

# How experience value affect user stickiness?

## An empirical research on booking tourism application

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**Abstract.** This study with a view to explore the influencing factors of user stickiness of booking tourism applications' users. Conducting surveys on samples from China online, this study analyzes the impact of different levels of user experience value, user satisfaction, and perceived risk on user stickiness by using SPSS 23.0 and AMOS 23.0. Results of correlation analysis and structural equation modeling indicate that both functional experience value and user satisfaction significantly positive influence user stickiness, while neither emotional experience value nor perceived risk have significant impact on user stickiness. In addition, user satisfaction is found an important mediator in the relationship between experience value and user stickiness. In exploring the moderating effect of perceived risk, results find that as perceived risk deepens, both the positive impacts of functional experience value and emotional experience value on user satisfaction are weaken, and the positive influence of functional experience value on user stickiness is decline.

**Keywords:** User stickiness; User experience value; User satisfaction; Perceived risk; Booking tourism application.

## 1. Introduction

Generally, tourism application (app) has become an indispensable tool in the era of mobile internet. Booking tourism application (BTA), such as Travelocity, HotelWorld, and Trip, as an important type of tourism application, refers to a mobile client that can provide tourists with reservation service of various kind of products during any stage of the journey.

This study aims to explore the different influence of user experience value at different levels on user stickiness in the era of mobile internet. In addition, the mediating effect of user satisfaction and the moderating effect of perceived risk will be tested to solve the inconsistencies of previous studies.

## 2. Literature Review and Hypotheses development

### 2.1 The Main Effect of User Experience Value

User stickiness is the willingness of continuous usage and dependent behaviour to network products [1] and a subset of user loyalty. In this study, it refers to users' behaviour intention to use a BTA continuously.

User experience value is an extended concept of experience value in the Internet era. It is a kind of evaluation after comparing users' perceived gain or loss with his/her expectation [2]. When it comes to the measurement of experience value, some researches believe that user experience value can be divided into different levels according to users' needs [2]. The current study divided user experience value into two levels: functional experience value and emotional experience value. Among them, the functional experience value can be reflected in the cost-effective and full-range of products that can meet users' needs, professional services, plenty of preferential activities, etc. And the gain of emotional experience value means that BTA provides users with a spiritual leisure environment online and a purchase experience that makes them happy [3].

Researchers have found that functional experience value and emotional experience value can significantly affect user satisfaction, which in turn affects the behaviour intentions of continuous usage [4]. Several research based on offline or online background show that user experience value

has a significant effect on user loyalty and user repurchase. It can be inferred that user experience value is an important factor affecting user stickiness. Thus the study posit:

H1. User experience value (functional/ emotional) will positively influence user stickiness.

## 2.2 The Mediating Effect of User Satisfaction

Expectation confirmation theory believes that user loyalty leads to the behaviour intention of continuous usage, and loyalty comes from high satisfaction and recognition [5]. User satisfaction can directly affect repurchase intentions and is of great help to trigger positive user behaviours. Empirical researches show that the more satisfied users are, the stronger their stickiness to products or services [6]. Therefore, it is hypothesized that:

H2. User satisfaction positively contributes to user stickiness.

Users can obtain high-quality products at low prices through BTA before traveling. They can also browse the pictures, videos, and texts shared by other users to “appreciate the scenery” of the destination in advance. During this process, they can gain functional experience value and emotional experience value. Material and spiritual satisfaction can make customers satisfied [7]. Thus, hypothesizes that:

H3. User experience value (functional/ emotional) positively contributes to user satisfaction.

H4. The relationship between user experience value (functional/ emotional) and user stickiness will be positively mediated by user satisfaction.

### 2.3 The Moderating Effect of Perceived Risk

Any behaviours of customers may have unforeseen consequences, and some of the consequences are likely to be unpleasant [8]. In other words, the behaviours of customers can be at risk. Users are faced with the risks like personal information leakage, property loss when using BTA, which largely affect users' satisfaction and willingness to revisit. More seriously, it may ultimately lead to user loss. Therefore, this study assumes that perceived risk can not only reduce user satisfaction and user stickiness, but also an important moderator in the relationship among user experience value, user satisfaction, and user stickiness. Thus, the next hypothesis is presented as follows:

H5. User perceived risk negatively influence user satisfaction.

H6. User perceived risk negatively influence user stickiness.

