International Journal of Hospitality Management 99 (2021) 103064

Contents lists available at ScienceDirect

International Journal of Hospitality Management

journal homepage: www.elsevier.com/locate/ijhm

Gamification in tourism and hospitality review platforms: How to R.A.M.P. up users' motivation to create content

Rafael Bravo, Sara Catalán *, José M. Pina

University of Zaragoza, Gran Vía 2, 50005 Zaragoza, Spain

ARTICLE INFO

Keywords:
Gamification
Psychological needs
Motivation
User-generated content
TripAdvisor

ABSTRACT

Tourism and hospitality review platforms use gamification to motivate individuals to create user-generated content. However, the gamification-related motivational processes that drive individuals to create content on these platforms have received scant attention in the literature. This study proposes and tests a model based on the R.A.M.P. (Relatedness-Autonomy-Mastery-Purpose) framework to analyse the impact of gamification on individuals' psychological need satisfaction, motivation and intention to create user-generated content. Using data from a sample of 266 U.S.-based registered TripAdvisor reviewers, the findings showed: that interacting with gamified elements promotes psychological need satisfaction and controlled motivation; that feelings of mastery and purpose promote autonomous motivation; and that, of the two motivation types, only the autonomous has a significant impact on intention to create content on the review platform.

1. Introduction

In the last decade, online user-generated content has experienced unprecedented growth and has become the most important source of travel information (Li et al., 2017; Salem and Twining-Ward, 2018). Platforms such as TripAdvisor.com, built around user-generated content, allow travellers to share their travel experiences with large global audiences. Whether for social recognition, or just to help travellers similar to themselves (Munar and Jacobsen, 2014), individuals contribute to these platforms for free, in 'the virtuous circle of sharing' (Salem and Twining-Ward, 2018, p. 35). However, while uploading content has become second nature for some travellers, others do not contribute (Zhang et al., 2020). To motivate individuals to contribute more, tourism and hospitality review platforms have started to apply gamification techniques (Zhang et al., 2020).

Gamification has been defined as a form of motivational design that applies elements and mechanics common in games to non-game contexts (Deterding et al., 2011). In the service-marketing perspective it has been characterised as a process that uses motivational affordances to enhance services by creating experiences similar to those created by games (Hamari et al., 2014; Koivisto and Hamari, 2019).

In the tourism context, gamification has been described as a tool with the potential to be combined with augmented reality, virtual reality and 3D technologies to create an immersive and entertaining experience of tourist attractions (Xu et al., 2016). It has been applied to maximise visitors' experiences in museums (Kasurinen and Knutas, 2018) and festivals (Liu et al., 2019), and to increase brand awareness and loyalty towards destinations (Xu et al., 2017) and travel agencies (Abou-Shouk and Soliman, 2021). In the airline and hotel context it has been applied to encourage consumption through gamified loyalty programmes (Çilingir and Gültekin, 2021). It has been applied to tourism and hospitality review platforms such as TripAdvisor.com. However, empirical research analysing the phenomenon is still scarce, and has notable limitations (see Appendix 1).

Moro et al. (2019) noted that, on these platforms, gamification has the potential to affect both consumers and reviewers. On the one hand, consumers use the gamified elements featured on the platforms as measures of the reviewers' reputation and to decide whether they are experienced and reliable sources of travel information (Banerjee et al., 2017); on the other, reviewers (and other readers) might regard gamified elements, for example, the levels they have reached, as indicators of their status on the platform, which might impact on their reviewing behaviours (Moro et al., 2019). Despite the existence of this dual perspective, prior research has mostly focused on the consumer. In particular, most studies (see Appendix 1) have analysed the influence of gamified elements on review helpfulness (e.g., Filieri et al., 2019; Hlee et al., 2019; Hu and Chen, 2016; Kwok and Xie, 2016; Liu and Park, 2015; Li et al., 2019, 2020; Liang et al., 2019; Schuckert et al., 2016;

* Correspondence to: Departamento de Marketing e Investigación de Mercados, Gran Vía 2, 50005 Zaragoza, Spain.
E-mail addresses: rbravo@unizar.es (R. Bravo), scatala@unizar.es (S. Catalán), jmpina@unizar.es (J.M. Pina).

https://doi.org/10.1016/j.ijhm.2021.103064
Received 8 July 2020; Received in revised form 24 May 2021; Accepted 27 August 2021
Available online 4 September 2021

Yang et al., 2017; Zhou and Guo, 2017), review trustworthiness (Banerjee et al., 2017), enjoyment (Park and Nicolau, 2015) and number of votes received (Hlee et al., 2019; Li et al., 2017).

A further limitation of the prior research is that, despite the existence of a wide range of gamified features, gamification in this specific context seems to have been relegated to a mere badge-based reputation review system. As can be seen in Appendix 1, most studies have focused on analysing badges (e.g., Banerjee et al., 2017; Hlee et al., 2019; Hu and Chen, 2016; Kwok and Xie, 2016; Kwok et al., 2020; Li et al., 2017, 2019, 2020; Liang et al., 2017; Liu and Park, 2015; Liu et al., 2018, 2019; Moro et al., 2019; Park and Nicolau, 2015; Schuckert et al., 2016; Zhang et al., 2020; Zhou and Guo, 2017), while few have analysed the influence of other gamified elements, such as levels (Yang et al., 2017), rewards (Zhou et al., 2020) and the number of 'friends' the reviewer has attracted (Hlee et al., 2019; Li et al., 2017).

Finally, the existing research also suffers from a lack of a theoretical foundation that explains the motivational effects of gamification, and by having a narrow methodological scope; most empirical studies have relied on information taken from platforms, obtained using data mining techniques such as web crawling (Hu and Chen, 2016; Kwok and Xie, 2016; Li et al., 2017; Liang et al., 2017, 2019; Liu et al., 2018, 2019; Schuckert et al., 2016; Zhang et al., 2020), web scraping (Moro et al., 2019) and web harvesting (Hlee et al., 2019; Yang et al., 2017). With few exceptions (e.g., Zhou et al., 2020), the existing research has not analysed the subjective experience of users, that is, the consumers and the reviewers.

To address these gaps this study proposes a model to explain the motivational mechanisms through which gamified elements in tourism and hospitality review platforms motivate reviewers to create and post user-generated content. More specifically, this study provides empirical evidence for the R.A.M.P. (Relatedness-Autonomy-Mastery-Purpose) gamification framework (Marczewski, 2015) and extends it to the context of tourism and hospitality review platforms. This framework proposes that, to motivate individuals, it is highly important that the gamified systems evoke in them feelings of relatedness, autonomy, mastery and purpose. Thus, this study analyses the specific effects of the reviewer's interactions with the motivational affordances on the TripAdvisor platform in relation to four basic psychological needs, the impact of these needs on motivation –differentiating between autonomous and controlled motivation– and their ultimate effects on content creation.

This study provides both theoretical and managerial contributions to this emerging topic.

Recent studies have called for a deeper understanding of gamification in tourism and hospitality review platforms from the reviewer's perspective (Moro et al., 2019). In particular, the question as to how gamified platforms motivate reviewers to make contributions remains unanswered. Moreover, recent studies have noted that there is a lack of theoretical rigour in gamification research (Rapp et al., 2019). This study responds to these calls and advances previous research by proposing and testing a research model, based on the R.A.M.P. framework of gamification (Marczewski, 2015), that examines the underlying motivational mechanisms that drive reviewers to create user-generated content.

In addition, there has, indeed, been little empirical research in this field, and many of the studies that have been undertaken have focused mainly on the impact of badges (e.g., Banerjee et al., 2017; Kwok et al., 2020; Liu et al., 2018, 2019; Moro et al., 2019; Schuckert et al., 2016; Zhang et al., 2020). Therefore, this study contributes to a greater understanding of the topic by examining a more diverse set of game elements (i.e., points, badges, levels, profile personalisation, travel maps). Furthermore, the study addresses the methodological limitations of prior works examining the effectiveness of gamification in tourism and hospitality review platforms. Through an analysis of reviewers' perceptions of their interactions with gamified systems, using a methodologically-rigorous questionnaire-based research, this work improves on studies which used web scraping and crawling to obtain information about reviewers/reviews (e.g., Hlee et al., 2019; Liang et al., 2019; Liu et al., 2019; Moro et al., 2019; Zhang et al., 2020), and tourism-focussed gamification studies based on case studies and theoretical papers (e.g., Skinner et al., 2018; Xu et al., 2017).

Finally, the study makes suggestions for platform developers and marketers.

2. Model development

2.1. From self-determination theory to the R.A.M.P. framework

Gamification involves motivational designs aimed at persuading people to behave in a certain way (Werbach and Hunter, 2012). Understanding individuals' motivations is crucial for explaining the effects of gamification. Thus, self-determination theory (Deci and Ryan, 2000; Ryan and Deci, 2000) has become a key framework in gamification research (Tobon et al., 2020).

Self-determination theory is one of the leading human motivation theories; it moves forward the standard definition of motivation by identifying different types of motivation, delineated by the forces that persuade individuals to act (Ryan and Deci, 2000). In contrast to traditional motivation theories which focus on total amount of motivation, self-determination theory maintains that there are various types of motivation, and that motivation type is far more important than amount of motivation for predicting individuals' behaviours (Deci and Ryan, 2008).

