

Exploring the impact of extrinsic motivation on users' intention to continue using a gamified tourism commerce platform

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Abstract: Gamification has obtained increasing attention in a number of fields including management, marketing, education, and health care. In the tourism context, the users of online tourism services are fond of online application platforms that are enjoyable and interesting, where gamification can be applied. Besides, with the increasing types and amount of online tourism platforms, the user churn rate is very high. Therefore, it is crucial for online tourism platforms to keep the tourists from switching to other platforms and explore users' motivations for using the platform. However, there are relatively few studies concerning the effects of the extrinsic motivation of gamification on users' psychological needs for using online tourism platforms in detail. Based on self-determination theory and gamification literature, this research identifies four different types of extrinsic motivations and investigates their effects on users' willingness to continue using gamified online travel platforms. Based on the questionnaire data, this research found that: 1) the four extrinsic motivations positively influence the satisfaction of consumers' basic psychological needs, but have weaker impacts on competence needs; 2) the satisfaction of consumers' three basic psychological needs is positively related to their intention to consistently use gamified travel platforms.

1 INTRODUCTION

In the Chinese market, following the "Double-11" event in 2009, various kinds of shopping carnival sales have emerged, and e-commerce platforms have launched various themes and games during the shopping carnival connecting brands, platforms, and users in order to create momentum for holiday marketing and facilitate consumers' purchases. It is believed that the concept of gamification has played an important role in these marketing events [6].

Likewise, gamification is increasingly applied in tourism marketing and is believed to become a trend in the future [54]. Gamification was found to increase consumers' willingness to participate, interact, and enhance consumer perceptions of enjoyment [55]. Research indicates that gamification may further influence OTA platform users' purchase intentions by satisfying consumers' intrinsic and extrinsic psychological needs [35][36]. Another study based on TripAdvisor's online travel review site reveals the relationship between contributor levels and the number of scores and helper votes [47].

Therefore, it is important to understand what motivates users to use gamified products. Self-determination theory explains the motivation behind the choices people make, focusing on the extent to which a person's actions are triggered by self-determination. While previous research on gamification of e-commerce platforms focused on

exploring the design factors of gamification and the impacts on consumers' decision-making process, little is known in terms of how gamification influences consumers' behaviors through their motivations. Therefore, this study explores how the gamification settings of travel commerce platforms can meet users' basic psychological needs from the perspective of four different extrinsic motivations, thus positively influencing users' willingness to continue using the platforms.

2 LITERATURE REVIEW

2.1 Gamification

The concept of gamification originates from games, which is the willingness to tackle unnecessary difficulties [50]. Gamification refers to incorporating game design elements into a non-game environment [11]. Existing studies on gamification mainly focus on two aspects: one is how to design and apply gamification elements; the other is to analyze the value and positive experience gamification brings to users.

Previous studies have defined a number of common gamification design elements. Points, badges, and leaderboards are three main game elements that make up "PBL", which enable the achievements, auctions, and game mechanics needed on a gamified platform [52]. Erb puts forward the Elemental Tetrad Model and holds that the four gamification elements of story, mechanism,

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aesthetics, and technical support play an important role in regulating the relationship between products and consumers [12]. However, gamification can be limited if it is only applied in a superficial way, such as points, badges, or leaderboards [53]. Therefore, we believe that gamification should also provide users with opportunities to socialize and identify with their own values.

On the other hand, relevant studies have also proved the positive mechanism of gamification on user behavior. The intention of users to adopt gamification will enhance their participation in tourism organizations, thus enhancing their brand loyalty and brand awareness [1]. By giving customers functional, social and emotional value, gamification can significantly improve users' purchase intention on the online travel platform [48]. Therefore, previous studies have mainly focused on how gamification enhances users' purchase intention and brand loyalty and love, while few studies have focused on users' willingness to continue using gamified platforms.

Since gamification can significantly increase users' engagement, an increasing number of companies are using gamification to market and promote their products (Kim, 2015a). Starbucks adopt a gamified marketing approach, where customers are rewarded with tangible and intangible rewards such as stars and points when they purchase Starbucks products, and they can redeem their stars for free drinks.

Gamification also positively contributes to the sustainability of tourism. Tourism companies can significantly increase customer engagement, enhance customer purchase behavior, and foster visitor loyalty through gamified marketing [56]. Airlines use gamification to enhance customer engagement and loyalty to the company brand, thus improving the customer experience [29]. Tourists can obtain information about tourist destinations through gamified social media

platforms, thus increasing their acceptance and willingness to use gamified platforms [5][26].