H7. User perceived risk weakens the positive effect of user experience value (functional/emotional) on user satisfaction.

H8. User perceived risk weakens the positive effect of user experience value (functional/emotional) on user stickiness.

H9. User perceived risk weakens the positive effect of user satisfaction on user stickiness.

The proposed research model with all hypothesized is presented in Figure 1.

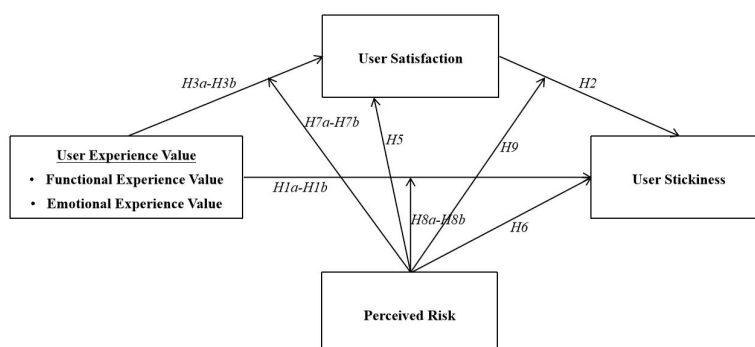


Fig. 1 Hypothesized research model

### 3. Methodology

#### 3.1 Research Design and Sampling

To test the hypotheses, we use SPSS23.0 and Amos23.0 to explore the relationship among user experience value, user stickiness, user satisfaction and perceived risk.

Chinese were chosen as the survey sample in this study. The formal survey was carried out from July 23 to August 17, 2021 online. Chinese at home and abroad participated in the formal survey, and finally, a total of 623 questionnaires were distributed by snowball sampling method. Response rate was 100 %. According to the polygraph test, some samples were deleted and 427 usable questionnaires were received. Effective rate was 68.539 %. Table 1 displays the demographic profiles of the respondents. Overall, the number of effective samples for this survey is sufficient and the structure of samples is generally reasonable.

Table 1. Profiles of the samples(N=427)

Sample characteristics	Frequency	%	Sample characteristics	Frequency	%
Gender			Age		
Male	202	47.3	25 and below	199	46.6
Female	225	52.7	26-35	135	31.6
Education level			36-45	71	16.6
High school and below	18	4.2	46 and above	22	5.2
Junior college	92	21.5	Time to use App		
Bachelor's degree in college	223	52.2	Within one year	95	22.2
Master's degree and above	94	22.0	More than one and within three years	85	19.9
			More than three and within four years	103	24.1
			More than four years	144	33.7

#### 3.2 Instrument

The formal questionnaire consists of three sections. The first section has three manipulation check questions to ensure the respondents have ever used BTA. The second section contains demographic questions about the gender, age, and education level of the respondents. The third section includes questions to measure user experience value, user stickiness, user satisfaction and perceived risk. All the items of the four constructs are adopted from previous studies [4],[9-11] which are revised to fit the study context and measured using a five-point Likert-type scale with 1 representing “strongly disagree” to 5 representing “strongly agree”.

#### 3.3 Data Analysis

As Table 2 shows, the composite reliability of each construct measure is assessed by calculating Cronbach alpha values, all of which greater than the 0.70 threshold (range from 0.801 to 0.867). Measurement validity was firstly evaluated through exploratory factor analysis (EFA). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy exceeds 0.70 threshold, ranging from 0.701 to 0.796, which shows that the samples meet the criteria for factor analysis. The five constructs can each extract a common factor and the common factor cumulative variance contribution rate of the scales are from 65.179 % to 79.149 %, which are greater than 50 %. All factor loadings are higher than the 0.60 benchmark, ranging from 0.653 to 0.886. Average variance extracted (AVE) (ranging from 0.535 to 0.691) exceeds the 0.50 threshold, and the composite reliability range from 0.802 to 0.870, significantly above the criterion of 0.70, indicating that the model has relatively good convergent validity. Then the validity is further evaluated through confirmatory factor analysis (CFA) with structural equation modeling. The key fit indices show the measurement model achieves a satisfactory fit to the data: CFI = 0.953, TLI = 0.940, IFI = 0.953, RFI = 0.908, NFI = 0.928, RMSEA = 0.063, SRMR = 0.041,  $\chi^2 = 253.667$  (df = 94,  $p < 0.000$ ),  $\chi^2/df = 2.699$ . Finally, this study check the discriminant validity through AVE method. As Table 3

shows, the square root of the average variance extracted (AVE) values of all variables are greater than the corresponding correlation coefficient, indicating sufficient level of discriminant validity. Overall, these results show that the measures have high validity and reliability.