The theory proposes that the distinction of motivation begins with the classic differentiation of intrinsic motivation versus extrinsic motivation (Deci et al., 1996). *Intrinsic motivation* refers to individuals behaving voluntarily, seeking fun and enjoyment (Ryan and Deci, 2000), whereas *extrinsic motivation* refers to individuals behaving to attain some external outcome, such as receiving a tangible reward (Deci and Ryan, 2015). Early studies into motivation analysed the effects of extrinsic rewards on intrinsic motivation, and found that when individuals were given extrinsic rewards for doing intrinsically interesting activities, their intrinsic motivation was damaged (Deci et al., 1999). In particular, Deci et al. (1999) found that if rewards were contingent on behaviours performed, and were expected, this decreased intrinsic motivation. In contrast, other studies found that providing individuals with choice and positive feedback tended to enhance intrinsic motivation (Deci et al., 1999; Deci and Ryan, 2000). The reason behind this finding was that individuals did not perceive these rewards as controlling, but rather they gave them a sense of self-determination, or autonomy.

This posed the question as to whether individuals can be self-determined while, at the same time, extrinsically motivated. Self-determination theory addressed the issue by, first, establishing that extrinsically motivated behaviours vary in the degree to which they are controlled, as opposed to autonomous, or self-determined and, second, by dividing them into external regulation, introjected regulation, identified regulation and integrated regulation (Deci et al., 1996). *External regulation* is the most controlled (i.e., the least self-determined/autonomous) form of extrinsic motivation. It describes the circumstances where individuals' behaviours are externally imposed and controlled (Deci and Ryan, 2000). *Introjected regulation* relates to behaviours motivated by internal pressures, such as when individuals carry out activities for ego enhancement or to avoid shame (Deci and Ryan, 2000). *Identified regulation,* a more fully self-determined form of extrinsic motivation, relates to when individuals behave in certain ways because they identify with the intrinsic value of the behaviour (Deci and Ryan, 2000). Finally, *integrated regulation* leads individuals to integrate external regulations with other aspects of the self, so that they behave in a certain way because, to them, the behaviour is important or valuable (Deci et al., 1996).

Based on this subdivision of extrinsic motivation, self-determination theory proposes a new classification of motivation, distinguishing

between autonomous and controlled motivation. *Autonomous motivation* has been defined as behaving with a full sense of choice, and includes intrinsic motivation and well-internalised forms of extrinsic motivation (i.e., identified regulation and integrated regulation), whereas *controlled motivation* involves behaving under pressure and facing demands to achieve specific, externally imposed outcomes; it includes external and introjected forms of extrinsic motivation (Deci and Ryan, 2008, 2015). Experimental and field studies in varied contexts have examined the consequences of these two types of motivation; these found that outcomes are better when individuals are autonomously motivated, as this leads to higher levels of psychological well-being (Deci et al., 1996), affective commitment and increased performance (Gagné et al., 2015), among other positive results.

Given the findings about the importance of autonomous motivation, subsequent studies examined its antecedents and found that the satisfaction of individuals' basic psychological needs for autonomy, competence and relatedness facilitate internalisation and integration and, thus, foster autonomous motivational forms (Deci and Ryan, 2015; Ryan and Deci, 2000). *Autonomy,* or self-determination, relates to the individual's experience of his/her behaviour as choiceful (de Charms, 1968). When individuals are threatened, closely watched, or evaluated, they feel controlled and pressured, which diminishes their autonomy, whereas they experience greater autonomy if they are offered choice (Deci and Ryan, 2000). While control leads to compliance, autonomy leads to engagement (Pink, 2009), which takes us to the second psychological need, the need for competence. *Competence,* or mastery, is the experiencing of one's behaviour as effective (White, 1959), and of being able to produce desired outcomes. Individuals aim at becoming skilled at an activity and, eventually, mastering it (Marczewski, 2015) and, to do so, they need to be engaged with the activity (Pink, 2009). Finally, *relatedness* is the feeling of connection with others (Baumeister and Leary, 1995). As McGonigal (2011) noted, humans are social creatures and want to share experiences and create bonds. Thus, supportive social climates enhance autonomous motivation (Deci and Ryan, 2008).

Based on self-determination theory, Pink (2009) proposed the drive framework of motivation, which agrees that autonomous forms of motivation are dependent on autonomy and mastery, but adds a third leg to the tripod, that is, purpose. *Purpose* is the individual's desire to do something that has meaning (Pink, 2009). Individuals crave being part of something larger than themselves, and to feel that their actions matter and have worth not just to themselves, but to a much larger group, such as a community or an organisation (McGonigal, 2011). The psychological need for purpose corresponds to one of the core drivers of gamification proposed in Chou (2019)'s Octalysis framework, namely 'meaning'; this is where a player believes that (s)he is involved in something greater than him/herself (Chou, 2019). Purpose gives context to the other psychological needs, that is, autonomous individuals who work to achieve mastery perform well, but those who do so with a purpose greater than themselves perform even better, as they are more profoundly motivated (Pink, 2009).

Combining self-determination theory and the drive framework of motivation, Marczewski (2015) proposed the R.A.M.P. (Relatedness-Autonomy-Mastery-Purpose) framework to analyse these four intrinsic motivators, fundamental for the optimal human experience (McGonigal, 2011), in the context of gamification. Marczewski (2015) argued that gamified systems that enable relatedness, autonomy, mastery and purpose promote autonomous motivation and, as a consequence, the activity itself becomes the reward. This is the basis of all successful gamification systems.

2.2. Hypotheses development

Gamification has been conceptualised as a continuous process consisting of three main elements, that is, motivational affordances, psychological outcomes and behavioural outcomes (Hamari et al., 2014; Koivisto and Hamari, 2019). In combining this conceptualisation of gamification with the R.A.M.P. framework, it is expected that the motivational affordances provided in a gamified tourism and hospitality review platform will produce a series of psychological outcomes, that is, relatedness, autonomy, mastery, purpose and motivation, which may direct reviewers towards particular behaviours, such as the posting of user-generated content on the platform. Fig. 1 shows the proposed study model.

Gamified tourism and hospitality review platforms use points, levels and badges, among other game elements, to reward reviewers for their contributions, which can come in the form of reviews, posts, photos, etc. Previous studies in varied contexts have noted that the user's interaction with motivational affordances promotes autonomous motivation as they meet his/her basic psychological needs (Bitrián et al., 2020; Xi and Hamari, 2019).

The basic psychological need for relatedness is associated with the individual's feeling of connection with others, and the sense of belonging to a group (Baumeister and Leary, 1995; Ryan et al., 2006). Therefore, the social networking features of gamified systems fulfil the individual's need for relatedness because they allow him/her to exchange information with others (Bitrián et al., 2021; Hassan et al., 2019; Wee and Choong, 2019); for example, they allow the individual to share views about the latest place (s)he has visited, and by receiving 'likes' and/or votes for his/her reviews, etc. The motivational affordances of gamified systems, such as cooperation and competition, also foster relatedness as they help users connect with each other and create a sense of belonging to a team (Bitrián et al., 2021; Suh et al., 2018; Van Roy and Zaman, 2019; Wee and Choong, 2019). Similarly, motivational affordances such as leaderboards and rankings also promote feelings of relatedness because they allow users to compare their performances and achievements with those of other users (Bitrián et al., 2020, 2021; Hassan et al., 2020; Suh et al., 2018; Xi and Hamari, 2019).

The basic psychological need for autonomy is related to the freedom to choose (Deci and Ryan, 2000). Thus, personalisation and customisation-based motivational affordances (e.g., when a user chooses an avatar to represent him/her on a platform) foster feelings of autonomy because they enable users freely to choose different aspects of a system and personalise the experience according to their preferences (Bitrián et al., 2020; Kim et al., 2015; Peng et al., 2012; Suh et al., 2018; Wee and Choong, 2019). Similarly, challenges, tasks and goals foster feelings of greater autonomy among users (van Roy and Zaman, 2019) because they can freely choose which they want to participate in, and those they do not; and motivational affordances such as badges and leaderboards arouse feelings of autonomy because they provide users with informational feedback on their performance of the challenges, tasks and goals they have freely chosen to pursue (Bitrián et al., 2020; Suh et al., 2018; Xi and Hamari, 2019).

The basic psychological need for mastery is related to the feeling of behaving effectively (Ryan et al., 2006). Therefore, feelings of mastery arise when gamified systems include points and badges (Bitrián et al., 2020, 2021; Peng et al., 2012; Sailer et al., 2017; Suh et al., 2018; Van Roy and Zaman, 2019; Xi and Hamari, 2019), because these game

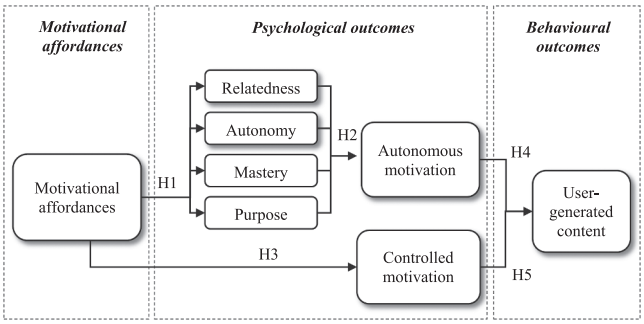

Fig. 1. Proposed model.

elements provide information about the user's success in particular tasks or challenges (Sailer et al., 2013; Werbach and Hunter, 2012). Similarly, motivational affordances such as levels and performance graphs also enhance perceptions of mastery (Bitrián et al., 2020, 2021; Hassan et al., 2020; Xi and Hamari, 2019) because they provide feedback on whether users are performing well and, therefore, progressing in the gamified system (Sailer et al., 2013). Competition and cooperation-based motivational affordances also promote mastery (van Roy and Zaman 2019; Xi and Hamari, 2019). On the one hand, competition among the users promotes mastery because it allows them to challenge each other to achieve the best results (Suh et al., 2018). On the other hand, cooperation helps users gain skills and knowledge about the gamified system through their interactions with other users, which increases their accomplishments (Xi and Hamari, 2019).

