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Introduction

Immersive experiences are often mentioned together with games because the latter is often addictive (Stetina et al., 2011). This study attempts to study immersive tourism experiences by viewing all tourism activities from the perspective of gamification. It attempts to (1) develop a scale and a calculation formula for the tourism gamification index, (2) examine how tourism gamification influences immersive travel experience, and whether the influence is moderated by a tourist's travel experience and arousal demand, based on the arousal theory, and (3) compare these relationships between leisure sports tourism, Han-Chinese-costume photo-shooting tourism, and traditional sightseeing tourism.

Literature Review

Gamification is the process of making activities more like games (Werbach, 2014). Many researchers have found that gamification can enhance customer experience during the service process and thus support the overall value creation for users (Huotari & Hamari, 2017). Scholars have different views on games' elements (Eppmann et al., 2018; Högberg et al., 2019; Huizinga, 2014; Liu et al., 2019; McGonigal, 2011; Pearce, 2002; Stenros, 2017; Zhou, 2016). Based on previous research, this study summarizes nine dimensions of gamification: goal-oriented, rule-based, feedback, scenario-based, role-based, entertainment, achievement-based, social-based, and differential dimensions.

The term "immersion" in this study refers to a state of mind in which the ultimate pleasure is achieved by a person fully engaging in an activity (Wei et al., 2021). Although many studies have discussed immersive tourism experience from different perspectives with different theories (Bec et al., 2019; deMatos et al., 2021; Fan et al., 2022; Huang et al., 2020; Lunardo & Ponsignon, 2020; Park et al., 2006; Quan & Wang, 2004; Wei et al., 2021). However, the causes of immersive tourism experience still need further exploration (deMatos et al., 2021).

It has been shown that travel experience is an important factor influencing people's travel behavior, travel motivation, revisit intention, and evaluation of the destination (Chen & Gursoy, 2001; Pearce, 2005; Weaver et al., 2007). With the growth of travel experience, the novelty of tourism decreases; tourists become more demanding of destinations, and only higher-level experience can satisfy them (Zhou & Li, 2015). Previous studies on travel experience mostly compare first-time and repeat visitors' destination perception and revisit intention (Fuchs et al., 2013). Rare studies examine the effect of the amount of travel experience on tourism experience.

Arousal theory states that people's action is driven to maintain an optimum level of physiological arousal in many activities (Berlyne, 1960). On one hand, people tend to seek more stimuli to increase their arousal level when their arousal level drop into a

very low level (Berlyne, 1960). On the other hand, folks seek relaxation to reduce their arousal level when their arousal level is too high (Berlyne, 1960). According to arousal theory, novelty seeking is closely related to the need for optimal stimulus levels, and a high frequency and a long duration of stimuli reduce the novelty level of the same stimulus (Bello & Etzel, 1985; Berlyne, 1960; Reisenzein, 1994). In tourism, many scholars have applied this theory in explaining tourism phenomena (Kim et al., 2016; Cheng et al., 2022).

Based on the above review and the arousal theory, we developed a theoretical model attempting to explain the relationship between tourism gamification, immersive tourism experience, travel experience, and arousal demand.

Methodology

This study first collect 234 valid questionnaires online from experienced gamers to determine the scale of gamification index. Then the authors revised and applied the scale in the tourism context and collect 854 valid questionnaires online to measure tourism gamification index, including 292 questionnaires from leisure sports visitors, 244 from Han-Chinese-costume photo-shooting visitors, 282 from traditional sightseeing visitors, and 36 from other types of visitors. With these data, the gamification index scale and the tourism gamification index scale were both determined by using PLS-SEM. The theoretical model is tested with survey data from all visitors, leisure sports visitors, Han-Chinese-costume photo-shooting visitors, and traditional sightseeing visitors, respectively.

Results

A formative-formative type of hierarchical component models with 18 indicators and 9 dimensions was adopted for the gamification index scale. Based on that, the scale of tourism gamification index was also verified and determined.

The test result of the theoretical model with all tourism data shows that immersive tourism experience is positively influenced by tourism gamification index and the square of arousal demand, and negatively affected by travel experience. The influence of tourism gamification index on immersive tourism experience is negatively moderated by the square of arousal demand.

The PLS-MGA test result shows that there is no significant difference in the impact of tourism gamification index on immersive tourism experience between leisure sports tourists, Han-Chinese-costume photo-shooting tourists, and general sightseeing tourists. However, the influences of arousal demand and travel experience vary significantly between the three groups.

This study developed a simplified and easy-to-operate calculation formula of tourism gamification index based on the above analysis results. One-way ANOVA test result shows that the tourism gamification index for leisure sports tourism and Han-Chinese-

costume photo-shooting tourism is significantly higher than that for general sightseeing tourism.

The comparison result between gamification index and tourism gamification index shows that although the eight dimensions are the same for the two constructs, the importance of these dimensions vary between the two constructs.

The results of independent-samples T Test, one-way ANOVA and Welch ANOVA test show that tourism gamification index, immersive tourism experience, travel experience, and arousal demand are significantly influenced by some demographic factors, especially gender, age, and monthly household income per capita.

Conclusion and Discussion

This study determined the scale of gamification index and further developed a scale and a calculation formula for tourism gamification index. A series of comparisons were conducted between leisure sports tourism, Han-Chinese-costume photo-shooting tourism, and traditional sightseeing tourism. Findings suggest that overall, immersive tourism experience is positively influenced by tourism gamification index and the square of arousal demand, and negatively affected by travel experience. The influence of tourism gamification index on immersive tourism experience is moderated by arousal demand. These relationships vary significantly between different types of tourism. The tourism gamification index for leisure sports tourism and Han-Chinese-costume photo-shooting tourism is significantly higher than that for sightseeing tourism.

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