What Drives User Engagement of Theme Park Apps? Utilitarian, Hedonic or Social Gratifications

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Abstract. This study seeks to examine the determinants of user engagement in theme park apps from a uses and gratification perspective. Specifically, three different gratifications: utilitarian (i.e., utilitarian value, perceived ease of use, and convenience), hedonic (i.e., hedonic value and curiosity fulfillment), and social (i.e., social interaction and presence) gratifications are proposed to affect user engagement, which comprises three dimensions: cognitive, affective, and behavioral engagement. The research model was tested by collecting data via an online survey (N = 347). The results show that all utilitarian, hedonic, and social gratifications can facilitate users' cognitive and affective engagement, while behavioral engagement is only affected by utilitarian and hedonic gratification. This study enriches the understanding of what motivates user engagement in theme park apps and offers practical implications for park managers.

Keywords: Theme Park, Mobile Applications, User Engagement, Uses and Gratification.

1 Introduction

The growth of mobile applications (apps) and the ubiquitous access to wireless Internet have dramatically changed the way people visit theme parks. An increasing number of theme parks have launched dedicated apps to improve visitors' experience [1]. Theme park apps are intentionally designed for theme park visitors and offer multi-functional services to satisfy visitors' various needs throughout the journey [2]. For instance, visitors can use such apps to obtain official event information, book digital tickets, arrange visit routes, reserve a digital fast-pass ticket for specific attractions, take photos, and interact with others. Particularly, under the COVID-19 pandemic situation, theme park apps are important for theme park visitors to obtain safety notifications and touchless services. However, user engagement is still crucial of successful implementation for theme park apps [3, 4]. Prior research has indicated that many users are willing to download mobile travel apps, but about 50% of users will delete the apps later [5]. Thus, it is important to investigate what sustains user engagement in theme park apps.

Recent studies have examined the factors influencing user engagement of travel-related mobile apps from different perspectives. For instance, based on Stimulus-

Organism-Response (S-O-R) model, Tian et al. [6] found that user engagement in travel apps is affected by perceived usefulness, price advantage, and user interface attractiveness. Similarly, Tak and Gupta [7] identified visual design, information design, and collaboration design are determinants of user engagement in travel apps. Although these studies have offered important insights into understanding what motivates user engagement in theme park apps, several issues require further investigation. First, prior studies have mainly focused on the technological perspectives; few studies have examined the impacts of hedonic and social impacts on user engagement in theme park apps. Indeed, the existing theme park apps have included some functions to fulfill users' hedonic (e.g., listening to music) and social needs (e.g., communicating with other users), which may influence user engagement. Second, while user engagement is a multidimensional concept, most prior studies only touch on one particular dimension, and few have examined multiple different dimensions of user engagement. Users may engage in theme park apps differently (e.g., cognitively, emotionally, or behaviorally); thereby, it is essential to understand what affects such differences.

To address the research gap, the current study seeks to examine the determinants of user engagement in theme park apps from a uses and gratification perspective. Specifically, three different gratifications, namely, utilitarian (i.e., utilitarian value, perceived ease of use, and convenience), hedonic (i.e., hedonic value and curiosity fulfillment), and social (i.e., social interaction and presence) gratifications are proposed to affect user engagement. Additionally, user engagement has three dimensions: cognitive, affective, and behavioral engagement. The research model was tested by collecting data via an online survey (N = 347). In so doing, the present study contributes to the literature by offering an in-depth understanding of the different roles of different gratification in triggering different dimensions of user engagement in theme park apps.

The remainder of the paper is structured as follows. Section 2 offers the theoretical background, and section 3 proposes the research model and hypotheses. Section 4 introduces the research methods, and section 5 shows the results. Finally, the paper is closed through conclusions, limitations, and future research directions.

2 Theoretical background

2.1 Uses and Gratification Theory

Uses and gratification theory (U&G) originated in communication research, aiming to explain why and how people actively select a specific media to fulfill their specific needs [8]. It offers a theoretical framework to identify psychological needs of individuals when using a specific media [8, 9]. It has been widely used in IS field to examine user behaviors in different contexts, such as online games [10], mobile apps [11-13], and microblogs [14].