Finally, the basic psychological need for purpose is linked to the feeling that one is doing something worthwhile for a much larger group, such as a team or a community (McGonigal, 2011). Therefore, cooperation-based motivational affordances help users to develop a sense of altruistic purpose (Riar et al., 2020). Similarly, gamified systems which include altruistic elements such as gifting and features that allow users to help other each other, for example by answering questions, create in the users a sense of purpose (Marczewski, 2015). In video game contexts, it has been found that cooperation-based motivational affordances encourage players to help each other (Dolgov et al., 2014). In addition, allowing players to provide tips to others has also been associated with altruistic sentiment (Velez and Ewoldsen, 2013).

Based on the arguments above, the following hypotheses are proposed:

H1. *Interaction with motivational affordances promotes (a) relatedness, (b) autonomy, (c) mastery, and (d) purpose.*

It has been shown that, to thrive, individuals must have their basic psychological needs satisfied (Deci and Ryan, 2000). Thus, contexts that facilitate psychological need satisfaction foster autonomous motivational forms in users (Deci and Ryan, 2000; Ryan and Deci, 2000; Marczewski, 2015).

First, as individuals want to share experiences with others and feel part of a group, supportive social climates that satisfy the basic psychological need for relatedness, because individuals find them enjoyable, enhance autonomous motivation (Deci and Ryan, 2008). For instance, it has been demonstrated that gamified exercise apps that help users to relate to other users are more motivational (Bitrián et al., 2020). This is because individuals enjoy themselves more if they can connect to others, rather than feeling isolated (Baumeister and Leary, 1995). In game play, a sense of relatedness to other players has also been associated with greater intrinsic motivation to play games (Ryan et al., 2006), and greater persistence in game play (Neys et al., 2014). Users of review platforms feel part of a community of travellers who share same interests; therefore, it is to be expected they will enjoy, and feel motivated towards, participating on the platform.

Similarly, research has found that autonomous/self-determined individuals who freely make their own choices while playing a game are more persistent in game play (Neys et al., 2014), and show greater intrinsic motivation to play (Buil et al., 2019; Peng et al., 2012; Ryan et al., 2006), because feeling free makes the experience more enjoyable.

Other contexts capable of gamification, for example the workplace (Buil et al., 2020; Mitchell et al., 2020), learning (Chen and Jang, 2010) and exercise (Bitrián et al., 2020) are also more motivating if users experience in them a certain level of autonomy or self-determination.

In addition, individuals who feel masterful while playing games or participating in gamified activities show greater intrinsic motivation to play (Buil et al., 2019; Peng et al., 2012) and greater autonomous motivation to participate (Buil et al., 2020). The reason behind this is that individuals feel masterful at a specific task when they surpass a standard of excellence and, at that point, they become intrinsically motivated to continue with the task as it makes them feel good (Schüler et al., 2010). For instance, when users initially join a review platform community they have to learn how to create content on it; however, when they become masters they should find the activity more enjoyable and intrinsically motivating due to their newly acquired sense of control.

Finally, purpose increases autonomous forms of motivation to carry out activities which are not necessarily interesting (Pink, 2009), because individuals enjoy helping others (Riar et al., 2020). Therefore, contributing to the welfare of others can be intrinsically fulfilling for game players (Riar et al., 2020). This is in line with altruism theory, which proposes that enjoyment is a natural consequence of helping others (Batson and Shaw, 1991). In the context of tourism and hospitality review platforms, a sense of altruistic purpose is crucial, as helping others in the community of travellers is one of the primary reasons users are motivated to share their travel experiences online (Munar and Jacobsen, 2014).

Therefore, the following hypotheses are proposed:

H2a:. *Relatedness positively predicts autonomous motivation to create user-generated content.*

H2b:. *Autonomy positively predicts autonomous motivation to create user-generated content.*

H2c:. *Mastery positively predicts autonomous motivation to create user-generated content.*

H2d:. *Purpose positively predicts autonomous motivation to create user-generated content.*

In addition to promoting autonomous motivation through the satisfaction of basic psychological needs, interaction with game elements also directly promotes controlled motivation (Zeng et al., 2017). Self-determination theory proposes that controlled forms of motivation arise when the individual, for instance, performs a task to receive something in exchange (Ryan and Deci, 2000). Tourism and hospitality review platforms include elements, such as points and badges, that could be perceived as rewards given in exchange for content creation. Although Zhou et al. (2020) demonstrated that providing economic rewards to online travel community members does not necessarily promote higher mutual commitment, Poch and Martin (2015) found that providing rewards results in higher intention to create user-generated content. Indeed, game elements have been extensively described as incentives for users to behave in certain ways (Marczewski, 2015; Zeng et al., 2017). Controlled forms of motivation also arise from internal pressures, such as when individuals carry out activities for self-enhancement (Deci and Ryan, 2000). In this sense, the number of points received, the level achieved, the number of reviews posted and badges obtained could be perceived as status-centred achievements (Sailer et al., 2013) that fulfil self-enhancement which, in turn, might provide reviewers with controlled forms of motivation. As Hennig-Thurau et al. (2004) noted, this might also motivate individuals to create user-generated content.

Based on these arguments, the following hypothesis is proposed:

H3:. *Interaction with motivational affordances promotes controlled motivation to create user-generated content.*

The ultimate goal of gamification is to change individuals' behaviours (Robson et al., 2015). As Koivisto and Hamari (2019) proposed in their conceptualisation of gamification, the motivational affordances embedded in gamified systems enhance individuals' psychological outcomes, which, in turn, promote behavioural outcomes. Thus, it might be expected that the autonomous and controlled motivation that users derive from interacting with gamified elements will prompt them to create user-generated content (Sigala, 2015). As Neys et al. (2014) noted, it is obvious that, irrespective of the kind of motivation individuals experience, all motivational forms can drive them to perform a target behaviour. On the one hand, autonomously motivated reviewers are expected to create user-generated content because they intrinsically

enjoy the review writing process. On the other hand, an 'Elite' reviewer on Yelp.com, or a 'Level 6′ contributor on TripAdvisor.com, are viewed by other users as experts in writing reviews. Thus, the controlled motivation based on the desire to become an expert will also drive reviewers to contribute user-generated content to the platform (Wu, 2018).

Therefore, the following hypotheses are proposed:

H4:. *Autonomous motivation positively influences intention to create user-generated content.*

H5:. *Controlled motivation positively influences intention to create user-generated content.*

3. Methodology

3.1. Research context

The research model was tested in the context of TripAdvisor.com. TripAdvisor is the world's largest tourism and hospitality review platform; 463 million travellers each month browse 859 million reviews of 8.6 million lodgings, restaurants and attractions (TripAdvisor, 2019).

TripAdvisor uses a gamified programme called 'TripCollective' to encourage content creation. The programme recognises the contribution of the reviewers each time they post something on the platform. It is built mainly on three key game elements: points, levels and badges. The reviewers are "rewarded" for their contributions. For posting reviews or travel articles they receive 100 points; photos or videos, 30 points; forum posts, 20 points; rating establishments/tourist attractions, 5 points; and casting helpful votes for others' reviews, 1 point. The more points reviewers earn, the more their contribution to the travel community is recognised, and the higher will be their TripCollective level, ranging from Level 1 (300 points) to Level 6 (10,000 points).

TripCollective also awards reviewers with badges that reflect their contributions, and these are displayed on their profiles to demonstrate their expertise. Kotler et al. (2016) noted that traditional loyalty programmes usually incentivise customers with reward-redeemable points, whereas in customer communities such as TripAdvisor, users are motivated with reputation-based points, termed badges.

TripCollective features various kinds of badges. First, the 'Reviewer' badge (from 'New Reviewer'–1 review– to 'Top Contributor' –more than 50 reviews) which recognises overall number of reviews published. Second, the 'Expertise' badge (e.g., 'Hotel Expert', 'Restaurant Expert', 'Attraction Expert'), which recognises the number of reviews published in a single category. Third, the 'Passport' badge, which recognises that users are world travellers; the locations they have visited are added to their personal travel maps. Four, the 'Helpful votes' badge, which recognises users whose reviews other travellers have found particularly useful. Five, the 'Explorer' badge, awarded to users who are among the first to review a hotel, restaurant or attraction. Six, the 'Travelers Choice Reviewer' badge, awarded when a property that the user has favourably reviewed goes on to win a 'Travelers' Choice Award'.