2.2 Extrinsic motivation in SDT

Self-determination theory (SDT) is a macro theory of human motivation and personality. It assumes that human beings are active organisms with a positive tendency to self-integration, self-improvement, and continuous learning, but the occurrence of this tendency is not natural and requires the support and sustenance of various external social factors to achieve. SDT has two sub-theories: cognitive evaluation theory (focusing on intrinsic motivation) and organismic integration theory (dealing with extrinsic motivation) [45].

According to the organismic integration theory, extrinsic motivation is divided into four types: external motivation, introjected motivation, identified motivation, and integrated motivation, illustrated in Figure 1. [46]. The degree of internalization of these four kinds of extrinsic motivation is increasing successively. However, it should be noted that although identified motivation and integrated motivation are highly internalized extrinsic motivations, they are very different from intrinsic motivation. Intrinsic motivation comes from people's spontaneous enjoyment of certain things or activities without being affected by external environmental factors while identified motivation and integrated motivation are based on external factors and are not self-sustained. Therefore, this study will focus on the role of extrinsic motivation in gamified platforms, to provide suggestions for e-commerce platforms, such as how to continuously enhance users' different types of extrinsic motivation and enhance their willingness to continue using the platform.

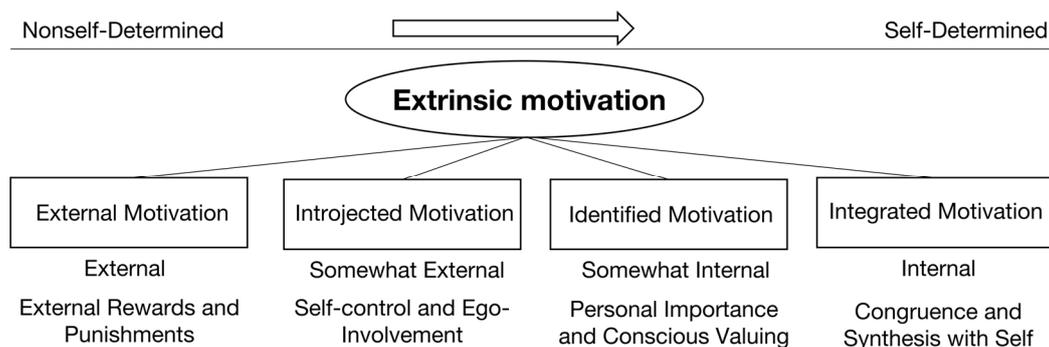


Figure 1: Different Types of Extrinsic Motivations.

2.3 Basic psychological need theory

Basic psychological Needs theory is another sub-theory of SDT theory [46]. It is a systematic exposition of people's motivational needs in a social context, which considers basic psychological needs as an indispensable innate psychological nutrient for the process of psychological growth, attainment of well-being, and psychological integrity [45]. SDT divides basic psychological needs into three types: autonomy, competence, and relatedness[10][45]. The need for autonomy refers to that people can make choices freely without external pressure

and interference, and actively participate in the decision-making process of various behaviors. The need for competence reflects people's desire to demonstrate their competence, achieve goals, and thus gain self-efficacy and self-competence approval. The need for relatedness reflects the desire to connect with others and to gain and maintain good social relationships. In this process, people usually have a strong sense of collective. According to SDT, when these three basic psychological needs are satisfied, people will actively participate in relevant activities and produce more positive results [46].

3 RESEARCH MODEL AND HYPOTHESES

3.1 Hypotheses development

The research model is based on the following main hypotheses in Figure 2:

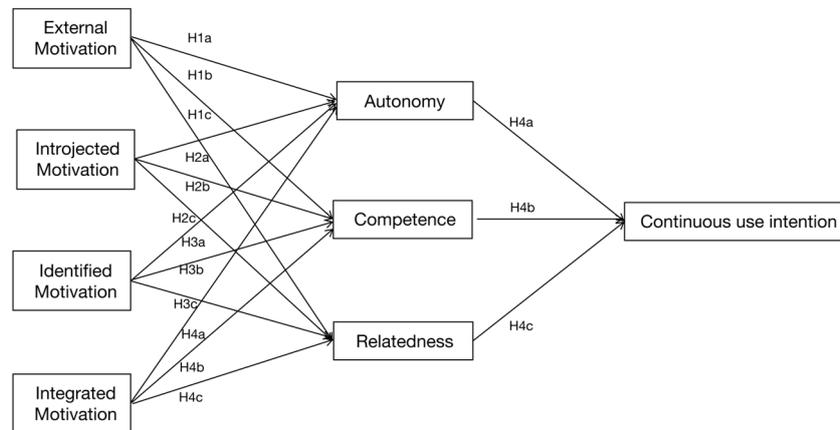


Figure 2: Research model

3.1.1 External motivation and basic psychological needs

Under the influence of external incentives, people are stimulated to engage in certain activities, thus increasing external motivation and sustaining rewards. Previous research has found that economically relevant gamification mechanics can be designed to give users a positive emotional experience by giving them rewards and incentives (gold coins, virtual currency, etc.). A previous study describes the rewards in gamification design as "financial benefits", believing that such benefits allow users to have a better consumption experience and have more enjoyment [23].