Table 2. Survey instruments and results for the measurement model

Measured variable and dimensions	FL	AVE	CR	KMO	Alpha
Functional Experience Value(FEV)		0.575	0.802	0.706	0.801
FEV1	0.755				
FEV2	0.795				
FEV3	0.723				
Emotional Experience Value(EEV)		0.611	0.825	0.719	0.824
EEV1	0.792				
EEV2	0.785				
EEV3	0.767				
User Stickiness(US)		0.585	0.808	0.701	0.807
US1	0.789				
US2	0.747				
US3	0.757				
User satisfaction(CS)		0.535	0.821	0.796	0.818
CS1	0.805				
CS2	0.743				
CS3	0.717				
CS4	0.653				
Perceived Risk(PR)		0.691	0.870	0.729	0.867
PR1	0.886				
PR2	0.835				
PR3	0.768				

Note: FL=factor loading.

In addition, the results of the correlation analysis showed in Table 3, indicating rejection of some hypothesis of this article. Perceived risk was found to have no significant correlation with user satisfaction ( $\beta = 0.051$ ,  $p > 0.05$ ) and user stickiness ( $\beta = -0.005$ ,  $p > 0.05$ ). Thus, H5 and H6 are not supported. With the development of network legalization, these cybersecurity issues have gradually ceased to pose a threat to users. Take China as an example, several laws and regulations have been set in order to regulate the online tourism market in these years, and 61.7% of Chinese stated that they had never encountered cybersecurity issues during the past six months. In other words, the legalization of the BTA has gradually alleviated the negative impact of perceived risk on user satisfaction and user stickiness.

Table 3. Descriptive statistics, correlations, and AVE

	M	SD	FEV	EEV	US	CS	PR
FEV	3.940	0.531	0.758				
EEV	3.679	0.630	0.538**	0.781			
US	3.970	0.564	0.599**	0.556**	0.765		
CS	3.760	0.557	0.573**	0.660**	0.635**	0.732	
PR	3.370	0.797	-0.008	0.063	-0.005	0.051	0.831

Note: \*\* $p < 0.01$  \* $p < 0.05$  (two-tailed).

## 4. Results

Structural equation modeling analysis was conducted by AMOS 23.0 to test other hypotheses in this study. The key indices show that the research model has a good fit with the data: CFI = 0.957, TLI = 0.944, IFI = 0.958, RFI = 0.917, NFI = 0.937, RMSEA = 0.068, SRMR = 0.0397,  $\chi^2 = 174.597$  (df = 59,  $p < 0.000$ ),  $\chi^2/df = 2.959$ . As the results presented in Table 4, the detailed path

coefficients with their corresponding significance levels can indicate acceptance or rejection of the hypotheses.

In Table 4 there is strong support for the positive impacts of both user functional experience value ( $\beta = 0.384$ ,  $p < 0.01$ ) and user satisfaction ( $\beta = 0.508$ ,  $p < 0.01$ ) on user stickiness. In particular, both functional experience value ( $\beta = 0.370$ ,  $p < 0.01$ ) and emotional experience value ( $\beta = 0.511$ ,  $p < 0.01$ ) have a significant influence on user satisfaction. The above results are in support of H1a, H2, H3a, and H3b, indicating the importance of functional experience value and user satisfaction on user stickiness. Additionally, the findings also overturn the positive influence of emotional experience value on user stickiness ( $\beta = 0.034$ ,  $p = 0.681 > 0.05$ ), which is different from existing studies. This is because BTA is highly instrumental, which mainly used for practical purposes like booking tourism products and services. Thus, the satisfactory in emotional needs can not significantly improve user stickiness.

Bootstrap estimation method is deployed to examine both the mediating effect of user satisfaction and the moderating effect of perceived risk in the model. According to Hayes, if the bootstrap interval without 0, in the bias-corrected 95 % percentile, then the mediating effect or the moderating effect is significant.