Finally, TripAdvisor also enables reviewers to personalise their profiles, that is, their appearance and name, and to create their own travel maps in which they can identify the places they have visited around the globe.

3.2. Procedure

The data collection was undertaken through an online survey presented to U.S.-based registered TripAdvisor reviewers during April 2020. Following similar recent research (e.g., Zhang et al., 2020), Amazon Mechanical Turk (MTurk) was used to collect the data. Only MTurk workers with an approval rate of 95% or higher were allowed to take part in the survey. Each participant was paid $1.00.

To ensure that the participants were, in fact, registered TripAdvisor reviewers who contribute to TripAdvisor communities, three control questions were posed in the questionnaire: (1) *'Have you ever created content in TripAdvisor? E.g., posting reviews, uploading photos, rating reviews…'*; (2) *'How many points do you have on your TripCollective panel?'*; and (3) *'At what level are you according to your TripCollective panel?'*. After data screening, and the removal of incomplete and non-valid questionnaires, a total of 266 valid responses were available for data analysis.

The G*Power (version 3.1.9.7) programme was then used to verify the appropriateness of the sample size (Faul et al., 2007). For an alpha of 0.05, an estimated effect size of 0.15, 80% power and 4 predictors (the highest number of predictors of any latent variable in the model), a total sample size of 85 would be required. However, Ringle et al. (2014) recommended that this value be doubled or tripled to create a more consistent model. The final study sample is 266, above the recommended minimum sample size.

The characteristics of the sample appear in Table 1.

3.3. Measurement instrument

The questionnaire was designed using well-established scales taken from the previous literature (see Appendix 2). Interaction with motivational affordances was conceptualised as a second-order formative construct with five first-order factors: receiving points, reaching new levels, collecting badges, adding places to one's travel map and personalising one's profile. Following Xi and Hamari (2019), interaction with each factor was measured formatively by two indicators, the frequency and the importance of the interaction to the player/user. The needs for relatedness, autonomy and mastery were measured using items developed by Xi and Hamari (2019), while the need for purpose was measured following Sharma et al. (2018). Motivation was measured on the situational motivation scale (SIMS) developed by Guay et al. (2000). In line with previous research (e.g., Buil et al., 2020; Gagné et al., 2015), autonomous motivation was conceptualised as a second-order reflective construct measured through the identified regulation and intrinsic motivation subscales, and controlled motivation was measured on the external regulation subscale. Finally, intention to create user-generated content on TripAdvisor was measured using the scale proposed by Sigala (2015). In all cases, 7-point Likert-type scales were used.

The participants were also asked to indicate how long they had been registered TripAdvisor reviewers, their gender and their age. In addition, manipulation check questions were included to ensure accurate responses.

Table 1
Sample characteristics.

Variable	Categories	Respondents
Age	18–25	31
	26–35	120
	36–45	54
	46–55	38
	56–65	17
	Above 65	6
Gender	Male	166
	Female	100
Experience on TripAdvisor	Less than 6 months	46
	6–12 months	70
	12–18 months	35
	18–24 months	31
	More than 2 years	84
Level (and points) on TripCollective	0 (Less than 300 points)	90
	1 (300–499 points)	43
	2 (500–999 points)	51
	3 (1000–2499 points)	40
	4 (2500–4999 points)	17
	5 (5000–9999 points)	9
	6 (10,000 points and more)	16

3.4. Common-method bias

Common-method bias was assessed through various procedures (Podsakoff et al., 2003). First, participation in the study was voluntary and anonymity and data confidentiality were assured to ensure participants gave honest and non-artificial responses (Podsakoff et al., 2003). Second, to prevent the respondents from inferring cause-effect relationships, the dependent and independent variables appeared on different pages of the questionnaire. Third, a full collinearity test based on variance inflation factors (VIFs) was conducted. The VIF values ranged from 1.044 to 3.263, all lower than 3.3 (Kock, 2015). Finally, Harman's single factor test was applied (Podsakoff et al., 2003). The total variance explained by a single factor was 39.86%, below the threshold of 50%. Thus, common-method bias does not appear to be a significant factor in this research.

4. Analyses and results

Partial least squares (PLS) with SmartPLS 3.0 was used to test the proposed model (Ringle et al., 2015). PLS is more suitable than covariance-based structural equation modelling when the conceptual model includes constructs with formative indicators (Chin, 2010; Hair et al., 2011). In addition, PLS has less restrictive assumptions about the distribution of data. PLS simultaneously assesses the measurement and structural models. These two steps are now described.

4.1. Measurement model

The proposed model includes reflective and formative constructs. First, the reflective measurement model was analysed (Table 2). Individual item reliability for all factor loadings was confirmed as they were all above 0.60, and statistically significant at 1% (Carmines and Zeller, 1979). In addition, all constructs were internally consistent, as their composite reliabilities were greater than 0.7 (Nunnally and Bernstein, 1994). The constructs also had convergent validity, as the average variance extracted values were above 0.5 (Fornell and Larcker, 1981). Finally, discriminant validity was also confirmed as the square roots of the AVEs of each construct were greater than the inter-construct correlations (Table 3) (Fornell and Larcker, 1981).

Table 2
Descriptive statistics and reflective measurement model.

Variables	Items	Mean	SD	FL	CR	AVE	Q^2
Relatedness	REL1	5.09	1.25	0.830	0.903	0.699	0.182
	REL2	5.17	1.32	0.828			
	REL3	5.19	1.26	0.857			
	REL4	5.29	1.31	0.829			
Autonomy	AUT1	5.51	1.32	0.871	0.913	0.725	0.108
	AUT2	5.63	1.26	0.867			
	AUT3	5.37	1.46	0.781			
	AUT4	5.53	1.32	0.882			
Mastery	MAS1	5.10	1.34	0.873	0.909	0.715	0.222
	MAS2	5.38	1.33	0.855			
	MAS3	4.52	1.73	0.827			
	MAS4	5.25	1.40	0.827			
Purpose	PUR1	5.15	1.39	0.828	0.908	0.711	0.200
	PUR2	5.35	1.33	0.834			
	PUR3	5.13	1.42	0.843			
	PUR4	5.14	1.35	0.866			
Autonomous motivation	IM1	5.23	1.46	0.875	0.931	0.629	0.348
	IM2	5.25	1.42	0.885			
	IM3	5.16	1.41	0.837			
	IM4	5.30	1.39	0.835			
	IR1	4.90	1.59	0.851			
	IR2	4.82	1.55	0.904			
	IR3	5.39	1.40	0.773			
	IR4	4.90	1.62	0.828			
Controlled motivation	CM1	3.77	1.95	0.917	0.919	0.743	0.084
	CM2	3.70	2.03	0.932			
	CM3	2.73	1.94	0.672			
	CM4	3.51	2.09	0.900			
User-generated content	UGC1	5.39	1.31	0.700	0.878	0.591	0.273
	UGC2	5.17	1.43	0.814			
	UGC3	5.05	1.55	0.722			
	UGC4	5.11	1.60	0.795			
	UGC5	4.74	1.73	0.804			

Note: SD: Standard deviation; FL: Factor loading; CR: Composite reliability; AVE: Average variance extracted.

The formative measurement model was thereafter analysed. Collinearity was assessed by analysing the variance inflation factors. A VIF value of 5 or higher indicates a potential collinearity problem (Hair et al., 2011). Hence, as the 'badges' indicator presented a value above 5, it was removed from the gamification construct, and the model was re-estimated. As Table 4 shows, the resulting VIFs range from 2.941 to 3.833. In addition, external validity was analysed by assessing the indicators' weights and loadings. Indicators with statistically significant weights have external validity, but indicators with non-significant weights, but high loadings (i.e., above 0.50), also have acceptable external validity (Hair et al., 2017).

4.2. Structural model

After analysing the reliability and validity of the measurement scales, the statistical significance of the standardised paths were analysed through a bootstrapping procedure with 5000 subsamples. The model explained 59.4% of the variation of reviewers' autonomous motivation to create user-generated content, 12.8% of the variation of reviewers' controlled motivation to create user-generated content, and 49.6% of the variation of reviewers' intention to create user-generated content in TripAdvisor. To assess predictive relevance the Stone-Geisser test was conducted; the Q^2 values were all positive (see Table 2). Finally, as the SRMR (standardised root mean square residual) showed a value of 0.07, lower than the threshold of 0.08 (Hu and Bentler, 1998), it can be concluded that the model has good fit.

The results of the structural model are summarised and presented in Table 5. The results indicated that interaction with motivational affordances in TripAdvisor was positively associated with the satisfaction of the needs for relatedness ($\beta = 0.527$; $t = 9.565$), autonomy ($\beta = 0.400$; $t = 6.087$), mastery ($\beta = 0.577$; $t = 10.233$) and purpose ($\beta = 0.549$; $t = 10.542$), which supports H1a, H1b, H1c and H1d, respectively. Satisfaction of the needs for mastery ($\beta = 0.417$; $t = 5.165$) and purpose ($\beta = 0.273$; $t = 3.398$) were positively associated with reviewers' autonomous motivation, supporting H2c and H2d. However, no significant impact was found for either the need to satisfy relatedness ($\beta = 0.165$; $t = 1.517$) or autonomy ($\beta = -0.011$; $t = 0.888$), thus H2a and H2b are rejected. Interaction with motivational affordances in TripAdvisor increased reviewers' controlled motivation to participate in the community ($\beta = 0.358$; $t = 4.879$), which supports H3. The results also showed that, while reviewers' autonomous motivation positively predicted their intention to create user-generated content ($\beta = 0.683$; $t = 13.995$), supporting H4, reviewers' controlled motivation had no impact on behavioural intentions ($\beta = 0.025$; $t = 0.538$), rejecting H5. Finally, the only control variable that had a significant impact on reviewers' intention to create user-generated content was age ($\beta = -0.101$; $t = 2.186$). In particular, it was found that younger reviewers are more prone than older reviewers to contribute to TripAdvisor.