It is believed that financial incentives can motivate employees to engage in their work, increase their creativity, and thus improve their performance [49]. A study on Volkswagen showed that economic rewards promote engagement among Volkswagen users, especially when it is oriented to economic value, i.e., when economic rewards involve good value and bargains [3]. Receiving financial rewards gives shoppers a sense of competence and therefore contributes to an intrinsically motivated and enjoyable experience [43]. Therefore, we can speculate that users of online travel platforms receive economic rewards such as coupons, vouchers, discounts, etc. for completing specific tasks, achieving a high level of self-efficacy, thus enhancing satisfaction and realizing the need for autonomy and competence.

It is suggested that rewards giving and badges upgrading gamification mechanisms are positively associated with perceived enjoyment and social interaction, which in turn strongly influence consumers' impulse buying [34]. On gamified online shopping platforms, economically relevant reward mechanisms can effectively promote social interaction among consumers [19]. Ruth's research suggested that financial rewards can motivate individuals to establish social communication relationships [42]. When users participate in the cooperative tasks set by online travel platforms such as

Ctrip and Tuniu, participants can obtain the corresponding economic-related rewards by completing cooperative tasks such as "collecting a certain number of likes" or "inviting a certain number of friends to help". In the process, users have more social interactions with other social members and establish more social relationships. Therefore, we can assume that:

H1: a) Autonomy, b) competence, and c) relatedness need satisfaction are strongly predicted by external game motivation in gamified travel platforms.

3.1.2 Introjected motivation and basic psychological needs

Introjected motivation is the motivation that people have to achieve some sense of self-esteem, self-confidence, and recognition by the group, which motivates them to engage in some behavior and achieve self-improvement. Gamified e-commerce systems typically include game mechanics such as achievement, auction, status, etc., in which people compete, receive feedback, and collaborate..

By offering different points, the gamification platform allows users to freely choose the challenges they want to participate in and the type of points they want to earn [2]. Badges seem to be tied to their ego [9]. Different levels and types of badges will also give users a choice. Thus, users can generate sufficient self-control and satisfaction by earning points, badges, and high rankings on gamified travel platforms, thus satisfying their need for autonomy.

Points are a common form of incentive in games or gamification platforms, usually, a reward given to players for completing a specific task and a reflection of the player's progress on the task[53]. As points accumulate, users strengthen their perception of their ability to complete and solve specific tasks and gain a higher level of self-efficacy. High points also give users a sense of accomplishment, which reinforces their beliefs about their abilities [15]. This suggests that point rewards have a positive effect on the need for competence. Therefore, in the communities of online travel platforms, people earn points by writing and posting their feelings and related

comments about their trips, thus giving themselves a sense of accomplishment and satisfying their need for competence.

In terms of social comparison functions, leaderboards, personal scores, badges, and rank maps are often used in online games to enhance players' social interaction [14]. Previous research has concluded that points provide an incentive for users to interact more intensively with crowdfunding companies, which further strengthens the social connection between users and crowdfunding companies [15]. Therefore, users of online travel platforms have more communication and social connections with the platform and other users in the platform community as a result of points earned, thus satisfying the need for a sense of relatedness. We can therefore infer that:

H2: a) Autonomy, b) competence, and c) relatedness need satisfaction are strongly predicted by introjected game motivation in gamified travel platforms.

3.1.3 Identified motivation and basic psychological needs

According to social identity theory, everyone plays a different role in a social group, and people who belong to a certain group have their social positions. The process of seeking social identity is socio-psychological, and its essence is the personal self-consciousness of people in social groups, also known as social identity [31]. Game-related research defines social identity in gaming contexts as players classifying themselves as members of a small friendship group within a social gaming community. Through identification, players in the gaming community see themselves as members of the gaming group, set up common goals, find similarities with other group members, and are thus motivated to participate in online games [17]. The stronger the perception of identity players have in the gaming community, the more motivated they are to keep playing the game when they experience difficulties [38].

