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Abstract

Destination management organizations (DMOs) have used different formats of travel information to create a positive destination image and attract potential tourists. Text-based travel information is the most common format while question-based and gamified versions have become popular in the recent 10 years. Integrating questions or applying gamification is believed to enhance people's flow experience and result in positive outcomes. However, no known research has empirically investigated the different effects of text-based, question-based, and gamified information in the tourism context. Through an experimental design, this research found that gamified information compared to text-based or question-based significantly enhances people's flow experience and in turn increases their destination image change, willingness to search for more information, and visit intention. The findings give insights into the effects of different formats of information presentation and have implications for how DMOs could use gamified information to promote destinations and attract potential tourists.

Keywords

Gamification, gamified travel information, flow, experimental design, destination image, visit intention

Introduction

Travel information is an important way to promote destinations and increase visit intention. Through appealing content, it informs people about the benefits of traveling to a destination. Destination Management Organizations (DMOs) have traditionally used texts accompanied by pictures online and offline in order to present travel information. However, the text-based format is often not engaging since it relies on one-way communication and does not allow any interaction between the message providers and recipients. Recently, a question-and-answer (Q&A) format has been used by some DMOs in place of the text format. Typically, DMOs convert the text content into a series of simple questions about different aspects of the destination followed by answers. Similar to a "frequently asked questions (FAQ)" approach found on many websites, the aim is to stimulate the interest of readers by simulating two-way communication (Abbott, n.d.; Israel, 2009). For example, Visit Britain lists several questions that prospective tourists may ask about different attractions in the UK, followed by answers in their webpages. Although the Q&A format is considered more reader-friendly than the text-based format, it is still one-way communication. Therefore, Q&A and text-based formatted information both often fail to trigger people's curiosity or to effectively convey the advantages of using a product or service (Wood & Lynch, 2002).

Recently, the employment of game mechanics has been proposed as a novel format designed to reduce boredom and overcome the lack of interaction that is the drawback of the traditional formats (Müller-Stewens, Schlager, Häubl, & Herrmann, 2017; Abou-Shouk & Soliman, 2021). Gamification is defined as "the use of game design elements in non-game contexts" (Deterding, Dixon, Khaled, & Nacke, 2011, p. 2). It has been widely used to raise brand awareness, improve service quality, and enhance information presentation in marketing contexts (Bittner & Schipper, 2014; Shen, Choi, Joppe, & Yi, 2020). Gamified information is "the use of games as a vehicle for conveying information" (Müller-Stewens et al., 2017, p. 9). The key characteristic of gamified information is that people can actively interact with the information through game play. Gamified information not only shows the information of tourist attractions, but also offers an engaging gaming experience. DMOs have started to employ gamification in their travel information. For example, gamified ads, such as *Where Am I* launched by Destination Ontario and the *Yo Toronto* website designed by Tourism Toronto, have attracted much more attention than previous campaigns that relied on text and picture format (Shen, 2020).

However, the effects of gamified information on people's perception and behavioral intention have not been investigated adequately so far. Even though several previous studies indicated that gamification may encourage customer engagement (Blohm & Leimeister, 2013) and improve brand awareness (Xu, Buhalis, & Weber, 2017), those studies were theoretical in nature and only a small number of empirical studies have been conducted (Bittner & Schipper, 2014; Müller-Stewens et al., 2017). Therefore, there is a need to examine whether gamified travel information is more effective compared to traditional formats of travel information.

Hypotheses Development

Flow theory emphasizes that the context is an important factor that influences to what extent individuals get involved in an activity and have a flow experience (Ghani & Deshpande, 1994). Gamification has been treated as a marketing innovation as the challenges embedded in an advertisement or information can generate such a flow experience (Hsu & Chen, 2018). Therefore, this research proposes that:

> H1: Gamified travel information will result in a higher flow experience than text-based or Q&A formatted travel information.