5. Discussion and conclusions

In recent times tourism and hospitality review platforms have started to apply gamification features to motivate reviewers to create content. However, scant empirical research has analysed this phenomenon. This study examines the extent to which interaction with motivational affordances on gamified platforms motivates reviewers to create user-generated content.

Table 3
Discriminant validity analysis.

	1	2	3	4	5	6	7	8
1. Motivational affordances	**N.A.**							
2. Relatedness	0.527	**0.836**						
3. Autonomy	0.400	0.693	**0.851**					
4. Mastery	0.577	0.745	0.611	**0.845**				
5. Purpose	0.549	0.826	0.624	0.676	**0.843**			
6. Autonomous motivation	0.557	0.693	0.528	0.717	0.684	**0.793**		
7. Controlled motivation	0.358	0.181	-0.052	0.285	0.185	0.313	**0.862**	
8. User-generated content	0.742	0.641	0.517	0.647	0.635	0.695	0.234	**0.768**

Note: The values on the diagonal are the square roots of the AVEs. Values below the diagonal are the inter-construct correlations. N.A.: not applicable.

Table 4
Formative measurement model.

Variable	Items	Loadings	t values	Weights	t values	VIFs
Motivational affordances	Points	0.883	22.242	0.361	2.635	3.156
	Levels	0.793	13.079	-0.141	0.896	3.691
	Profile	0.908	23.056	0.374	2.466	3.833
	Travel Map	0.937	31.448	0.484	3.504	2.941

Note: VIF: variance inflation factor.

Table 5
Structural model results.

Hypotheses	β	t value	p value
H1a: Motivational affordances → Relatedness	0.527	9.565	0.000
H1b: Motivational affordances → Autonomy	0.400	6.087	0.000
H1c: Motivational affordances → Mastery	0.577	10.233	0.000
H1d: Motivational affordances → Purpose	0.549	10.542	0.000
H2a: Relatedness → Autonomous motivation	0.165	1.517	0.129
H2b: Autonomy → Autonomous motivation	-0.011	0.141	0.888
H2c: Mastery → Autonomous motivation	0.417	5.165	0.000
H2d: Purpose → Autonomous motivation	0.273	3.398	0.001
H3: Motivational affordances → Controlled motivation	0.358	4.879	0.000
H4: Autonomous motivation → User-generated content	0.683	13.995	0.000
H5: Controlled motivation → User-generated content	0.025	0.538	0.591
Control variables:			
Experience on TripAdvisor	0.079	1.615	0.106
Points on TripCollective	-0.022	0.460	0.646
Gender	0.020	0.424	0.672
Age	-0.101	2.186	0.029

The findings showed that gamification directly increases controlled motivation and indirectly increases autonomous motivation through the satisfaction of basic psychological needs. This empirically demonstrates the motivational power of gamification. As expected, interacting with motivational affordances causes reviewers to develop feelings of relatedness, autonomy, mastery and purpose. However, contrary to our predictions, only mastery and purpose significantly increased autonomous motivation to create content on the platform. Although unexpected, this finding is in line with previous studies which also failed to demonstrate that satisfaction of the needs for relatedness (e.g., Buil et al., 2019; Mitchell et al., 2020; Vandercammen et al., 2014) and autonomy (e.g., Vandercammen et al., 2014) had a significant effect on autonomous motivation.

In addition, the findings showed that, of the two types of motivation, autonomous motivation is more important, as it alone had a significant impact on intention to create content. This finding is in line with previous studies which also found that autonomous motivation, but not controlled motivation, had a significant impact on individuals' behaviours (e.g., Buckley and Doyle, 2016; Koestner et al., 2008).

Finally, it is also important to note that the findings indicated that the length of time reviewers have been registered on TripAdvisor, and the amount of points they have collected on TripCollective, do not have a significant impact on intention to create user-generated content. This is an interesting finding given that some previous studies have suggested that gamification suffers from a 'novelty effect' (Hamari, 2017; Koivisto and Hamari, 2014). In other words, these authors suggested that gamification changes behaviours because individuals are initially curious about it but, when the novelty effect wears off, the behavioural changes tend to decrease. The present study demonstrated that both experienced and inexperienced reviewers are equally prone to create user-generated content on the gamified platform.

5.1. Theoretical implications

This study makes a number of theoretical contributions. First, recent studies have noted a lack of theoretical rigour in gamification research (Rapp et al., 2019). In particular, several researchers (e.g., Hamari et al., 2014; Johnson et al., 2016; Matallaoui et al., 2017; Sailer et al., 2017; Seaborn and Fels, 2015) have argued that there is a lack of theoretical foundation underpinning the explanation of the motivational effects of gamification. This shortcoming is particularly noted in the specific context of tourism and hospitality review platforms. The present study fills this gap by proposing and testing a research model based on the R.A.M.P. framework of gamification (Marczewski, 2015) which is, in turn, based on the main concepts of self-determination theory (Ryan and Deci, 2000). However, while self-determination theory has been widely used to explain the effectiveness of gamification (e.g., Bitrián et al., 2020: Buil et al., 2020; van Roy and Zaman, 2019), there is less supporting empirical evidence for the R.A.M.P. framework.

Second, regarding the research context, as recently noted by Koivisto and Hamari (2019), gamification research is strongly focussed on the education/learning and health/exercise domains, which creates an unbalanced view of how gamification actually works. Academic research into the use of gamification in tourism is limited (Xu et al., 2017) and, specifically, research into gamification applied to tourism and hospitality review platforms is notably scarce. The present study fills this gap by providing empirical evidence of the effects of gamification in the context of tourism and hospitality review platforms.

Third, most existing studies in this context have focused solely on the impact of badges (e.g., Banerjee et al., 2017; Hlee et al., 2019; Hu and Chen, 2016; Kwok and Xie, 2016; Kwok et al., 2020; Li et al., 2017, 2019, 2020; Liang et al., 2017; Liu and Park, 2015; Liu et al., 2018, 2019; Moro et al., 20191; Park and Nicolau, 2015; Schuckert et al., 2016; Zhang et al., 2020; Zhou and Guo, 2017). In fact, the use of a small set of game elements –mostly points, badges and leaderboards– has been identified in recent literature reviews on the topic as a limitation of general gamification research (e.g., Koivisto and Hamari, 2019; Rapp et al., 2019; Tobon et al., 2020). Therefore, this study advances knowledge of the topic by examining a more diverse set of game elements (i.e., points, badges, levels, profile personalisation, travel maps).

In addition, almost all previous studies that have analysed gamified tourism and hospitality review platforms have gathered their data directly from the platforms through web scraping and crawling (e.g., Hlee et al., 2019; Hu and Chen, 2016; Kwok and Xie, 2016; Li et al.,

2017; Liang et al., 2017, 2019; Liu et al., 2018, 2019; Moro et al., 2019; Schuckert et al., 2016; Yang et al., 2017; Zhang et al., 2020; Zhou et al., 2020), and most have analysed the phenomenon from the customer perspective (e.g., Banerjee et al., 2017; Filieri et al., 2019; Hlee et al., 2019; Hu and Chen, 2016; Kwok and Xie, 2016; Li and Park, 2015; Li et al., 2017, 2019, 2020; Liang et al., 2019; Park and Nicolau, 2015; Schuckert et al., 2016; Yang et al., 2017; Zhou and Guo, 2017). The present study provides a different perspective on the effectiveness of gamification by analysing reviewers' perceptions.

Finally, recent literature reviews on gamification have suggested that most empirical studies lack methodological rigour (Rapp et al., 2019) as they use inconsistent measurement instruments and small samples (Koivisto and Hamari, 2019). This gap is even most evident in the tourism context, where most existing research is based on case studies (e.g., Xu et al., 2017) or theoretical papers (e.g., Skinner et al., 2018). The present study bridges this gap by applying a methodologically-rigorous questionnaire-based empirical quantitative research using scales previously validated in previous studies, and a large sample.

5.2. Managerial implications

This study provides practical implications for tourism and hospitality review platforms. As previously noted, these platforms depend heavily for their content on their reviewers' voluntary contributions. Thus, motivating reviewers to participate on their platforms has been one of the main concerns of marketers. However, as this study demonstrates, not all motivation types are equally effective at delivering marketing outcomes.

The results of the study show how crucial it is that reviewers be autonomously motivated, as opposed to controlled, to create user-generated content. Thus, instead of offering extrinsic rewards that might be perceived as controlling, such as tangible gifts and/or discounts, to encourage users to post reviews, managers should introduce gamified systems into their platforms to make participation itself the reward.