According to self-determination theory, when consumers feel autonomy, they are more likely to be intrinsically motivated and consistently engage in some activity [33]. A study of VBCs found that in consumer-hosted VBCs, members who identified with the group were more likely to have the motivation to maintain the community because they felt they were part of the group and had the right to determine community outcomes, and therefore community identification positively influenced their contribution to knowledge and continued involvement in the community [27]. So social identification gives users more autonomy in how they use the platform.

Previous studies have shown that higher identification leads to higher self-efficacy for users [28]. In a study of the game's avatar, it was found that higher levels of identification lead to higher feelings of competence, as identification makes the experience of the game's avatar more transferable to the user [25]. Therefore, we believe that social identity will lead users to a higher sense of achievement and status in the gaming community, increasing self-efficacy and thus satisfying the need for

competence.

Social identity indicates that the player classifies himself as a member of a small friendship group within a community game group. Through the identification process, players will formulate desires to participate in online group gaming by viewing themselves as group members, sharing in-group goals, and acting similar to other in-group members [30]. Therefore, we assume that users who participate in the online travel platform community have a sense of belonging and attachment to the community because they see themselves as part of the community group and establish social connections with other community members. Thus we predict that:

H3: a) Autonomy, b) competence, and c) relatedness need satisfaction are strongly predicted by identified game motivation in gamified travel platforms.

3.1.4 Integrated motivation and basic psychological needs

Integrated motivation is when people not only accept and identify with the values of the organization but also put those values into action to change their behavior and habits. Among them, a very important factor is value congruence.

Value congruence is strongly associated with organizational expectations and research has found that people with high-value congruence tend to demonstrate higher organizational commitment and organizational performance [8]. Thus, in this scenario, people are no longer just specifically motivated to perform some behavior, but they voluntarily engage and perform because they integrate their self-worth with the values of the organization or the collective. In the scenario of a gamified travel platform, when users identify with the values of the platform, they are more motivated to integrate and make certain behavioral changes. This process is not only motivated by the platform, but also by the fact that they have a strong sense of control over their behavior and actively engage in activities to gain the satisfaction of the need for autonomy.

Study in the field of education has similarly shown that when teachers' values are aligned with those of the school, there is a significant increase in average teacher scores, with gaining a perception of self-competence and generating a higher level of job satisfaction [13]. If values are aligned across all levels and areas of the organization, it will significantly improve the way staff work, increasing the efficiency of the company's operations and the ability of staff to do their jobs [7]. In gamified travel platforms, users will integrate and align themselves with the platform's values by participating in some gamified activities. This integrated motivation will allow them to perform better in the games of the travel platform, thus giving users a sense of competence satisfaction.

When a person strongly adheres to certain values, he or she is more inclined to appreciate those who share them. Value congruence helps to attract partners and gain liking and enables members of the organization to work together [24]. Byrne points out that if there is a higher degree of similarity in values between individuals, then the

relationship will make them more likely to be attracted to each other, resulting in positive emotions and harmonious interpersonal relationships [40]. As a result, when users of online travel platforms are aligned with the values of the travel platform, they will trust the groups on the platform more and be willing to generate more interactions with them, thus strengthening their social relationships with each other.

H4: a) Autonomy, b) competence, and c) relatedness need satisfaction are strongly predicted by integrated game motivation in gamified travel platforms.

3.1.5 Basic psychological needs and continuance use intention

In the area of physical education, studies have shown that high school students' autonomous motivation for sports can positively influence their willingness to continue participating in sports in college [18]. Therefore, we can speculate that when users feel a high degree of autonomy on a gamification platform, they will have more choice and a sense of control, thus promoting their willingness to continue using the gamification platform.

Studies have shown that there is a positive correlation between perceived competence and perceived usefulness [44]. Users' increased perceived usefulness of the gamified system will drive their willingness to continue using it. A study on social comparison elements shows that game users get a higher sense of self-efficacy by comparing leaderboards, badges, etc., which leads to a willingness to continuance intention [14].

A study on Pokémon games proved that social stimuli (critical mass and social interactions) positively influence the willingness to keep participating in the game and travel [21]. Previous research has demonstrated that social networks increase users' willingness to continue using them by providing them with social feedback [20]. Therefore, we believe that gamified travel platforms create opportunities for users to interact with other members of the community by setting up collaborative tasks and activities, thus enhancing users' sense of connection and generating a willingness to continued use.

H5: The satisfaction of a) autonomy, b) competence, and c) relatedness is positively related to users' intention to continue using the gamified travel platform.

4 DATA COLLECTION AND ANALYSIS

4.1 Data collection

Users of some typical travel commerce platforms in China, including Ctrip, Way cattle, and Fliggy, were selected for this study. Pictures and videos of the games were inserted into the questionnaire to prevent users from being unaware of the gamification settings of the platforms. We received 388 responses in total.