Researchers have argued that gamification has a positive effect on attitude and perception: Gamified contexts offer fun and interesting experiences, motivating people's participation (Huotari & Hamari, 2012). The increased engagement and efforts make the information more memorable which in turn influences people's perception and attitude (McGuire, 1968; Wang, 2006). And thus, gamified information will lead to positive attitudes toward the destination (Jeong, 2009).

The flow generated by gamified information can also motivate people to process the messages and change people's perception (Müller-Stewens et al., 2017). When people feel a good balance between their skills and challenges, they may engage in the gamified context and have a flow experience, which leads them to allocate more cognitive resources to solving challenges and remembering the information (Müller-Stewens et al., 2017; Rappaport, 2007). Since people perceive and remember more positive information about the destination, the information will

effectively change people's perceived destination image (Bojanic, 1991). Therefore, compared with either the text or the Q&A format, the gamified format generates a greater flow experience among participants, which in turn leads to forming a more positive destination image. This research proposes the following hypotheses:

H2a: The gamified format will lead to a significantly better perceived destination image than either the text-based or the Q&A format.

H2b: The flow experience mediates a more positive destination image obtained through the gamified format compared with either the text-based or the Q&A format.

Additionally, researchers have argued that gamified information will increase people's information acquisition (Lee, 2019), innovation adoption (Müller-Stewens et al., 2017), and purchase intention (Bittner & Shipper, 2014). In the tourism context, engaging with interesting travel information enhances people's perceived advantages of traveling to the destination, thereby increasing their intention to search for more information about the attractions (Ho, Lin, & Chen, 2012) and strengthening visit intention (Jeong, 2009).

The flow experience generated through the gamified format will lead to a greater willingness to search for more information. The gamified information engages people in completing the questions and raises their curiosity about the answers. An intrinsic part of flow experiences, this curiosity reminds individuals of their knowledge gaps and stimulates their interest in processing new messages (Loewenstein, 1994; Trevino & Webster, 1992). As a result, individuals will search for more information to satisfy their curiosity and to fill their knowledge gap (Park, Mahony, Kim, & Kim, 2015). Therefore, this research proposes the following hypotheses:

H3a: The gamified format will result in significantly greater willingness to search for more information about the destination than either the text-based or the Q&A format.

H3b: The flow experience mediates greater willingness to search for more information obtained in the gamified format compared with either the text-based or the Q&A format.

In addition to the positive effect of gamified information on intention (Bittner & Shipper, 2014; Shang & Lin, 2013), flow has been argued as a mediator between the formats of information presentation and intention (Cho & Kim, 2012). From the perspective of experiential marketing, game mechanics may engage consumers in a personal way and more effectively advocate the benefits of a product or service, and thus people will have stronger purchase intentions (Müller-Stewen et al., 2017). Since researchers argue that gamified information or gamified advertisements could help marketers to increase customers' purchase intention, gamified travel information may also effectively impact people's visit intention (Mucollari & Samokhin, 2017).

H4a: The gamified format will result in significantly higher intention to visit the destination than either the text-based or the Q&A format.

H4b: The flow experience mediates higher intention to visit the destination obtained in the gamified format compared with either the text-based or the Q&A format.

Data Collection

This research used the travel information of London, UK and Vienna, Austria as research contexts. Using two cities ensured that the stronger effect of gamified vs text-based or Q&A formatted travel information is not specific to one destination. Additionally, this research used asking questions and requiring answers as the main component of the gamified format, which is a common way to gamify travel information by DMOs (e.g., Destination Ontario and The London Pass).

To test the effect of the designed gamified context, three-round pilot studies were conducted to design and develop the stimulus materials. Since London and Vienna were used as cases to examine the different effects, their appearance sequence in each condition was also examined and varied to exclude its influence. A 3 (travel information format: text-based, Q&A, and gamified information) $\times$ 2 (sequence of the travel information of London and Vienna) between-subjects experimental design was conducted. For one half of the participants, the travel information about London and related questions were presented first, followed by the travel information about Vienna and related questions. This order was inverted for the other half of the participants.

