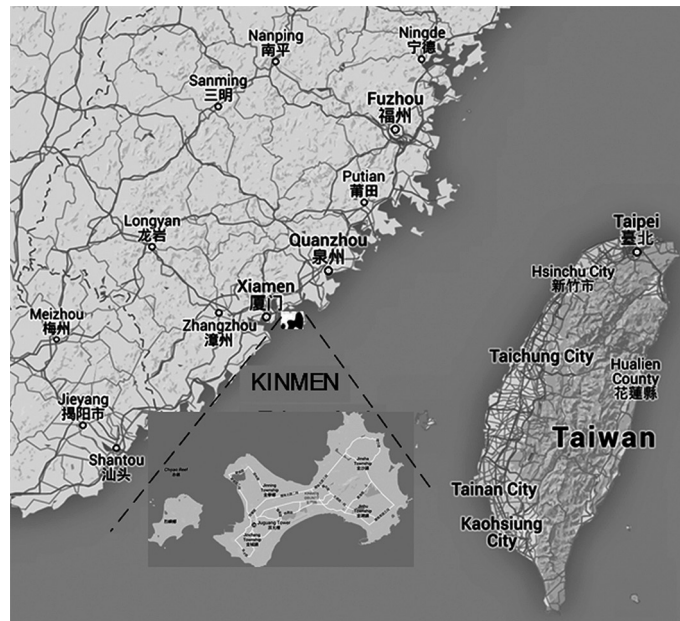
Figure 1: Map of Kinmen Island
Source: Google map.

Figure 2: Military forts of Kinmen Island
Source: Google.

a result, diversified innovations should be applied to effectively revitalize the resource so that tourists can truly see the value of the site and increase their willingness to pay visits. There are different types of innovations to diversify the utilization of an identical resource and, more importantly, stimulate tourists' intentions to visit destinations.

Among possible fashions to derive innovative service, gamification is a novel idea to have differential service with fun, achievement, belonging, and other emotions. In fact, a game is a good natural way to get involved with consumers as Deterding et al. indicated that gamification is a new fashion to rebuild customers' experiences.[8] Applications of gamification have been widely seen in the last decade.[9] Gamified applications potentially provide a pleasure process compared with con-

ventional practices. As such, related studies have shown that customers possess high motivations while having a gamified service such as exercise, investment, education, and entertainment.[9, 10] Other academic works also pointed out that gamification intuitively has adopted the spirit of marketing to attract consumers' attentions.[11]

Regarding the features of gamification, Rigby and Ryan argued that competence, autonomy, and relatedness are three main pillars.[12] In reality, famous gamified designs are such as Getaway by Mini Cooper, Nike+Run by Nike, or Fold It by Washington University. In the tourism industry, Geocatching develops an online treasure hunt game for tourists while traveling to destinations. Smile land Thailand developed by the Thailand Tourism Bureau is another example where tourists

or potential visitors can receive basic ideas about Thailand's destinations and culture through the online game before they actually visit the sites.

3. Measurement of gamification

In order to have a clear look at gamification, this article collected related papers which studied elements and possible effects of gamification. Ultimately, six elements were summarized for the following analysis. First of all, the so-called PBL (point-badge-leaderboard) system is commonly adopted to provide incentives and establish a belonging community.[13] Secondly, challenges and stages for players to obtain achievement and growth are also popular in the gamified design so that they can have a purpose and reason to stay. Hamari and Koivisto have verified that the use of achievement can generate positive attitudes toward gamified platforms and maintain retention.[14] Landers et al. further indicated that the use of a scoreboard is able to stimulate consumers' intention to stay in the community.[15] Thirdly, surprise is shown to be one of the elements to attract consumers' intention as well. Constantinides and Yousif have shown the positive influence of KLM surprise to the company's brand image.[16] Sinarta and Buhalis also supported the use of real-time surprise to improve consumers' experience.[17]

Fourthly, social interaction in the community is also found to be a vital factor for shaping users' perceptions and values.[18] Huang et al. pointed out that comments to sellers from buyers on shopping platforms can strengthen transaction satisfaction.[19] As such, real or virtual interactions can lead to any forms of social behavior which are influential to consumers' retentions. Fifthly, creativity and innovations in which users are able to contribute time and effort are verified to increase their involvement. In this aspect, Pera has shown that innovative activities in itineraries can bring co-creation experience and lead to pleasure reactions from customers.[20] Prayag et al. further indicated that positive emotions are highly related to satisfaction and loyalty.[21] Last but not least, scarcity or limitation leads to a feeling of urgency especially when consumers want something badly. Gabler et al. conducted an experiment to show the issue of regret after purchase.[22] They have shown that if information of scarcity is revealed, consumers would increase the level of regret if they did not make the purchase decision.