Table 4. Evaluation of the structural equation model

Path	Hypotheses	Std.Coeff.	Coeff.	St.error	Critical ratio	Results
FEV→US	H1a	0.348	0.384	0.085	4.494***	Accepted
EEV→US	H1b	0.039	0.034	0.083	0.411 (0.681)	Rejected
CS→US	H2	0.508	0.508	0.109	4.662***	Accepted
FEV→CS	H3a	0.335	0.370	0.074	5.028***	Accepted
EEV→CS	H3b	0.587	0.511	0.060	8.478***	Accepted

Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ , non-significant p-values are in parentheses.

#### 4.1 Mediating Effect of User Satisfaction

Detailed results of the mediating effect test are displayed in Table 5. In general, the results are consistent with evidence in the literature that, user satisfaction is the important mediator in the relation between user experience value and user stickiness. 5000 bias-corrected bootstrap resamples with replacement were used to calculate the 95% confidence intervals (CI) for the indirect effect of functional experience value and emotional experience value on user stickiness through user satisfaction.

In the path "FEV→CS→US", user satisfaction plays a partial mediation role, and the confidence interval (CI) in the bias-corrected 95 % percentile is [0.198, 0.339], without 0. Hence, the indirect effect is significant ( $\beta = 0.265$ ,  $p < 0.01$ ), which is in support of H4a. In the path "EEV→CS→US", user satisfaction plays a complete mediation role, and the confidence interval (CI) in the bias-corrected 95 % percentile is [0.202, 0.377], excluding 0. Thus, the indirect effect is significant ( $\beta = 0.281$ ,  $p < 0.01$ ), and H4b is supported.

Table 5. Mediating effects of user satisfaction

Path	Hypotheses	Point estimate	St.error	Bootstrapping=5000 Bias-corrected percentile 95% CI		
				Lower	Upper	Results
FEV→CS→US	H4a	0.265	0.037	0.198	0.339	Accepted
EEV→CS→US	H4b	0.281	0.044	0.202	0.377	Accepted

#### 4.2 Moderating Effect of Perceived Risk

Results of bootstrap estimation method testing the moderating effect of perceived risk are showed in Table 6. As Table 6 shows, the moderating effect of perceived risk on all the relationships between functional experience value and user satisfaction ( $\beta = -0.178$ ,  $p < 0.01$ , 95 % CI [-0.280, -0.077]), between emotional experience value and user satisfaction ( $\beta = -0.080$ ,  $p =$

$0.022 < 0.05$ , 95 % CI [-0.149, -0.012]), between functional experience value and user stickiness ( $\beta = -0.152$ ,  $p < 0.01$ , 95 % CI [-0.253, -0.051]) are negative and significant, which are in support of H7a, H7b, and H8a. The results above indicate that with the increasing of perceived risk, the positive impact of functional experience value on both user satisfaction and user stickiness will decline. And the rising perceived risk weakens the positive influence of emotional experience value on user satisfaction. Additionally, the moderating effect of perceived risk on the relationship between user satisfaction and user stickiness is negative but not significant ( $\beta = -0.062$ ,  $p = 0.165 > 0.05$ , 95 % CI [-0.150, 0.026]). Furthermore, in order to delineate the moderating effects of perceived risk on different relationship, this study plot the relationships among functional experience value, emotional experience value, user stickiness and user satisfaction for the low and high levels of perceived risk in Figure 2.

Table 6. Mediating effects of user satisfaction

Path	Hypotheses	Point estimate	St.error	Bootstrapping=5000 Bias-corrected percentile 95 % CI		
				Lower	Upper	Results
FEV→CS	H7a	-0.178	0.052	0.000	-0.280	-0.077
EEV→CS	H7b	-0.080	0.035	0.022	-0.149	-0.012
FEV→US	H8a	-0.152	0.051	0.003	-0.253	-0.051
CS→US	H9	-0.062	0.045	0.165	-0.150	0.026