For the formal data collection, the online panel company Dynata was used to recruit participants. This approach allows researchers to set demographic and screening criteria to reach the targeted participants. People who had already visited the two case cities were screened out. The participants were assigned to the six conditions and answered the questions about flow (concentration, perceived enjoyment, and curiosity), destination image change (DIC), willingness to search for information (WSI), and visit intention (VI). A total of 336 participants were recruited, but 36 of them were excluded because of the poor quality of responses. The final dataset has 300 valid responses, evenly split by gender. Each condition has 100 valid responses.

Data Analysis and Results

A confirmatory factor analysis (CFA) was used to assess the adequacy of the measures for flow, DIC, WSI, and VI, for the London and Vienna data, separately. Flow was measured as a second-order construct, which is represented by three first-order constructs, including concentration, perceived enjoyment, and curiosity. The CFA results show that the constructs have good composite reliability, convergent validity, and discriminant validity. Therefore, each construct (i.e., flow, DIC, WSI, and VI) was represented by a one-index score.

This research compared the mean values of the four constructs in the six conditions to examine the impacts of formats and appearance sequence of London and Vienna. A two-way ANCOVA was conducted to analyze whether the means were significantly different based on the three formats (i.e., text-based, Q&A formatted, and gamified) and the appearance sequence of London and Vienna.

Table 1. Mean values, standardized deviations, and p-values

City and constructs	Text-based information		Q&A formatted information		Gamified information	
	Mean	SD	Mean	SD	Mean	SD
London						
Flow	4.386[a]	0.979	5.375[b]	0.749	5.904[c]	0.732
DIC	4.290[a]	1.099	4.820[b]	1.023	4.906[c]	1.175
WSI	3.987[a]	1.417	4.725[b]	1.164	5.680[c]	0.976
VI	3.530[a]	1.509	4.275[b]	1.452	4.995[c]	1.452
Vienna						
Flow	4.162[a]	1.165	5.233[b]	0.830	5.887[c]	0.832
DIC	4.325[a]	1.264	4.850[b]	1.058	5.690[c]	1.022
WSI	3.992[a]	1.371	4.820[b]	1.213	5.580[c]	1.026
VI	3.360[a]	1.453	3.875[a]	1.452	4.695[b]	1.610

Note: 7-point scale: 1 = strongly disagree, 7 = strongly agree; comparison based on Bonferroni, a, b, c stands for significance at 0.05 level

The impact of the sequence of the cities as well as the effect of the interaction between information format and sequence were not significant. The covariates, including education level, age, and gender were also not significant. Based on the ANCOVA analysis, the formats had a significant main effect on flow, DIC, WSI, and VI (Table 1), which supported the first hypothesis.

A mediation analysis was conducted to investigate whether flow mediates the effects of gamified information compared to text-based or Q&A formatted information on DIC, WSI, and VI (i.e., H2b, H3b, H4b). The datasets of London and Vienna were analyzed in Mplus.

Preacher and Hayes' (2004) bootstrapping method was used to test mediation, and 500 times of bootstrapping were used. The mediation hypothesis for the effects of gamified versus text-based travel information for London on DIC, WSI, and VI was examined first (See Figure 1 for estimates of the paths). Compared with the text-based format, gamified travel information significantly increased flow experience ($\beta = 0.662$, $p < 0.001$), and then flow had a statistically positive effect on DIC ($\beta = 0.624$, $p < 0.001$), WSI ($\beta = 0.712$, $p < 0.001$), and VI ($\beta = 0.397$, $p < 0.001$).