Prior research has applied this theory to classify different gratifications and examine their different roles in determining users' behavioral intentions toward a new IS. For instance, when studying WeChat, Gan and Li [11] categorized gratification into hedonic, utilitarian, social, and technical dimensions. They found that hedonic, utilitarian, and technical gratifications positively affect users' continuance intention of WeChat,

while social gratification does not. Regarding the tourist attraction fan page, Ho and See-To [15] classified gratification as entertainment, informativeness, and socializing gratifications, and found that all gratifications have a positive influence on user attitude on the fan page. In the work of Gamage et al. [16], social, process, and content gratifications are found to affect users' decision-making of hotel choices through WeChat. Although prior studies examine how IS gratifies users' needs using similar factors, there are several inconsistent findings.

In summary, U&G theory has been applied to explain how individuals use an IS in different contexts, including travel-related IS. We selected it as the research framework for this study due to following reasons. First, this theory can help explain user engagement on the individual level. Second, it can identify the types of gratifications obtained from previous use of a theme park app and help understand whether different gratifications play different roles in predicting individuals' user engagement.

2.2 User Engagement

In prior literature, user engagement is defined differently, but most definitions agree that its core reflects users "investment in interactions with an object" [17]. The understanding of user engagement has evolved in past years. Initial user engagement was considered as unidimensional, focusing on users' behavioral responses to an object, such as continuance behaviors [17, 18]. Recent studies agree that user engagement is a complex and multidimensional concept that involves different types of psychological states and behaviors. One commonly used category of user engagement was developed by Dessart et al. [19]: cognitive, affective, and behavioral engagement. Cognitive engagement refers to how users pay attention to the interaction with the object; affective engagement refers to how users enjoy interacting with an object; and behavioral engagement refers to users' actual behaviors to interact with the object, such as sharing, learning, and endorsing [17, 19].

Many scholars have used this classification to examine user engagement in various IS. For instance, when studying online brand communities, Islam et al. [20] tested user engagement as a reflective second-order construct comprising affective, behavioral, and cognitive engagement, and found that user engagement is influenced by self-brand image congruity and value congruity. In the context of mobile travel apps, Tian et al. [18] found that perceived ease of use only affects behavioral engagement positively, while has no significant impact on cognitive and affective engagement. Both compatibility and UI attractiveness have significant influences on all affective, behavioral, and cognitive dimensions of engagement. These studies show that the multidimensions of user engagement may be helpful in explaining how users engage in theme park apps variously. Thus, the three dimensions of user engagement, including cognitive, affective, and behavioral dimensions, are applied in this study.

3 Research Model and Hypotheses

Based on U&G theory, this study operationalizes utilitarian value, perceived ease of use, and perceived convenience as utilitarian gratification; hedonic value and curiosity

fulfillment as hedonic gratification; social presence and social interaction as social gratification. All gratifications have positive impacts on user engagement, which includes cognitive, affective, and behavioral engagement. Fig. 1. illustrates the research model.

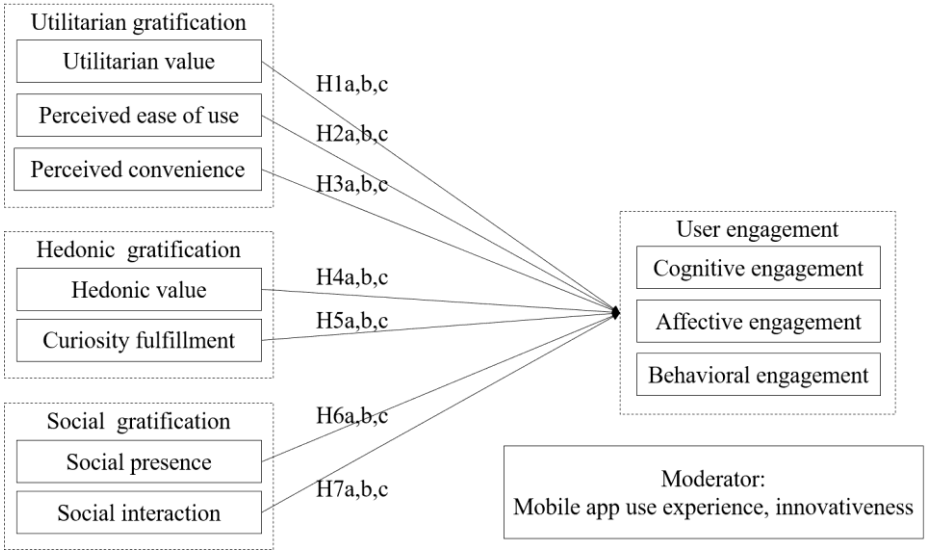

Fig. 1. Research model.