Of the questionnaire results, 60 people were excluded due to inappropriate data or not having used travel commerce platforms, giving a survey response rate of 84.5%. All questionnaires were online.

Since this was a study conducted in China, the original English content of the questionnaire was first translated into Chinese, and then into English after the collection of the questionnaire was completed. Four graduate students and four undergraduate students were asked to check the consistency of the Chinese and English versions. Before beginning data collection, a preliminary test was conducted with 25 people to refine the wording of the questionnaire and to check the presentation of the questionnaire instrument to further ensure that the questionnaire could be easily understood by those completing it. The final version of the questionnaire is shown in Appendix A.

4.2 Measures

All measurements in this study have been used and validated in previous studies (see Appendix A). Some changes have been made to better fit the context of our study. The four extrinsic motivation measures were adopted and changed from another study [51]. The basic psychological needs for autonomy and competence were measured with the items changed by [39]. The measure of relatedness psychological needs satisfaction was adapted from a previous study [35][36]. In addition, users' intention to continue using the gamified travel platform was measured by adapting a previous study's items [21]. All instruments were structured using a seven-point Likert scale ranging from "1=strongly disagree" to "7=strongly agree".

4.3 Sample characteristics

Table 1 shows the demographic data of the dataset. As can be seen from the table, about 33.9% of the subjects were male and about 66.2% of the subjects were female. The main customers of the travel business platform are young people such as students, and the users are mostly college or university-educated students or corporate employees.

Table 1: Sample demographics.

Measures	Item	Count	%
Gender	Male	129	33.8
	Female	253	66.2
	<18	3	0.8
	18-22	201	52.6
Age	23-25	26	6.8
	26-30	35	9.2
	31-40	71	18.6
	41-50	42	11.0
	>=50	4	1.0
	Student	202	52.8
Occupation	Civil servants	20	5.2
	Enterprise staff	99	25.9
	Freelancers	23	6.0
	Retiree	1	0.2
	Others	37	9.6
	Junior high and below	9	2.3
Education	High school or technical school	32	8.3
	College or University	275	71.9
	Master degree or above	66	17.2

4.4 Results

To test the model developed and the hypotheses proposed in this study, the data were analyzed using Amos version 26.0. Through a two-step data analysis procedure, we first tested the reliability and validity of the measurement model, and then tested the hypothesized relationships.

4.4.1 Measurement model

The assessment of the measurement model consists of the estimation of internal consistency, the convergent validity, and the discriminant validity test of structural validity.

In terms of internal consistency, this study assesses it using Cronbach's alpha and composite reliability. The study considers a Cronbach's alpha higher than 0.7 to be acceptable [41]. Our data results between 0.713 and 0.858, which exceeds the threshold value and proves that the internal consistency is sufficient. The acceptable threshold for composite reliability should be higher than 0.7 [4], and in this study, the composite reliability ranged from 0.725 to 0.860, indicating that the internal consistency was adequate. The results of the reliability and descriptive statistics of the structure are shown in Table 2.

Table 2: Construct reliability and validity.

Constructs	Items	Mean	S.D	Cronbach α	CR
External motivation	EM1	5.79	0.998	0.808	0.819
	EM2	5.52	1.074		
	EM3	5.32	1.224		
Introjected motivation	IT1	5.7	1.153	0.753	0.762
	IT2	5.78	1.215		
	IT3	5.73	1.074		
Identified motivation	IM1	5.29	1.268	0.748	0.764
	IM2	5.27	1.283		
	IM3	5.56	1.257		
Integrated motivation	IN1	5.34	1.176	0.851	0.85
	IN2	5.46	1.189		
	IN3	5.53	1.271		
Autonomy	AY1	5.64	1.139	0.713	0.725
	AY2	5.68	1.215		
	AY3	5.42	1.26		
Competence	CP1	5.1	1.188	0.788	0.797
	CP2	5.3	1.325		
	CP3	5.08	1.239		
Relatedness	RD1	5.56	1.208	0.799	0.814
	RD2	5.64	1.169		
	RD3	5.23	1.227		
Continuous use intention	CUI1	5.38	1.082	0.858	0.86
	CUI2	5.15	1.188		
	CUI3	5.14	1.095		

Note: CR-Composite Reliability

Thereafter, we evaluated the convergent validity using the Average Variance Extracted (AVE) values. The results showed that the AVE values were all above 0.5, indicating that the convergent validity of the scale was good.