With the aforementioned findings from individual works in literature, this study designed a questionnaire with the consideration of the before, during, and after visiting the destination. A total of thirty-three items were adopted. 300 questionnaires were distributed and 277 valid responses were collected regarding the level of agreement for each item using Likert Scale. The targeted population focused on domestic tourists between 18 and 50 years old. This specific group of consumers has high possibilities to hear, understand and accept the concept of gamification. The collected samples consisted of 50.5 % female tourists and 53.8 % of the respondents were unmarried. For the age, the 18-40 year-old group represented 80 % of the samples. Among all samples, 87 % of the respondents possessed a college degree or above. For the monthly income, the result showed that most respondents earned between 20k and 40k dollars (local Taiwanese currency).

The reliability analysis showed that Cronbach's alpha values for items of before-the-visit, during-the-visit, and after-the-visit are 0.862, 0.870, 0.852, respectively. With the aim of identifying the determinant factors as well as reducing dimensions, a factor analysis was carried out. Consequently, all items were classified into six factors based on the modelling results. These factors were named "achievement (9 items)", "reward (7 items)", "uniqueness (5 items)", "experiences (5 items)", "imagination (2 items)", and "value added (2 items)" based on the composition of the items. The cumulated variances explained by the six obtain factors are as high as 63.32 %. In addition, the KMO (Kasier-Meyer-Olkin) value reaches 0.935 and the Bartlett test also shows significance (p-value < 0.05). Both indices showed that the collected responses are suitable for exploratory factor analysis.

In order to verify the factorial structure obtained in the previous stage using exploratory factor analysis, we further collected the second sample set with 309 responses. The data were then analysed using the technique of confirmatory factor analysis. However, the original result was not satisfied based on the criteria commonly adopted in literature. We then abandoned the items with low loading factors and the refined model ultimately has nineteen items (6 items for achievement, 5 items for reward, 2 items for uniqueness, 2 items for experiences, 2 items for imagination, 2 items for value added) for the measurement of gamification. In addition, the Chi-square/d.f is 2.73 (< 3.0), GFI is 0.882 (> 0.8), AGFI is 0.837 (> 0.8), RMSEA is 0.078 (< 0.08), NFI is 0.903 (> 0.9), and PGFI is 0.636 (> 0.5). In short, the fitting result overall showed the satisfied outcome. As a result, we can verify that the obtained six factors are able to explain the concept of gamification and they can be used to design gamified service in order to differentiate the utilization of homogeneous tourism resources.

4. Gamify to diversify

Based on the findings in the last section, six corresponding strategies with corresponding management actions can be considered to include the idea of gamification while designing itinerary service. First of all, managers can consider the use of multiple military tasks with various levels of difficulties in terms of the specialized expertise. In addition, group work and interaction among participants should also be considered. Through the cooperation among members, tasks can be solved and honors can be earned to raise achievement. Secondly, the collected points or badges after finishing the assigned tasks should be able to be turned into reward in the real world such as discount to purchase local food, stay in accommodation, take transportation, or even buying souvenirs. Thirdly, a permission to join a special and one-of-a-kind club can be issued if participants have accomplished a certain number of tasks and became an expert in the community. This is especially

useful for establishing loyalty and experiencing some kind of mystery. Fourthly, as army originally has many branches and ranks, tasks should be designed based on the core job content of branches to have experiences. As such, tourists can build up their connections and keep wonderful memories which can be told and shared. Fifthly, the adoption of technology such as virtual reality/augmented reality/mixed reality or other similar kinds should be considered to enhance visit experiences. Related activities can be arranged before, during, or even after the visit. Last but not least, the collected points through solving tasks can be considered to allure the customer for future visits. For instance, lottery draws for free transportation (airline or other kinds) or privilege to conduct some specific activities in future trips could be used as potential incentives for revisits. As the six identified strategies can be applied to integrate resources and design gamified activities, visits to the sites with homogeneous tourism resources, such as bunkers in Figure 2, can be differentiated as a consequence. In general, similar concepts can also be applied to other kinds of battlefield sites such as museums, forts, and tunnels for distinctive experiences.

Acknowledgement

Notes

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