3.1 Relationship between Utilitarian Gratification and User Engagement

Utilitarian value refers to users' cognitive evaluation of problem-solving in using a theme park app [21]. Previous research has found that users use various IS to help them accomplish tasks, such as online banking systems [22] and mobile social apps [23]. In this study's context, the theme park app often provides multiple functions to help tourists solve problems when visiting a theme park, such as assisting users in making a travel plan via offering official information on attractions and events and assisting visitors to quickly locate and find the path to a specific attraction via a GPS-based map. When users perceive that a theme park app is useful for enhancing their visiting experience, they are likely to pay more cognitive effort to know the app. Meanwhile, when problems have been solved, users may form positive emotions toward the app, which in turn improve their willingness to interact with the app emotionally. Furthermore, user perceptions of usefulness in solving problems may directly influence their use behavior. Prior studies have indicated that users' perceptions of usefulness can affect users' affective and cognitive engagement in online learning platforms [24]. And users' utilitarian motivation positively influences their behaviors regarding mobile phones [25]. Thus, it is reasonable to assume that utilitarian value can enhance users' cognitive, affective, and behavioral engagement. Therefore, the following hypotheses are developed:

H1: When using a theme park app, users' perceived utilitarian value positively affects their (a) cognitive engagement, (b) affective engagement, and (c) behavioral engagement.

Perceived ease of use refers to users' belief that a theme park app that using the app would be free of effort [26]. It has been found to be an important determinant of individuals' behaviors toward IS, such as adoption and continuance usage [26, 27]. Prior research also suggested that perceived ease of use can affect user engagement with mobile apps [28]. Similarly, when users can easily use a theme park app, they may feel greater control over the usage, which may improve their willingness to pay more attention and efforts to learn how to use it. Additionally, perceived ease of use may promote users' positive emotions and willingness to use the app. Thus, the following hypotheses are suggested:

H2: When using a theme park app, users' perceived ease of use positively affects their (a) cognitive engagement, (b) affective engagement, and (c) behavioral engagement.

Perceived convenience refers to users' cognition that using a theme park app can help them to accomplish tasks in a convenient way when visiting a theme park [29]. It has been identified as a critical factor influencing users' behaviors, such as usage behaviors toward mobile payment [30] and online learning [31]. Indeed, many functions in theme park apps seek to help users visit a theme park at the right time and place conveniently. When users perceived the app as convenient, they are likely to engage with the app. Thus, the following hypotheses are proposed:

H3: When using a theme park app, users' perceived convenience positively affects their (a) cognitive engagement, (b) affective engagement, and (c) behavioral engagement.

3.2 Relationship between Hedonic Gratification and User Engagement

Hedonic value refers to users' pleasurable experience via using a theme park app [21, 32]. It has been found to be an important factor influencing use behaviors of mobile apps, such as the mobile fitness app [33] and mobile travel app [32]. Indeed, many hedonic elements have been included in theme park design, such as photos, music, video, and even mini-games. When users perceive a mobile app is fun to use, they are likely to interact with it. Therefore, it is reasonable to assume that the more hedonic value users perceived in using a theme park app, the more likely they are to engage with it. Thus, we hypothesize the following:

H4: When using a theme park app, users' perceived hedonic value positively affects their (a) cognitive engagement, (b) affective engagement, and (c) behavioral engagement.

Curiosity fulfilment refers to users' perceptions of cognitive exploration in seeking out new things and experience via using a theme park app [34]. Theme park apps provide users with many channels to fulfil such needs, for instance, official information on attractions and events, the discussion forum for users to share experiences, or photos and videos. All these channels can satisfy users' curiosity about the theme parks and other visitors' experiences, stimulating their interest in the park. Prior research has

demonstrated that curiosity fulfilment is an important component of hedonic value of social media, which affects continued usage [34]. Therefore, this study assumes when users' curiosity is fulfilled by using a theme park app, they are more likely to engage with the app from cognitive, affective, and behavioral perspectives. Thus, the following hypotheses are developed:

H5: When using a theme park app, users' curiosity fulfillment positively affects their (a) cognitive engagement, (b) affective engagement, and (c) behavioral engagement.