Finally, the square root of the AVE of all structures was calculated to be higher than the square root between that structure and all other structures, as shown in Table 3, so we proved the adequate discriminant validity of the measure.

Table 3: Latent variable correlations.

	EM	IT	IM	IN	AY	CP	RD	CUI
External motivation	0.776							
Introjected motivation	0.519	0.721						
Identified motivation	0.350	0.310	0.726					
Integrated motivation	0.557	0.525	0.590	0.809				
Autonomy	0.436	0.645	0.350	0.603	0.685			
Competence	0.470	0.494	0.489	0.719	0.572	0.754		
Relatedness	0.521	0.440	0.518	0.775	0.529	0.722	0.773	
Continuous use intention	0.360	0.402	0.344	0.500	0.440	0.568	0.532	0.819

Note: The bold number in the diagonal row are square roots of the average variance extracted.

4.4.2 Structural model

The results of the analysis are shown in Figure 3,

demonstrating the standardized path coefficients (β) and the significance level of each path. The overall fit of this model is adequate (CMIN/DF=3.599, IFI=0.902, CFI=0.901) (Table 4).

Table 4: Model fit.

CMIN	CMIN/DF	IFI	CFI	RMSEA
788.279	3.599	0.902	0.901	0.083

In the test of path coefficients, H1c hypothesized that external motivation would positively affect relatedness, which was verified ($\beta=0.42$, $p<0.001$). H2a hypothesized that introjected regulation would positively and significantly affect the satisfaction of autonomy needs, which was also verified ($\beta=0.36$, $p<0.001$). H2b was also verified ($\beta=0.34$, $p<0.001$), indicating that introjected regulation positively influences users' satisfaction of the need for competence. H3b hypothesis that identity

regulation positively influences people's satisfaction of the need for competence was verified ($\beta=0.42$, $p<0.05$). H4a was also verified ($\beta=0.59$, $p<0.001$), indicating that integrative motivation positively predicts users' satisfaction of the need for autonomy. H4c hypothesis that integrative motivation positively predicts user satisfaction of associativity needs was also validated ($\beta=0.34$, $p<0.05$). In addition, H5a ($\beta=0.18$, $p<0.001$), H5b ($\beta=0.43$, $p<0.001$) and H5c ($\beta=0.18$, $p<0.001$) were all validated, indicating

that the satisfaction of basic psychological needs can significantly and positively influence users' willingness to continue using the gamified travel platform. The results for the four hypotheses H1b, H3a, H3c, and H4b are insignificant and therefore not proven.

In addition, the hypothesis of H1a shows a negative significant result, which shows that external motivation negatively affects the satisfaction of users' psychological need for autonomy. The hypothesis of H3a also showed a negative correlation, suggesting that identified motivation may negatively affect users' need satisfaction for autonomy.

Research by social psychologists has found that extrinsic incentives such as expected rewards, time

deadlines, etc. can diminish employees' interest and satisfaction with their work because it can put pressure on them to act [32], and the effect is especially pronounced for highly creative activities [16]. As a result, some game rules of gamified travel platforms may cause people to feel restricted and frustrated because the time is too short or the task is too difficult, negatively affecting the satisfaction of the need for autonomy. Similarly, although identified motivation can give users a sense of belonging to a group and self-identity, many times they believe they need to take on certain organizational or group responsibilities because they are part of a collective, which prevents them from freely choosing their preferences and thus inhibits the satisfaction of the need for autonomy.