When flow was entered as a mediator, direct effects of gamified versus text-based travel information on DIC and WSI were not significant (Figure 1). The bootstrapping analyses (Preacher & Hayes, 2004) provided the point estimate of the indirect path from the gamified versus text format comparison on each of the three dependent variables and its 95% confidence interval (CI). The mediation path to DIC via flow was estimated to be 0.414 with 95% CI [0.326, 0.501]. It should be noted that 95% confidence interval not including zero indicates that the mediation path is significantly different from zero at $p < 0.05$. Similarly, the mediation path to WSI via flow was estimated to be 0.472 with 95% CI [0.386, 0.558]). These findings indicate that flow fully mediated the gamified versus text-based format comparison on DIC and WSI. Differently, the direct effect of gamified versus text-based travel information on VI was still significant ($p < 0.05$) after flow

was entered, so flow was a partial mediator for this effect. The mediation path to VI via flow was estimated to be 0.263 with 95% CI [0.173, 0.353]). These findings provided support to the mediation hypotheses for the gamified versus text format comparison for the London data.

The same approach was used to test the mediation hypothesis for Vienna (See Figure 2 for estimates of the paths). Compared with the text-based format, gamified travel information led to a significantly higher flow experience ($\beta = 0.650$, $p < 0.001$), which resulted in greater DIC ($\beta = 0.721$, $p < 0.001$), WSI ($\beta = 0.746$, $p < 0.001$), and VI ($\beta = 0.486$, $p < 0.001$).

When flow was entered as a mediator, direct effects of gamified versus text-based travel information on DIC, WSI, and VI were all not significant (Figure 2). Flow was a full mediator of the effects of gamified versus text-based travel information for Vienna according to the results of bootstrapping analyses (Preacher & Hayes, 2004). The mediation paths to DIC, WSI, and VI via flow were estimated to be: 0.469, with 95% CI [0.395, 0.542]; 0.485 with 95% CI [0.415, 0.554]); and 0.316 with 95% CI [0.235, 0.397], respectively. It should be noted that 95% confidence interval not including zero indicates that the mediation path is significantly different from zero at $p < 0.05$. These findings provided support to the mediation hypotheses for the gamified versus text format comparison for the Vienna data.
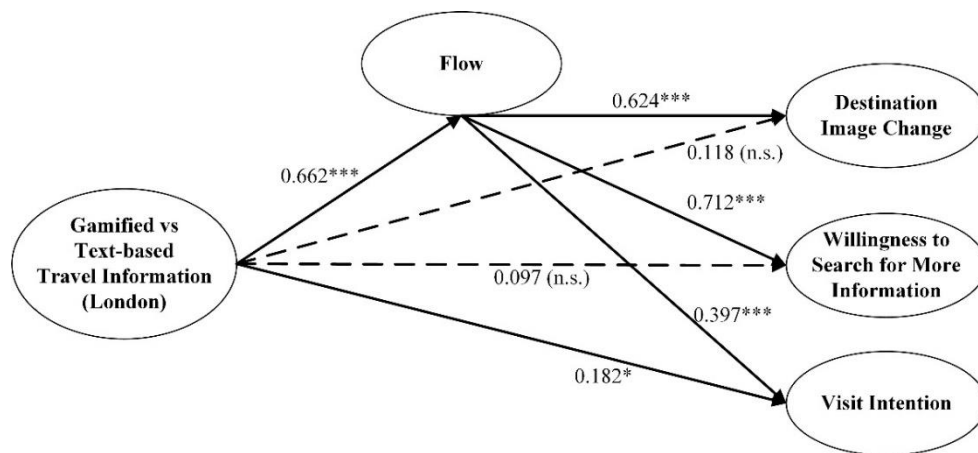