3.3 Relationship between Social Gratification and User Engagement

Social presence refers to users' psychological sense of establishing connections with others via using theme park apps [10]. People are motivated to use IS with high levels of social presence to meet their needs for psychological connection with others. Prior studies have found that social presence positively affects user behaviors, such as continuance intention toward social virtual world [35] or social network sites [36]. Many theme park apps included social elements to satisfy such social needs. When users feel more likely to connect with others through theme park apps, they have a stronger intention to engage with the app. Thus, the following hypotheses are recommended:

H6: When using a theme park app, users' perceived social presence positively affects their (a) cognitive engagement, (b) affective engagement, and (c) behavioral engagement.

Social interaction refers to users could obtain opportunities to get acquainted or become familiar with others via using a theme park app [37]. It has been found to be an essential factor affecting individuals' engagement with IS. For instance, Cheung et al. [38] found that social interaction significantly impacts users' sharing behavior in online communities. In the work of Li et al. [10], social interaction positively affects users' continuance intention of online games. Likewise, when users feel that a theme park app can satisfy their social needs through social functions (e.g., forming a friendship with others), they have a stronger willingness to engage with the app. Thus, the following hypotheses are suggested:

H7: When using a theme park app, users' perceived social interaction positively affects their (a) cognitive engagement, (b) affective engagement, and (c) behavioral engagement.

4 Research Method

4.1 Data Collection

This study conducted an online survey via wjx.cn in China to collect empirical data. The target population was theme park app users who had used the app when they were visiting a theme park. The snowball sampling method was employed to reach the target respondents. The questionnaire was first sent to different theme park fans' groups via QQ and Weibo (Chinese famous social media platforms), then the respondents were encouraged to spread the survey to other theme park fans' communities or their friends.

Each respondent who completed the questionnaire got a virtual red packet with random money from RMB 0.1 to 2.

A total of 361 completed questionnaires were received. Among the received questionnaires, 14 invalid submissions (e.g., same answers for all questions) were removed. Thus, 347 valid responses were used for further analysis. Table 1 shows the demographics of the respondents, 47% were males, 54.8% aged between 26 and 35, 74.4% earned income over RMB 4500 per month, 60.8% held bachelor's degrees, 97.7% visited theme parks once per year, 55% used mobile phone 3-6 hours per day.

Table 1. Demographic information of respondents (N = 347).

Measure	Item	Frequency	Percentage（%）
Gender	Male	163	47.0
	female	182	52.4
	Unwilling to disclose	2	0.6
Age	18-25	86	24.8
	26-35	190	54.8
	36-45	67	19.3
	46-55	4	1.2
Monthly income	under RMB 1500	16	4.6
	RMB 1501—3000	39	11.2
	RMB 3001—4500	34	9.8
	RMB 4501—6000	74	21.3
	RMB 6001—7500	64	18.4
	RMB 7501—9000	52	15.0
	RMB 9001—10500	31	8.9
	RMB 10500 or above	37	10.7
Education	Below college	35	10.1
	Junior college	50	14.4
	Bachelor or above	262	75.5
Yearly theme park visit experience	0	8	2.3
	1	132	38.0
	2	139	40.1
	3 or above	68	19.6
Daily mobile phone usage	>0 and <=1 hour	4	1.2
	>1 and <=3 hours	69	19.9
	>3 and <=6 hours	191	55.0
	>6 and <=9 hours	50	14.4
	>9 hours	33	9.5

4.2 Data Measures

The measurements of this research were adapted from previously validated instruments and further modified to fit the theme park app context. The seven-point Likert scale

(from "1 = strongly disagree" to "7 = strongly agree") was used to measure all constructs. The measurement items for utilitarian value and hedonic value were adapted from Fang et al. [32] and Zhou et al. [21]. The items of perceived ease of use were modified from Davis [26]. The items of perceived convenience were taken from Souiden et al. [29]. The items of curiosity fulfilment were adopted from Hu et al. [34]. The items of social presence were modified from Li et al. [10]. The items of social interaction were adapted from Kim et al. [37]. The items of cognitive engagement, affective engagement, and behavioral engagement were taken from McLean and Wilson [39].

To collect data from theme park app users in China, the author of this study, who is fluent in both Chinese and English, translated the questionnaire from English to Chinese, and two IS experts checked both versions of the questionnaire. Additionally, a pilot study was conducted among 30 theme park app users from social media platforms. Based on the feedback from respondents, some of the questions were reworded, and the layout of the whole questionnaire was modified to improve the coherence.