To develop autonomous motivation reviewers' basic psychological needs must be satisfied, especially the needs for mastery and purpose. To do so, the gamified system should include achievement- and progression-related elements, such as challenges, as these provide reviewers with clear goals, give them a sense of purpose and highlight the importance of their actions. These challenges can be presented in increasingly difficult levels, and adjusted based on the reviewers' performances. It is also recommended that platforms include recognition elements such as badges or medals, as these visually and simply depict reviewers' achievements, and leaderboards/rankings so that they can compare their performance with others, thus enhancing their feelings of mastery.

In addition to including game elements related to achievement and progression, which are already common, it would be beneficial to include elements that increase the reviewers' immersion. Platforms might enable users to create avatars and let them customise their profiles and experience.

Finally, platform managers are recommended to introduce game elements that encourage social relatedness. Review platforms should create community forums in which users can help other travellers, thus enhancing their feelings of altruistic purpose. Similarly, platforms should enable reviewers to share the achievements they have made on the platform in their social networking sites, and to invite their friends (e.g., Facebook friends) to join the platform.

5.3. Limitations and future research opportunities

The main limitations of this study offer opportunities for future research. First, this study tested the proposed model using data from one specific tourism and hospitality review platform, TripAdvisor, and reviewers from one country, the United States. Future studies might apply the proposed model to other platforms and to reviewers from other countries.

Second, the data were obtained using a self-administered questionnaire. It would be interesting to measure the effectiveness of gamification using both objective and subjective measures, that is, if future studies could combine this methodology with information gathered directly from platforms.

Third, while the study used temporal cues as control variables, determining the long-term effects of gamification on reviewers was not possible due to the use of cross-sectional data. Thus, an interesting avenue for future research would be to use longitudinal data to analyse the long-term effects of gamification on reviewers' motivations and content creation.

In addition, while the basic psychological needs for relatedness, autonomy and mastery have been widely investigated in the literature, the need for purpose has hitherto not received the same level of attention. Thus, it would be interesting if future studies could examine the antecedents and consequences of altruistic purpose. This psychological need might play a key role, particularly in the current context. After more than a year of the COVID-19 pandemic, people are still hesitant to dine out and stay in hotels due to the perceived risks. Thus, reviewers who operate on tourism and hospitality platforms might be motivated to create content to dissuade potential consumers from patronising establishments which are not following government recommendations, and to promote establishments which are following the guidelines. Finally, while this study applied the R.A.M.P. framework to analyse motivation derived from gamification, future studies might use alternative frameworks, such as Octalysis (Chou, 2019), to deepen the understanding of the motivational effects of gamification on user-generated content creation in tourism and hospitality review platforms.

Acknowledgements

This study was supported by the Government of Spain (Spain) and the European Regional Development Fund (European Commission) (project ECO2017-82103-P) and by the Government of Aragón (Spain) (GENERES Group S-54_20R) co-financed by FEDER 2014–2020 'Building Europe from Aragón' (European Comission).

Declarations of interest

None.

Appendix 1. Summary of studies analysing gamified elements on tourism and hospitality platforms

Study	Platform	Data	Gamification-related findings
Liu and Park (2015)	Yelp	5090 reviews of 45 restaurants in London and NYC	Reviews from more reputed reviewers –with the 'Elite' badge- are perceived by travellers as more helpful.
Park and Nicolau (2015)	Yelp	5090 reviews of 45 restaurants in London and NYC	Reviews from reviewers with the 'Elite' badge are perceived as enjoyable.

(*continued on next page*)

(*continued*)

Study	Platform	Data	Gamification-related findings
Hu and Chen (2016)	TripAdvisor	147,912 reviews of hotels in Orlando and 201,670 reviews of hotels in Las Vegas (web crawling)	For hotels with low review ratings, top contributors –those with more badges- provide less helpful reviews.
Kwok and Xie (2016)	TripAdvisor	56,284 reviews of 1045 hotels in Texas (web crawling)	Reviewers with more review badges (from 'Reviewer' to 'Top Contributor') tend to provide more helpful reviews.
Schuckert et al. (2016)	TripAdvisor	1,181,935 reviews by 43,764 reviewers (web crawling)	Compared to reviewers with low-level badges, reviewers with high-level badges are more likely to avoid extreme ratings and, therefore, receive less helpful votes.
Banerjee et al. (2017)	Yelp	69,612 reviews of local businesses	'Elite' reviewers are perceived as more trustworthy.
Li et al. (2017)	Yelp	56,139 reviews of 100 hotels in Las Vegas (web crawling)	Reviews by 'Elite' reviewers receive more useful, funny and cool votes. Reviews from reviewers with more friends also receive more peer evaluation votes. However, 'Elite' friends are less likely to vote a review as funny, useful or cool, as they have stricter criteria.
Liang et al. (2017)	Airbnb	3830 lodgings of 1872 hosts in Hong Kong (web crawling)	Lodgings awarded with the 'Superhost' badge tend to receive higher ratings and more reviews.
Yang et al. (2017)	TripAdvisor	1158 reviews of one hotel in NYC (web harvesting)	Reviewer's helpful votes received is a key factor in explaining review helpfulness, whereas the level achieved on the platform only plays a subtle role.
Zhou and Guo (2017)	Yelp	70,610 restaurants in five major US cities	Reviews from more reputed reviewers –with the 'Elite' badge– are perceived by travellers as more helpful.
Liu et al. (2018)	TripAdvisor	39,950 reviews by 19,674 users (web crawling)	Reviewers with less badges are eager for quick promotion and, therefore, tend to write fewer words per review.
Filieri et al. (2019)	TripAdvisor	7455 reviews of 220 French hotels	The number of helpful votes received by a reviewer moderates the relationship between extreme review rating and review helpfulness.
Hlee et al. (2019)	Yelp	2629 reviews of 6 restaurants (web harvesting)	'Elite' reviewers and those with more 'friends' receive more helpful and funny votes.
Li et al. (2019)	Yelp	186,714 reviews of 300 restaurants in Las Vegas	Reviews from 'Elite' reviewers are perceived as more useful.
Liang et al. (2019)	TripAdvisor	106,498 reviews of 541 hotels in four major Chinese cities (web crawling)	Reviewers with more helpful votes are identified as more helpful.
Liu et al. (2019)	Qunar	33,099 Digest reviews and 35,828 general reviews (web crawling)	Users with the 'Digest review' badge tend to make additional effort to post reviews.
Moro et al. (2019)	TripAdvisor	67,685 reviews of 21 hotels in Las Vegas (web scraping)	Travellers with more 'Explorer' badges –which are awarded for first ever reviews of any restaurant or hotel– tend to post shorter reviews, which lack emotion, as emotions take more time to express. On the contrary, travellers with more 'Passport' badges–which are awarded based on the destinations the user has visited and reviewed– want to show their expertise and, thus, tend to write longer reviews.
Kwok et al. (2020)	Airbnb	166,489 reviews of 3128 listings in San Francisco and 814,634 reviews of 28,693 listings in NYC	Listings managed by hosts with the 'Superhost' badge receive more reviews and more positive comments.
Li et al. (2020)	Yelp	600,686 reviews of 300 restaurants in the US	Reviewer expertise –having the 'Elite' badge- can mitigate the positive role of negative emotional intensity on review helpfulness and strengthen the negative influence of positive emotional intensity in review helpfulness.
Zhang et al. (2020)	Yelp	546,505 reviews in Phoenix and 182,064 reviews in Tucson (web crawling)	In the short term, 'Elite' reviewers increase their contributions and the readability of their reviews, and become more conservative, whereas in the long term their numerical rating behaviours stabilise.
Zhou et al. (2020)	Mafengwo, Tuniu and Qyer	569 user surveys	Providing rewards to users of an online travel community does not make them more committed.

Appendix 2. Measurement instrument

Variables	Items		Sources
Motivational affordances	Points	Receive points for my contributions	
	Levels	Reach new levels	
	Badges	Collect badges	
	Profile	Personalise my profile	
	Map	Add more places to my travel map	
Relatedness	REL1	I feel that other people in TripAdvisor care what I have to say and what I do	Xi and Hamari (2019)
	REL2	I feel supported by other TripAdvisor users	
	REL3	I feel like I am a valuable person to other TripAdvisor users	
	REL4	I feel that I am understood	
Autonomy	AUT1	I feel free to participate in TripAdvisor	Xi and Hamari (2019)
	AUT2	I feel free to express my ideas and opinions in TripAdvisor	
	AUT3	I feel free from outside pressures to participate in TripAdvisor	
	AUT4	I feel I can be myself when I participate in TripAdvisor	
Mastery	MAS1	I think I am pretty good in TripAdvisor	Xi and Hamari (2019)
	MAS2	I am satisfied with my performance in TripAdvisor	
	MAS3	I feel like an expert in TripAdvisor	
	MAS4	I feel like a competent person in TripAdvisor	
Purpose	PUR1	I aim to make TripAdvisor a better website	Sharma et al. (2018)
	PUR2	I seek to learn so I can help other users	
	PUR3	My current pursuits will help me to contribute to TripAdvisor	
	PUR4	I make efforts to promote other TripAdvisor users' well-being	

(*continued on next page*)

(*continued*)

Variables	Items		Sources
Intrinsic motivation	IM1	I think it is interesting	Guay et al. (2000)
	IM2	I think it is pleasant	
	IM3	I think it is fun	
	IM4	I feel good	
Identified regulation	IR1	I am doing it for my own good	Guay et al. (2000)
	IR2	I think that it is good for me	
	IR3	By personal decision	
	IR4	I believe that it is important for me	
Controlled motivation	CM1	I am supposed to do it	Guay et al. (2000)
	CM2	It is something I have to do	
	CM3	I don't have any choice	
	CM4	I feel that I have to do it	
User-generated content	UGC1	Writing reviews	Sigala (2015)
	UGC2	Posting photos and/or videos	
	UGC3	Evaluating others' content (e.g., rating reviews)	
	UGC4	Updating my travel map and profile with travel content	
	UGC5	Interacting with others (e.g., sending messages, posting in forums…)	

References

Abou-Shouk, M., Soliman, M., 2021. The impact of gamification adoption intention on brand awareness and loyalty in tourism: The mediating effect of customer engagement. J. Decis. Mark. & Manag. 20, 100559.