Figure 1. Flow as a mediator on the effect of gamified versus text-based information for London
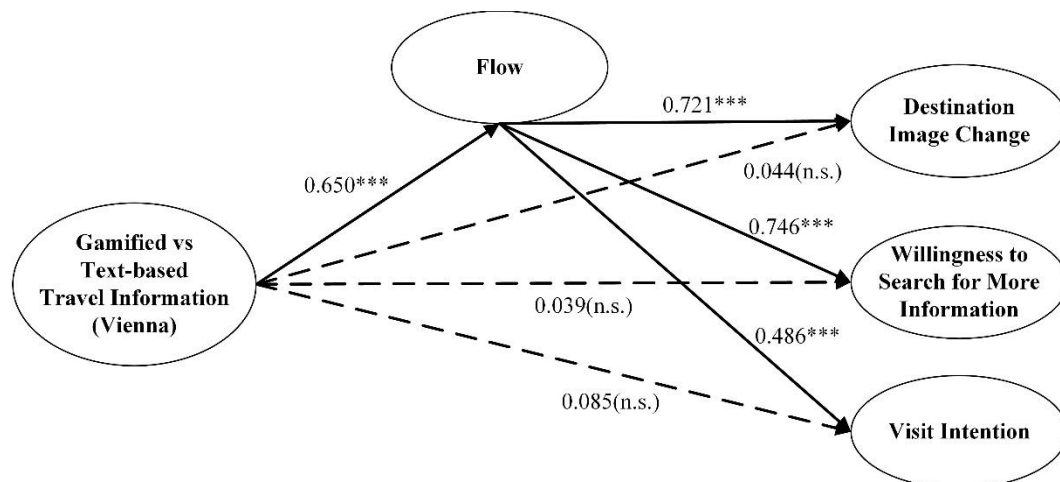
Figure 2. Flow as a mediator on the effect of gamified versus text-based information for Vienna

The mediation hypotheses for the effects of gamified versus Q&A formatted travel information for London and Vienna on DIC, WSI, and VI were examined (See Figure 3 and Figure 4 for estimates of the paths). Compared with the Q&A format, gamified travel information led to significantly higher flow experiences (London: $\beta = 0.340$, p < 0.001; Vienna: $\beta = 0.366$, p < 0.001), which resulted in greater DIC (London: $\beta = 0.525$, p < 0.001; Vienna: $\beta = 0.503$, p < 0.001), WSI (London: $\beta = 0.485$, p < 0.001; Vienna: $\beta = 0.487$, p < 0.001), and VI (London: $\beta = 0.220$, p < 0.01; Vienna: $\beta = 0.168$, p < 0.05).

As shown in Figures 3 and 4, once flow was entered as a mediator, direct effects of gamified versus Q&A formatted travel information for London and Vienna on DIC, WSI, and VI were still significant. The bootstrapping analyses (Preacher & Hayes, 2004) showed that the mediation path to DIC via flow was estimated to be 0.178 with 95% CI [0.117, 0.240] for London and 0.410 with 95% CI [0.275, 0.546] for Vienna. Similarly, the mediation path to WSI via flow was estimated to be 0.165 with 95% CI [0.108, 0.222] for London and 0.420 with 95% CI [0.269, 0.571] for Vienna. Additionally, the mediation path to VI via flow was estimated to be 0.075 with 95% CI [0.027, 0.123] for London and 0.194 with 95% CI [0.047, 0.341] for Vienna. All these 95% confidence intervals did not include zero, indicating that the mediation path is significantly different from zero at p < 0.05. These findings showed that flow was a partial mediator for the gamified versus Q&A format comparison on DIC, WSI, and VI for London and Vienna.
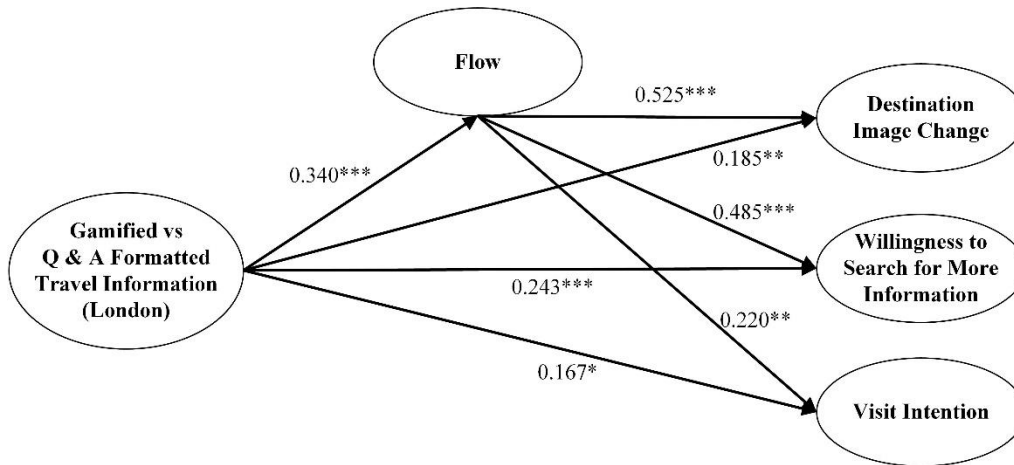
7