4.3 Common Method Variance

The common method variance (CMV) was tested by two methods: (1) The Harman's single-factor test. The result showed that the highest total variance for any factor was 47.97%, lower than the recommended maximum of 50% [40]. (2) The full collinearity test was suggested by Kock and Lynn [41]. The result showed that the variance inflation factors (VIFs) range from 1.647 to 3.848, lower than the 5, thereby suggesting collinearity was also not a critical concern in this research [41].

5 Data Analysis and Results

The partial least squares structural equation modeling (PLS-SEM) was used to evaluate the research model, including the test of measurement and structural models.

5.1 Measurement Model

The convergent validity and discriminant validity were applied to examine the measurement model. Convergent validity was evaluated by examining composite reliability (CR), average variance extracted (AVE), and Cronbach's alpha (CA) [42]. Discriminant validity was demonstrated by accessing item loadings and square root of each construct's AVE. Item loadings should be higher on the measured construct than the cross-loading on other constructs. In addition, the square root of each construct's AVE should be greater than the correlations with other constructs. Table 2 shows that the value of CR (CR >0.7), AVE (AVE >0.5), and CA (CA >0.7) all exceed the thresholds [43]; thus, the convergent validity of the measurement model in this study was confirmed. The result in table 3 indicates that the scales of this measurement model had sufficient discriminant validity [43].

Table 2. The results for test reliability and convergent validity.

Construct	Item	Factor loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Utilitarian value (UTIV)	UTIV1	0.873	0.837	0.902	0.755
	UTIV2	0.851			
	UTIV3	0.881			
Perceived ease of use (PEOU)	PEOU1	0.754	0.881	0.910	0.628
	PEOU2	0.797			
	PEOU3	0.859			
	PEOU4	0.771			
	PEOU5	0.804			
	PEOU6	0.764			
Perceived convenience (CONV)	CONV1	0.760	0.892	0.917	0.650
	CONV2	0.764			
	CONV3	0.845			
	CONV4	0.806			
	CONV5	0.820			
	CONV6	0.836			
Hedonic value (HEDV)	HEDV1	0.867	0.869	0.920	0.793
	HEDV2	0.893			
	HEDV3	0.910			
Curiosity fulfilment (CURI)	CURI1	0.890	0.893	0.934	0.824
	CURI2	0.905			
	CURI3	0.928			
Social presence (SOCP)	SOCP1	0.915	0.909	0.943	0.846
	SOCP2	0.916			
	SOCP3	0.929			
Social interaction (SOCI)	SOCI1	0.899	0.907	0.942	0.843
	SOCI2	0.913			
	SOCI3	0.942			
Cognitive engagement (COGE)	COGE1	0.832	0.792	0.878	0.706
	COGE2	0.812			
	COGE3	0.876			
Affective engagement (AFFE)	AFFE1	0.867	0.874	0.922	0.799
	AFFE2	0.886			
	AFFE3	0.927			
Behavioral engagement (BEHE)	BEHE1	0.877	0.854	0.911	0.774
	BEHE2	0.874			
	BEHE3	0.889			

Table 3. Discriminant validity: Fornell-Larcker criterion.

	UTIV	PEOU	CONV	HEDV	CURI	SOCP	SOCI	COGE	AFFE	BEHE
UTIV	0.869									
PEOU	0.774	0.792								
CONV	0.757	0.780	0.806							

HEDV	0.807	0.749	0.755	0.890						
CURI	0.703	0.583	0.613	0.702	0.908					
SOCP	0.651	0.555	0.605	0.718	0.795	0.920				
SOCI	0.646	0.587	0.609	0.718	0.686	0.751	0.918			
COGE	0.782	0.722	0.696	0.756	0.609	0.636	0.616	0.840		
AFFE	0.750	0.692	0.691	0.787	0.680	0.724	0.705	0.791	0.894	
BEHE	0.728	0.675	0.656	0.725	0.662	0.638	0.619	0.749	0.750	0.880

(Note: UTIV: Utilitarian value; PEOU: Perceived ease of use; CONV: Perceived convenience; HEDV: Hedonic value; CURI: Curiosity fulfilment; SOCP: Social presence; SOCI: Social interaction; COGE: Cognitive engagement; AFFE: Affective engagement; BEHE: Behavioral engagement)