Banerjee, S., Bhattacharyya, S., Bose, I., 2017. Whose online reviews to trust? Understanding reviewer trustworthiness and its impact on business. Decis. Support Syst. 96, 17–26.

Batson, D., Shaw, L., 1991. Evidence for altruism: toward a pluralism of prosocial motives. Psychol. Inq. 2 (2), 107–122.

Baumeister, R.F., Leary, M.R., 1995. The need to belong: desire for interpersonal attachments as a fundamental human motivation. Psychol. Bull. 117 (3), 497–529.

Bitrián, P., Buil, I., Catalán, S., 2020. Gamification in sportapps: the determinants of users' motivation. Eur. J. Manag. Bus. Econ. 29, 365–381.

Bitrián, P., Buil, I., Catalán, S., 2021. Enhancing user engagement: the role of gamification in mobile apps. J. Bus. Res. 132, 170–185.

Buckley, P., Doyle, E., 2016. Gamification and student motivation. Interact. Learn. Environ. 24 (6), 1162–1175.

Buil, I., Catalán, S., Martínez, E., 2019. Encouraging intrinsic motivation in management training: the use of business simulation games. Int. J. Manag. Educ. 17, 162–171.

Buil, I., Catalán, S., Martínez, E., 2020. Understanding applicants' reactions to gamified recruitment. J. Bus. Res. 110, 41–50.

Carmines, E., Zeller, R., 1979. Reliability and validity assessment. In: Sage University Paper Series on Quantitative Applications in the Social Sciences, 17. Sage Publications, Beverly Hills and London.

Chen, K., Jang, S., 2010. Motivation in online learning: testing a model of self-determination theory. Comput. Hum. Behav. 26, 741–752.

Chin, W.W., 2010. How to write up and report PLS analyses. Handbook of Partial Least Squares. Springer, Heidelberg, Berlin, pp. 655–690.

Chou, Y., 2019. Actionable gamification: Beyond Points, Badges, and Leaderboards. Packt Publishing Ltd.

Çilingir, Z., Gültekin, Y., 2021. Gamification applications in hospitality and airline industries: A unified gamification model. Gamification for Tourism. Channel View Publications.

de Charms, R., 1968. Personal Causation. Academic, New York.

Deci, E., Ryan, R., 2000. The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. Psychol. Inq. 11, 227–268.

Deci, E., Ryan, R., 2008. Facilitating optimal motivation and psychological well-being across life's domains. Can. Psychol. 49, 14–23.

Deci, E., Ryan, R. , 2015. Self-Determination Theory. International Encyclopedia of the Social & Behavioral Sciences, second ed., 21, 486–491.

Deci, E., Koestner, R., Ryan, R., 1999. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. Psychol. Bull. 125, 627–668.

Deci, E., Ryan, R., Williams, G., 1996. Need satisfaction and the self-regulation of learning. Learn. Individ. Differ. 8 (3), 165–183.

Deterding, S., Dixon, D., Khaled, R., Nacke, L., 2011. From Game Design Elements to Gamefulness: Defining "Gamification", MindTrek, Tampere.

Dolgov, I., Graves, W., Nearents, M., Schwark, J., Volkman, C., 2014. Effects of cooperative gaming and avatar customization on subsequent spontaneous helping behavior. Comput. Hum. Behav. 33, 49–55.

Faul, F., Erdfelder, E., Lang, A., Buchner, A., 2007. G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behav. Res. Methods 39, 175–191.

Filieri, R., Raguseo, E., Vitari, C., 2019. What moderates the influence of extremely negative ratings? The role of review and reviewer characteristics. Int. J. Hosp. Manag. 77, 333–341.

Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. J. Mark. Res. 18, 39–50.

Gagné, M., Forest, J., Vansteenkiste, M., Crevier-Braud, L., van den Broeck, A., Aspeli, A. K., Bellerose, J., Benabou, C., Chemolli, E., Güntert, S.T., Halvari, H., Indiyastuti, D. L., Johnson, P.A., Molstad, M.H., Naudin, M., Ndao, A., Olafsen, A.H., Roussel, P., Wang, Z., Westbye, C., 2015. The multidimensional work motivation scale: Validation evidence in seven languages and nine countries. Eur. J. Work Organ. Psychol. 24 (2), 178–196.

Guay, F., Vallerand, R.J., Blanchard, C., 2000. On the assessment of situational intrinsic and extrinsic motivation: the Situational Motivation Scale (SIMS). Motiv. Emot. 24 (3), 175–213.

Hassan, L., Dias, A., Hamari, J., 2019. How motivational feedback increases user's benefits and continued use: A study on gamification, quantified-self and social networking. Int. J. Inf. Manag. 46, 151–162.

Hair, J., Hollingsworth, C.L., Randolph, A.B., Chong, A.Y.L., 2017. An updated and expanded assessment of PLS-SEM in information systems research. Ind. Manag. Data Syst. 117 (3), 442–458.

Hair, J.F., Ringle, C.M., Sarstedt, M., 2011. PLS-SEM: indeed a silver bullet. J. Mark. Theory Pract. 19 (2), 139–152.

Hamari, J., 2017. Do badges increase user activity? A field experiment on the effects of gamification. Comput. Hum. Behav. 71, 469–478.

Hamari, J., Koivisto, J. , Sarsa, H. , 2014. Does gamification work? A literature review of empirical studies on gamification. In: Proceedings of the Forty Seventh Hawaii International Conference on System Sciences.

Hassan, L., Xi, N., Gurkan, B., Koivisto, J. , Hamari, J. , 2020. Gameful self-regulation: a study on how gamified self-tracking features evoke gameful experiences. In: Proceedings of the Fifty Third Hawaii International Conference on System Sciences.

Hennig-Thurau, T., Gwinner, K., Walsh, G., Gremler, D., 2004. Electronic word-of-mouth via consumer-opinion platforms: what motivates consumers to articulate themselves on the Internet? J. Interact. Mark. 18, 38–52.

Hlee, S., Lee, J., Yang, S., Koo, C., 2019. The moderating effect of restaurant type on hedonic vs utilitarian review evaluations. Int. J. Hosp. Manag. 77, 195–206.

Hu, L., Bentler, P., 1998. Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. Psychol. Methods 3, 424–453.

Hu, Y., Chen, K., 2016. Predicting hotel review helpfulness: the impact of review visibility, and interaction between hotel stars and review ratings. Int. J. Inf. Manag. 36, 929–944.

Johnson, D., Deterding, S., Kuhn, K., Staneva, A., Stoyanov, S., Hides, L., 2016. Gamification for health and wellbeing: A systematic review of the literature. Int. Interv. 6, 89–106.

Kasurinen, J., Knutas, A., 2018. Publication trends in gamification: a systematic mapping study. Comput. Sci. Rev. 27, 33–44.

Kim, K., Schmierbach, M.G., Chung, M.Y., Fraustino, J.D., Dardis, F., Ahern, L., 2015. Is it a sense of autonomy, control, or attachment? Exploring the effects of in-game customization on game enjoyment. Comput. Hum. Behav. 48, 695–705.

Kock, N., 2015. Common method bias in PLS-SEM: a full collinearity assessment approach. Int. J. e-Collab. 11, 1–10.

Koestner, R., Otis, N., Powers, T., Pelletier, L., Gagnon, H., 2008. Autonomous motivation, controlled motivation, and goal progress. J. Personal. 17 (5), 1201–1230.

Koivisto, J., Hamari, J., 2014. Demographic differences in perceived benefits from gamification. Comput. Hum. Behav. 35, 179–188.

Koivisto, J., Hamari, J., 2019. The rise of motivational information systems: a review of gamification research. Int. J. Inf. Manag. 45, 191–210.

Kotler, P., Kartajaya, H., Setiawan, I., 2016. Marketing 4.0: Moving from Traditional to Digital. John Wiley and Sons, New Jersey.

Kwok, L., Tang, Y., Yu, B., 2020. The 7 Ps marketing mix of home-sharing services: Mining travelers' online reviews on Airbnb. Int. J. Hosp. Manag. 90, 102616.

Kwok, L., Xie, K., 2016. Factors contributing to the helpfulness of online hotel reviews: does manager response play a role? Int. J. Contemp. Hosp. Manag. 28, 2156–2177.