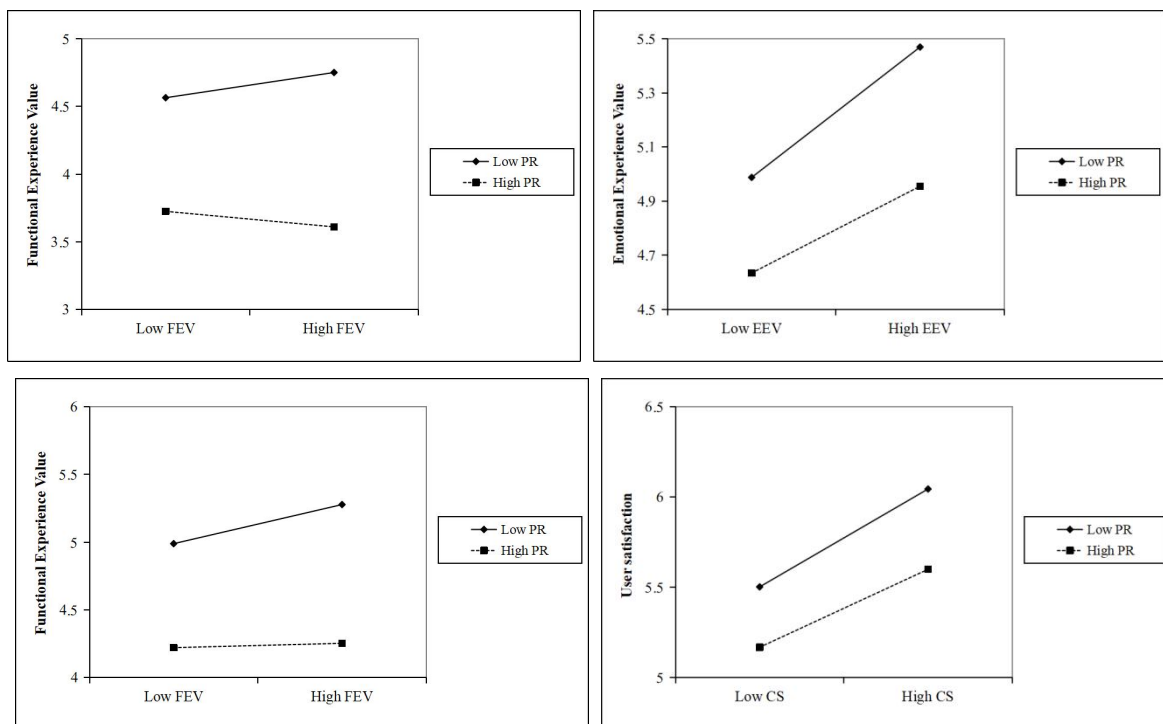


Fig 2. The moderating effect of perceived risk

## 5. Discussion and Conclusions

### 5.1 Conclusions

This study constructs the influence mechanism model of user stickiness of BTA, and the data analysis results of 427 usable samples show that: Firstly, both functional experience value and user satisfaction can significantly increase user stickiness, while emotional experience value has no significant impact on user stickiness. Secondly, both functional and emotional experience value positively affect user satisfaction, and user satisfaction is an important mediator. Thirdly, perceived

risk has significant and negative moderating effects on the relationship among different levels of experience value, user satisfaction and user stickiness.

## 5.2 Theoretical and Practical Implications

This study enriches the theoretical research of user stickiness from two aspects. First, previous research does not pay enough attention to user experience, and there is no unified opinion on the difference of the influence of different levels of experience value. This study provides relevant explanations for this. Second, this study explores the relationship between perceived risk and user stickiness more deeply, and finally find that although perceived risk has no significantly negative impact on user stickiness, it is an important moderator.

This study also has strong practical value that the investigation of the influencing factors of user stickiness can provide a scientific reference for the improvement of BTA.

## 5.3 Limitations and Future Research

The research limitations of this article are mainly reflected in two aspects: Firstly, the sample structure is not reasonable enough. The sample in this study is mainly users under the age of 35 with a bachelor's degree, which are from only one country may restrain the generalization of the findings and the irrationality of the sample structure may affect the explanation of the conclusion to other groups. Researches should find qualified subjects within the whole society by random sampling.

Secondly, there are still assumptions that are unsupported. In particular, both the direct effect of emotional experience value and perceived risk on user stickiness is not significant, and perceived risk has no significant moderating effect on the relationship between user satisfaction and user stickiness. The influencing mechanism of user emotional experience value and perceived risk on user stickiness is still unclear, and further research is needed to analysis it.

Thirdly, the research model of this study is relatively thin that most of the variables are single dimension. With the development of technology, future research can focus on the impacts of technical factors like artificial intelligence and virtual reality, which can improve the theoretical framework of user stickiness.

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