Figure 3. Flow as a mediator on the effect of gamified versus Q&A formatted travel information for London.
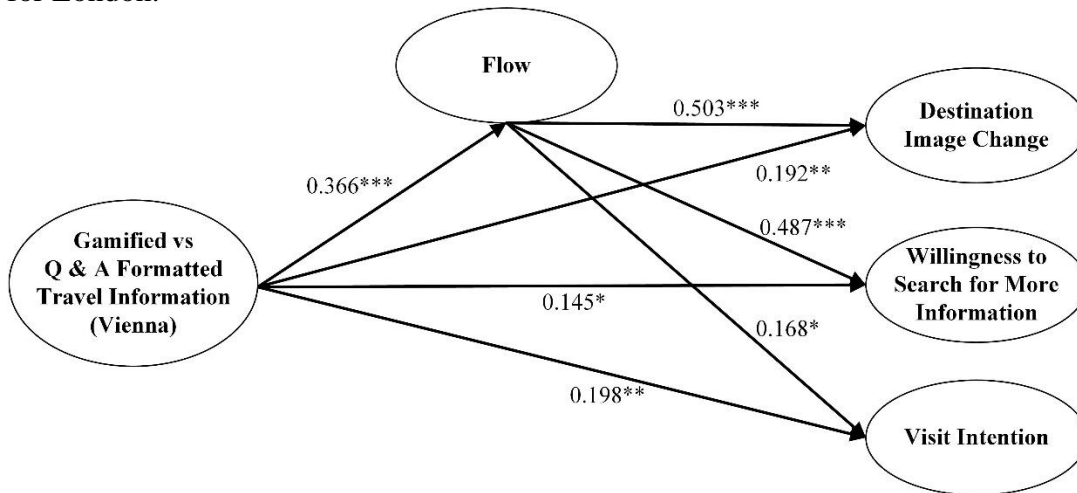

Figure 4. Flow as a mediator on the effect of gamified versus Q&A formatted travel information for Vienna.

Conclusion and Discussion

This research investigated the effect of gamified travel information on people's perceived destination image and behavioral intention. The different effects of gamified versus text-based or Q&A formatted travel information were examined through experimental design. From a theoretical perspective, this research empirically examines the effect of gamified travel information. It fills the previous literature gap by understanding how and to what extent gamification can enhance the effect of travel information (Xu et al., 2017). Flow experience, as a mediator, contributes to the literature on the underlying drivers of destination image change, search intention, and visit intention. Without flow experience, the effectiveness of gamified information would be significantly reduced and will less likely lead to positive outcomes. It also explains why not all gamification will be successful and have good engagement (Schöbel & Söllner, 2016) from the theoretical perspective.

From a practical perspective, the comparisons between text-based, Q&A formatted, and gamified travel information allow DMOs to understand which format is more effective in forming a positive destination image and behavioral intention. It is worthwhile to initiate gamified travel information because it can more effectively engage potential tourists, provide them with a good impression of the destination, and result in better persuasion outcomes. Even though Q&A formatted travel information has a better effect compared to the text-based version, it is not as effective as gamified information.

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