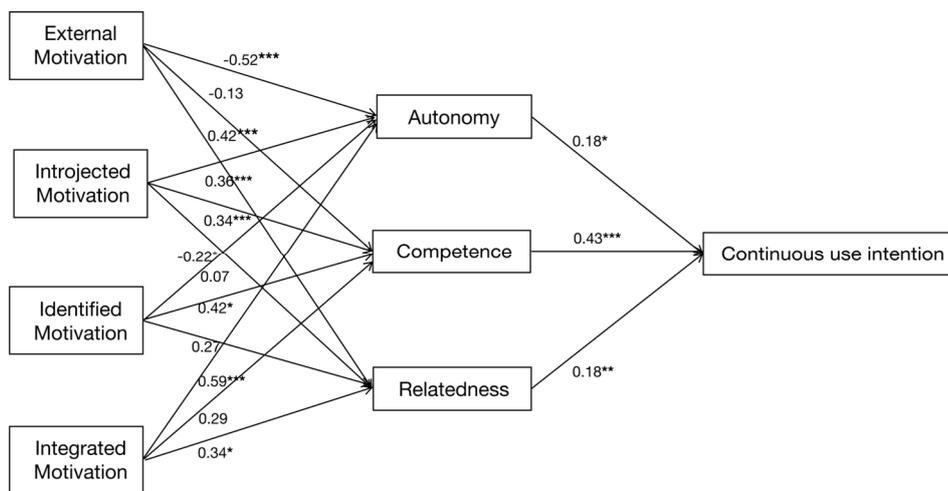


Figure 3: Results of Model Testing

5 DISCUSSION

5.1 Discussion of key findings

Based on SDT, this study explores the impact of four extrinsic motivations that are constantly internalized on users' willingness to continue using gamified tourism platforms. First, we found that external motivation can significantly satisfy users' need for relevance. By participating in games with others on a gamified travel platform, users can build social relationships with others, enhance social interaction, and gain a sufficient sense of social connection. This is consistent with previous research [57]. Introjected motivation also positively predicted the satisfaction of people's needs for autonomy and competence, which supports previous findings [37]. The introjected motivation mainly comes from the rewards people get after completing certain game tasks, which means they get the recognition of their ability from the platform and other players. In addition, identified motivation was also shown to positively influence users' satisfaction with competence needs. This is also consistent with the results in a previous study [25]. When users begin to identify with the value of the gamified travel platform and identify themselves as part of this platform group, they will believe that they should take some responsibility and behave well. In addition, we found that integrated

motivation can positively influence people's satisfaction with psychological needs for autonomy and relatedness. When users accept the value of the platform and integrate it with their values, they voluntarily make behavioral changes, because they feel that these games and activities are valuable and are consistent with their values.

Three basic psychological needs have also significantly increased users' willingness to consistently use gamification platforms. First, the satisfaction of the autonomy need makes people more willing to use Ctrip's gamification platform for a long time, which is consistent with the results of similar previous studies [18]. When users have enough rich choices and are given more freedom, they do not feel repulsed by the platform because its gamification settings can make them feel relaxed and enjoyable. Second, the satisfaction of competence needs also positively influences people's willingness to want to continue using the Ctrip platform. This is consistent with the results of a previous related study [44]. When users succeed in a game or complete a specified game task, they feel proud of what they have done and consider themselves to be highly competent. This is one of the ways they gain a sense of competence. Finally, the satisfaction of the psychological need for relatedness also positively influences people's willingness to continue using gamified travel platforms. This is also consistent with the results of a previous related study [21]. People are social creatures, and being recognized and accepted in the community makes users more willing to participate, cooperate and

share. The value and significance of the platform make them want to continue to use gamified Settings.

5.2 Implication for research

This study contributes to the existing research from the following aspects. First of all, this study applies the self-determination theory in psychology and applies the gradually internalized four extrinsic motivations to the gamification setting of tourism business platforms to explain the influence of these extrinsic motivations on the satisfaction of users' basic psychological needs. In the past, self-determination theory has been mostly applied to studies in the fields of education or human resources, or social comments on business platforms, but few studies have applied it to gamified online platforms in the field of tourism. Therefore, this study verifies the explanatory role and scope of SDT in online tourism gamification platforms.

Second, previous studies on the gamification of online business platforms mostly focused on the influence of intrinsic motivations on user perception or combined all extrinsic motivations to discuss [21], which makes it impossible to distinguish many different extrinsic motivations, and it is difficult to distinguish their effect on user psychology. Therefore, according to SDT, this study discusses the influence and different effects of four different internalized extrinsic motivations in detail. We find that external motivation, as one of the most externalized extrinsic motivations, can motivate users, but it is also easy to have a negative impact on users' autonomy due to some fixed settings in gamification (such as time limit and punishment mechanism). Introjected motivation makes users willing to participate in the platform's game activities because of certain rewards with recognizable symbols. But these rewards can also easily make users feel unfree and controlled, and they may be tempted to keep playing games they don't like to stay high in the rankings. Identified motivation makes users recognized by other users and platforms. When users participate in games on platforms, they communicate and interact with other players and gain a sense of belonging. Finally, integrated motivation, generated at this stage, can make users have high loyalty to the platform because, at this time, users have linked themselves to the values of the platform, they consider themselves as a symbol of the value of the platform, and when the platform encounters problems, they will try to solve them. Even if there is no reward they will volunteer to go to, this is a gaming platform to achieve the best effect of gaming.

Thirdly, previous studies on online business platforms mostly focused on purchase intention or brand loyalty [22] but ignored the importance of users' willingness to continue using the platform. According to a study conducted in 2020, the user turnover rate of e-commerce platforms is as high as 80%. Therefore, this research focuses on improving users' willingness to continue using the platform.