5.2 Structural Model

The structural model was tested by using the bootstrapping technique in Smart PLS, including the test of the significance of path coefficients, the coefficient of determination (R^2), and the predictive relevance (Q^2). The results show the R^2 value for cognitive engagement was 68.9%, affective engagement was 71.6%, and behavioral engagement was 62.9%. The Q^2 values for cognitive engagement, affective engagement, and behavioral engagement were 0.451, 0.534, and 0.453, respectively. These indicate that the proposed research model has strong explanatory power and predictive power. There were 11 hypotheses supported at the 0.05 significance level (see Table 4). The results showed that utilitarian value exerted significant effects on cognitive engagement ($\beta = 0.370$, $p < 0.001$), affective engagement ($\beta = 0.173$, $p < 0.05$) and behavioral engagement ($\beta = 0.233$, $p < 0.01$). Perceived ease of use exerted significant effects on both cognitive engagement ($\beta = 0.170$, $p < 0.05$) and behavioral engagement ($\beta = 0.183$， $p < 0.05$). There is no significant association between perceived convenience and user engagement. Thus, H1a, H1b, H1c, H2a, and H2c were supported, while H2b, H3a, H3b, and H3c were not. Additionally, hedonic value exerted significant effects on cognitive engagement ($\beta = 0.202$, $p < 0.05$), affective engagement ($\beta = 0.255$, $p < 0.001$) and behavioral engagement ($\beta = 0.163$, $p < 0.05$). There is no significant association between curiosity fulfilment and user engagement. Therefore, H4a, H4b, and H4c were supported, while H5a, H5b, and H5c were not. Furthermore, social presence exerted significant effects on both cognitive engagement ($\beta = 0.187$, $p < 0.05$), and affective engagement ($\beta = 0.227$, $p < 0.01$). Social interaction exerted significant effects on affective engagement ($\beta = 0.136$, $p < 0.05$). Thus, H6a, H6b, and H7b were supported, while H6c, H7a, and H7c were not.

Regarding the control variables, age showed significant effects on cognitive engagement within theme park app ($\beta = 0.062$, $p < 0.05$). There were no significant effects from other control variables.

Table 4. Hypotheses results

Hypotheses	Path coefficients	P value	t value	f^2 value	Result
H1a: UTIV →COGE	0.370	0.000	4.444	0.108	support
H1b: UTIV →AFFE	0.173	0.020	2.323	0.026	support
H1c: UTIV →BEHE	0.233	0.007	2.716	0.036	support
H2a: PEOU →COGE	0.170	0.018	2.363	0.027	support
H2b: PEOU →AFFE	0.119	0.055	1.920	0.014	not support
H2c: PEOU →BEHE	0.183	0.015	2.438	0.026	support
H3a: CONV →COGE	0.071	0.341	0.952	0.005	not support
H3b: CONV →AFFE	0.060	0.364	0.909	0.004	not support
H3c: CONV →BEHE	0.036	0.640	0.467	0.001	not support
H4a: HEDV →COGE	0.202	0.018	2.369	0.030	support
H4b: HEDV →AFFE	0.255	0.000	3.491	0.052	support
H4c: HEDV →BEHE	0.163	0.050	1.964	0.016	support
H5a: CURI →COGE	-0.089	0.230	1.201	0.007	not support
H5b: CURI →AFFE	-0.006	0.930	1.459	0.000	not support
H5c: CURI →BEHE	0.139	0.145	1.459	0.015	not support
H6a: SOCP →COGE	0.187	0.017	2.379	0.029	support
H6b: SOCP →AFFE	0.227	0.007	2.691	0.047	support
H6c: SOCP →BEHE	0.064	0.474	0.715	0.003	not support
H7a: SOCI → COGE	0.019	0.766	0.298	0.000	not support
H7b: SOCI →AFFE	0.136	0.032	2.148	0.023	support
H7c: SOCI →BEHE	0.056	0.447	0.761	0.003	not support

(Note: UTIV: Utilitarian value; PEOU: Perceived ease of use; CONV: Perceived convenience; HEDV: Hedonic value; CURI: Curiosity fulfilment; SOCP: Social presence; SOCI: Social interaction; COGE: Cognitive engagement; AFFE: Affective engagement; BEHE: Behavioral engagement)

6 Discussion and Conclusion

This study investigates the antecedents of user engagement in theme park apps in China. The results indicate that utilitarian, hedonic, and social gratifications play different roles in determining different sub-dimensions of user engagement in theme park apps. Specifically, regarding the antecedents of cognitive engagement, utilitarian gratifications (i.e., utilitarian value and perceived ease of use), hedonic gratifications (i.e., hedonic value), and social gratifications (i.e., social presence) are found to affect cognitive engagement positively. These results are consistent with previous research. For instance, prior research has found that utilitarian value affects cognitive engagement in online learning [24], perceived ease of use influences IS continuance significantly [27], hedonic value is an antecedent of travel app engagement [32], and social presence exerts significant influence on user engagement with social network sites [36]. When users perceive a theme park app as useful, easy to use, enjoyable, and can fulfil their need to connect with others, they are likely to engage with the app cognitively, such as pay more attention and effort to know and learn the app.