Li, H., Chuhan, W., Meng, F., Zhang, Z., 2019. Making restaurant reviews useful and/or enjoyable? The impacts of temporal, explanatory, and sensory cues. Int. J. Hosp. Manag. 83, 257–265.
Li, H., Liu, H., Zhang, Z., 2020. Online persuasion of review emotional intensity: a text mining analysis of restaurant reviews. Int. J. Hosp. Manag. 89, 102558.
Li, H., Zhang, Z., Meng, F., Janakiraman, R., 2017. Is peer evaluation of consumer online reviews socially embedded? – an examination combining reviewer's social network and social identity. Int. J. Hosp. Manag. 67, 143–153.
Liang, S., Schuckert, M., Law, R., Chen, C., 2017. Be a 'Superhost': the importance of badge systems for peer-to-peer rental accommodations. Tour. Manag. 60, 454–465.
Liang, S., Schuckert, M., Law, R., 2019. How to improve the stated helpfulness of hotel reviews? A multilevel approach. Int. J. Contemp. Hosp. Manag. 31, 963–977.
Liu, X., Schuckert, M., Law, R., 2018. Utilitarianism and knowledge growth during status seeking: evidence from text mining of online reviews. Tour. Manag. 66, 38–46.
Liu, X., Zhang, Z., Law, R., Zhang, Z., 2019. Posting reviews on OTAs: motives, rewards and effort. Tour. Manag. 70, 230–237.
Liu, Z., Park, S., 2015. What makes a useful online review? Implication for travel product websites. Tour. Manag. 47, 140–151.
Matallaoui, A., Koivisto, J., Hamari, J., Zarnekow, R., 2017. How effective is "exergamification"? A systematic review on the effectiveness of gamification features in exergames. In Proceedings of the 50th Hawaii International Conference on System Sciences.
Marczewski, A., 2015. Even Ninja Monkeys Like to Play: Gamification, Game Thinking and Motivational Design. CreateSpace Independent Publishing Platform.
McGonigal, J., 2011. Reality is Broken. The Penguin Press, New York.
Mitchell, R., Schuster, L., Jin, H., 2020. Gamification and the impact of extrinsic motivation on needs satisfaction: making work fun? J. Bus. Res. 106, 323–330.
Moro, S., Ramos, P., Esmerado, J., Jalali, S., 2019. Can we trace back hotel online reviews' characteristics using gamification features? Int. J. Inf. Manag. 44, 88–95.
Munar, A., Jacobsen, J., 2014. Motivations for sharing tourism experiences through social media. Tour. Manag. 43, 46–54.
Neys, J., Jansz, J., Tan, E., 2014. Exploring persistence in gaming: the role of self-determination and social identity. Comput. Hum. Behav. 37, 196–209.
Nunnally, J.C., Bernstein, I.H., 1994. Psychometric Theory. McGraw-Hill, New York.
Park, S., Nicolau, J., 2015. Asymmetric effects of online consumer reviews. Ann. Tour. Res. 50, 67–83.
Peng, W., Lin, J., Pfeiffer, K., Winn, B., 2012. Need satisfaction supportive game features as motivational determinants: an experimental study of a selfdetermination theory guided exergame. Media Psychol. 15, 175–196.
Pink, D.H., 2009. Drive: the Surprising Truth About What Motivates Us. Riverhead Books, New York.
Poch, R., Martin, B., 2015. Effects of intrinsic and extrinsic motivation on user-generated content. J. Strateg. Mark. 23, 305–317.
Podsakoff, P., McKenzie, S., Lee, J., Podsakoff, N., 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. J. Appl. Psychol. 88, 879–903.
Rapp, A., Hopfgartner, F., Hamari, J., Linehan, C., Cena, F., 2019. Strengthening gamification studies: Current trends and future opportunities of gamification research. Int. J. Hum. Comput. Stud. 127, 1–6.
Riar, M., Morschheuser, B., Hamari, J. , Zarnekow, R. 2020. How game features give rise to altruism and collective action? Implications for cultivating cooperation by gamification. In: Proceedings of the Fifty Third Hawaii International Conference on System Sciences.
Ringle, C., da Silva, D., Bido, D., 2014. Structural equation modeling with the SmartPLS. Braz. J. Mark. 13 (2), 56–73.
Ringle, C., Wende, S. , Becker, J. , 2015. SmartPLS 3. SmartPLS GmbH, Bönningstedt.
Robson, K., Plangger, K., Kietzmann, J., McCarthy, I., Pitt, L., 2015. Is it all a game? Understanding the principles of gamification. Business Horizons 58, 411–420.
Ryan, R., Rigby, C., Przybylski, A., 2006. The motivational pull of video games: a self-determination theory approach. Motiv. Emot. 30 (4), 344–360.
Ryan, R.M., Deci, E.L., 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. Am. Psychol. 55, 68–78.
Sailer, M., Hense, J., Mandl, J., Klevers, M., 2013. Psychological perspectives on motivation through gamification. Interact. Des. Archit. J. 19, 28–37.
Sailer, M., Hense, J., Mayr, S., Mandl, H., 2017. How gamification motivates: an experimental study of the effects of specific game design elements on psychological need satisfaction. Comput. Hum. Behav. 69, 371–380.
Salem, T., Twining-Ward, L., 2018. The Voice of Travelers: Leveraging User-generated Content for Tourism Development 2018. World Bank Group, Washington.
Schuckert, M., Liu, M., Law, R., 2016. Stars, votes, and badges: how online badges affect hotel reviewers. J. Travel Tour. Mark. 33 (4), 440–452.
Schüler, J., Sheldon, K., Fröhlich, S., 2010. Implicit need for achievement moderates the relationship between competence need satisfaction and subsequent motivation. J. Res. Personal. 44, 1–12.
Seaborn, K., Fels, D.I., 2015. Gamification in theory and action: A survey. Int. J. Hum. Comput. Stud. 74, 14–31.
Sharma, G., Yukhymenko-Lescroart, M., Kang, Z., 2018. Sense of purpose scale: development and initial validation. Appl. Dev. Sci. 22, 188–199.
Sigala, M., 2015. The application and impact of gamification funware on trip planning and experiences: the case of TripAdvisor's funware. Electron. Mark. 25 (3), 189–209.
Skinner, H., Sarpong, D., White, G., 2018. Meeting the needs of the Millennials and Generation Z: gamification in tourism through geocaching. J. Tour. Futures 4 (1), 93–104.
Suh, A., Wagner, C., Liu, L., 2018. Enhancing user engagement through gamification. J. Comput. Inf. Syst. 58 (3), 204–213.
Tobon, S., Ruiz-Alba, J.L., García-Madariaga, J., 2020. Gamification and online consumer decisions: Is the game over? Decis. Support Syst. 128, 113167.
TripAdvisor , 2019. TripAdvisor is the World's Largest Travel Site. ⟨http://ir.tripadvisor.com/⟩.
van Roy, R., Zaman, B., 2019. Unravelling the ambivalent motivational power of gamification: a basic psychological needs perspective. Int. J. Hum. Comput. Stud. 127, 38–50.
Vandercammen, L., Hofmans, J., Theuns, P., 2014. The mediating role of affect in the relationship between need satisfaction and autonomous motivation. J. Occup. Organ. Psychol. 87, 62–79.
Velez, J., Ewoldsen, D., 2013. Helping behaviors during video game play. J. Media Psychol. 25 (4), 190–200.
Wee, S.C., Choong, W.W., 2019. Gamification: predicting the effectiveness of variety game design elements to intrinsically motivate users' energy conservation behavior. J. Environ. Manag. 233, 97–106.
Werbach, K., Hunter, D., 2012. For the Win: How Game Thinking can Revolutionalize your Business. Digital Press, Wharton.
White, R., 1959. Motivation reconsidered: the concept of competence. Psychol. Rev. 66 (5), 297–333.
Wu, T., 2018. The Role of Gamification on Individual Behaviour: Evidences from Newsvendor Games and a User-generate Content Platform. University of Rochester.
Xi, N., Hamari, J., 2019. Does gamification satisfy needs? A study on the relationship between gamification features and intrinsic need satisfaction. Int. J. Inf. Manag. 46, 210–221.
Xu, F., Tian, F., Buhalis, D., Weber, J., Zhang, H., 2016. Tourists and mobile gamers: Gamification for tourism marketing. J. Travel & Tour. Mark. 33, 1124–1142.
Xu, F., Buhalis, D., Weber, J., 2017. Serious games and the gamification of tourism. Tour. Manag. 60, 244–256.
Yang, S., Shin, S., Joun, Y., Koo, C., 2017. Exploring the comparative importance of online hotel reviews' heuristic attributes in review helpfulness: a conjoint analysis approach. J. Travel Tour. Mark. 34, 963–985.
Zeng, Z., Tang, J., Wang, T., 2017. Motivation mechanism of gamification in crowdsourcing projects. Int. J. Crowd Sci. 1 (1), 71–82.
Zhang, M., Wei, X., Zeng, D., 2020. A matter of reevaluation: incentivizing users to contribute reviews in online platforms. Decis. Support Syst. 128, 113158.
Zhou, S., Guo, B., 2017. The order effect on online review helpfulness: a social influence perspective. Decis. Support Syst. 93, 77–87.
Zhou, Y., Berezina, K., Hui, W., Kim, W., 2020. Commitment is an act, not a word: examining members' commitment to travel-related online communities. Int. J. Hosp. Manag. 91, 102689.