5.3 Implication for practice

From a practical point of view, we prove that promoting different extrinsic motivations has different ways and effects on users' intention to continue using the platform. For example, when developers design extrinsic incentives related to financial incentives, while these rewards are attractive to first-time users of the platform, if the rules are too complex or the game is too difficult, users will become frustrated with the frequent failures of the game and choose to use the platform less often. Therefore, developers should rationally set up the mechanism of the game, to make the platform game close to the ability of the user so that users in the process of playing a game have improved their abilities, can continue to take an interest in new levels of the task, and continue to use.

Second, this study provides important suggestions for online travel platforms to reduce user churn by providing users with game content and activities that are in line with their interests and values. Only if the users think online tourism platform game sets the value, which is in line with their interests, will they voluntarily participate in, and this value is consistent to users who are more attractive than financial incentives. Therefore, developers should make game design more valuable, such as developing more convenient travel experience sharing community games, so that users will continue to participate in various games of the platform for the things they recognize (such as the concept of reciprocity, environmental protection, etc.), to reduce the user loss rate of the tourism business platform.

6 LIMITATIONS

The present research has some limitations to be addressed by scholars in future research. Firstly, this study is only based on the Ctrip platform but does not take into account the influence of variables like different travel online platforms, such as the differences in user groups of vertical search-based platforms, social media platforms, and comprehensive platforms, which may lead to differences in users' acceptance of gamification and willingness to participate. Therefore, subsequent studies still need to demonstrate whether and how different travel platforms affect them. Secondly, the questionnaire data of this study are all from Chinese users, so the results of this study may not apply to the cultural background of other countries. Third, we take the platform's intention to continue using as a dependent variable, but there is a certain difference between intention and actual continuous use behavior, so the continuous use behavior of users needs further research.

7 CONCLUSION

This paper explores the effect of extrinsic motivation on users' intention to continue using gamified travel online platforms. We divide the extrinsic motivation acquired by users into four forms of gradual internalization because the willingness of users to continue to use the platform plays a critical role in the development of the platform. This paper introduces the concept of four types of extrinsic

motivation in the self-determination theory into the field of tourism e-commerce, which can better reflect the particularity of gamification tourism e-commerce platforms. By comparing the mechanisms of different extrinsic motivations, we determine that they will have different effects on the satisfaction of users' basic

psychological needs in different aspects. Therefore, developers of travel platforms should consider the influence of these different extrinsic motivations in the process of gamification to better design game content and improve user experience.

APPENDIX A

Measurement

Construct	Item	Content
External motivation	EM1	I am strongly motivated by rewards(e.g., economic rewards) I can earn through taking part in these games on the Ctrip platform.
	EM2	I am keenly aware of the possible benefits(e.g., economic rewards) that may be brought by taking part in the games on the Ctrip platform.
	EM3	I am keenly aware of the possible benefits(e.g., economic rewards) I have for myself if I participant in some games on the Ctrip platform.
Introjected motivation	IM1	I am strongly motivated by the recognition I can earn from other users during game experience.
	IM2	I want other players in the games to find out how good I really can be.
	IM3	To me, accomplishing these game tasks on the Ctrip platform means doing better than other users.
Identified motivation	IN1	I really feel as if the issues in the Ctrip platform are my own.
	IN2	The games on the Ctrip platform have a great deal of personal meaning for me.
	IN3	I have a strong positive feeling toward the games on the Ctrip platform.
Integrated motivation	TM1	If the values of the games on the Ctrip platform were different, I would not be attached to it.
	TM2	The reason why I participate in some games on the Ctrip platform is because of what it stands for, that is, its value.
	TM3	My attachment to the games on the Ctrip platform is primarily based on the similarity of my values and those represented by Ctrip.
Autonomy	AY1	The game on the Ctrip platform provides me with interesting options and choices.
	AY2	I have a sense of choice and freedom during my participation in the games on the Ctrip platform.
	AY3	I will not feel pressured during my taking part in games on the Ctrip platform.
Competence	CPT1	I think I am pretty good at playing games during my participation.
	CPT2	I think I will do pretty well at playing these games, compared to other players.
	CPT3	After taking part in these games on the Ctrip platform for a while, I will feel pretty competent.
Relatedness	RD1	It will be comfortable for me to participate in these games with others on the Ctrip platform.
	RD2	I like that the host provides an opportunity for participants to interact and socialize.
	RD3	I like the interaction with other players in these games on the Ctrip platform.
Continuous use intention	CUI1	I intend to continue using gamified Ctrip platform in the future.
	CUI2	I will keep using gamified Ctrip platform as regularly as I do now.
	CUI3	I will continue using gamified Ctrip platform as much as possible in the future.

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