Moreover, regarding the determinants of affective engagement, utilitarian gratification (i.e., utilitarian value), hedonic gratification (i.e., hedonic value), and social gratification (i.e., social interaction and presence) are found to be significant predictors. These findings are consistent with previous research. For instance, utilitarian and hedonic values have been reported to facilitate users to form positive emotions toward Airbnb, which in turn, affect user satisfaction and loyalty [44]. Social presence has been found to have a positive influence on affective engagement in the context of online collaborative learning [45]. Social interaction is reported as a determinant of user engagement in fitness apps [46]. Thereby, similar to cognitive engagement, when users' utilitarian, hedonic, and social needs are gratified, they are likely to engage with the theme park apps emotionally.

Furthermore, regarding the antecedents of behavioral engagement, utilitarian gratification (i.e., utilitarian value and perceived ease of use) and hedonic gratification (i.e., hedonic value) are significant, while social gratifications are not. The possible reason for the insignificant relationship between social gratification and behavioral engagement is that other widely used alternatives exist, such as social network sites. Even though theme park apps offer social functions, they are not enough to trigger users' behavioral engagement directly. This also indicates the different roles of each gratification in motivating different user engagement dimensions.

Other factors, including perceived convenience and curiosity fulfilment are not predictors of all dimensions of user engagement. A possible explanation for the insignificant impact of perceived convenience is that convenience offered by theme park apps is limited, and cannot facilitate user engagement adequately. Likewise, curiosity fulfillment also cannot motivate engagement, as users may use other information channels (such as word of mouth, popular social media, or advertising) to satisfy their curiosity.

6.1 Theoretical Implications

This study contributes to the literature in the following ways: first, unlike prior studies mainly focusing on technical dimension, this study extends the user engagement research by examining the roles of three types of gratifications in motivating user engagement based on U&G theory. The findings show that user engagement in theme park apps depends on how users' needs are gratified; when utilitarian, hedonic, and social needs are all satisfied, they tend to engage with the app. The findings also help explain the multipurpose and multi-functional nature of theme park apps.

Second, unlike prior studies mainly touch on one dimension of user engagement, this study enriches prior literature by unfolding three dimensions of user engagement, including cognitive, affective, and behavioral engagement. The findings show that different dimension of user engagement has different antecedents. This helps distinguish the differences in user engagement dimensions.

Third, the theoretical perspective of U&G yields new insights into the mechanisms underlying user engagement of theme park apps. The findings show that utilitarian, hedonic, and social gratifications motivate user engagement, indicating the U&G theory is a useful theoretical framework to explain user engagement with IS.

6.2 Managerial Implications

This study offers managerial implications: first, to improve user engagement, managers should focus on the strategies to improve utilitarian value, perceived ease of use, and hedonic value. For instance, managers should improve the usefulness for users to solve problems during the visit, such as offering detailed event information, GPS-based map, and virtual queue functions. Also, the app should be easy to use, such as a concise and clear interface, fast response speed, and a detailed help manual. Moreover, the app should be fun to use, such as including music, video, and mini-games related to the theme park.

Furthermore, this study found that social presence is also important to improving users' cognitive and affective engagement. Social interaction is a determinant of affective engagement. Thus, managers should highlight the strategies to improve the social gratification related functions. For instance, the app should include some social functions or integrate with other social network apps (e.g., Facebook or Twitter) to allow users to build relationships and share moments with others.

6.3 Limitations and Future Research

This study has several limitations. First, the empirical data was only collected in China. Thus, future research could gather data in other countries to generalize this study's findings or uncover the differences among users in different nations. Second, this study focuses on the users' cognition impacts on user engagement; thus, user emotions, such as surprise and joy, could be studied in future research. Third, the relationships between three different dimensions of user engagement could also be examined in future research.

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