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Influencing Factors of Intention to Use Mobile Devices for Reading:
Moderation Effects of Perceived Sociality and Perceived Risk

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ABSTRACT

This research studied the continuous use intention of mobile reading users. The current study used the stimulus-organism-response model as a basis to build a causal model of mobile readers' continuous intention to use it. A questionnaire survey was conducted involving 327 users to obtain the current research data. Structural equation modeling was used to empirically test the relationship amongst variables in the conceptual model. Results are as follows. Perceived pleasure, perceived service, immersion, and perceived sociality had a significant positive effect on intention for continuous use. Particularly, perceived pleasure had a significant positive effect on immersion and perceived service. Perceived usefulness and perceptual interest had significant positive effects on perceived pleasure. Perceived sociality had a regulating effect on the relationship between perceived pleasure and intention for continuous use. Lastly, perceived sociality had a regulating effect on the relationship between immersion and intention for continuous use.

KEYWORDS

Mobile Devices for Reading, Perceived Pleasure, Perceived Risk, Perceived Society, Use

1. INTRODUCTION

The rapid development of mobile Internet technology has resulted in substantial changes in the way people read. The use of mobile devices for reading has become mainstream as a new reading mode on mobile platforms (Hellermann, Thorne & Fodor, 2017). In the field of reading promotion, the use of mobile devices for reading is becoming an indispensable part of the public's daily life (Wang, Chiu, Ho & Lo, 2016). The emergence of mobile devices for reading has brought both immense opportunities and challenges related to the promotion of digital reading. A 2019 report indicated that the number of active users of mobile devices for reading in China reached 350 million RMB. In addition, the market size reached 20.49 billion RMB, with a year-on-year increase of 22.4% (iResearch, 2020).

Although the use of mobile devices for reading occupies most of the market share, users consistently shift. While maintaining the growth of the use of mobile devices for the reading community, preventing the loss of mobile devices for reading users has become an important issue for digital reading promoters (Zhao & Ren, 2017). Therefore, the focus on the rapid development

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of the use of mobile devices for reading necessitates an analysis of the factors that influence the use of mobile devices for reading users' continuous use behaviors. In addition, we must promote the sustainable development of mobile devices for reading.

The use of mobile devices for reading refers to accessing, receiving, or downloading electronic resources through a wireless or mobile communication network for reading, particularly on a handheld portable device (Zhang, 2011). In the current study, the use of mobile devices for reading refers to the use of mobile terminals to read novels, magazines, and newspapers, among others, through Web pages and bookstore clients.

The use of mobile devices for reading improves the utilization of fragmentation time, which refers to the break period in the user's work and life that is affected by the diversification of needs (Nie et al., 2020). On the mobile Internet, fragmented time refers to the scattered times when people wait for elevators, buses, and subways, as well as getting in cars (Christensen & Knezek, 2018). Mobile Internet users can make full use of fragmented time to browse news, play games, and/or read e-books through mobile phones and tablets (Sarrab, Elbasir, & Alnaeli, 2016). Although these fragmented times are inconspicuous, they can produce important effects (Matronchik, Klyachin, & Khangulyan, 2018).

Variations in reading media have led to substantial changes in reading behaviors. A reading medium refers to the carrying and transmission of text based on text symbols, providing reading options rather than watching and listening. These materials are capable of direct physical contact with readers (i.e., books, newspapers, and magazines). They are based on paper-based printing techniques or digital information technology like computers, smart phones, and e-readers (Delgado, Vargas, Ackerman & Salmerón, 2018; Ghassemi et al., 2019). The reading medium mentioned in this paper refers to portable mobile devices, such as mobile phones and tablets, with a prompt off/on button (Crompton, 2013).

The rapid development of the use of mobile devices for reading has resulted in the emergence of characteristics in users' reading behaviors (Vasileiou, Hartley, & Rowley, 2009). Research on the use of mobile devices for reading behaviors has become a popular topic in the field of reading research. Others research hotspots include user preferences regarding mobile devices for reading, mobile device applications for reading in education, and factors influencing mobile device adoption behaviors for reading.

Previous studies on reading behaviors related to the use of mobile devices for reading (Konok, Pogány & Miklósi, 2017; Lin, 2014; Merga & Mat Roni, 2017; Park & Lee, 2019) found fragmented and segmented behaviors (Halevi, Moed & Bar-ILan, 2015; Nardi, 2016). Other studies determined that college students' use of mobile devices for reading differs in terms of gender, grade, subject, and region (Ciampa, Thrasher, Marston & Revels, 2013). Researchers investigated college students' use of mobile devices for reading by analyzing differences between e-reading and paper books in classroom learning (Halevi et al., 2015; Rasmusson, 2016).

Research on adoption behaviors has been based on the technology acceptance model, emphasizing the use of specific technologies and services from an attitude perspective. Users' perception of a specific technology or service is believed to impact on attitudes toward the technology or service, thereby impacting user intention. The perceptual factors emphasized by the technology acceptance model are perceived usefulness, perceived accessibility, and perceived pleasure (Tsai, Wang & Lu, 2011).

Research on the use of mobile devices for reading has introduced customer choice theory and built a value-based adoption model. Studies have determined that the value of the reading content on mobile devices is also a major factor affecting adoption intention (Wang et al., 2016). Technologies in mobile devices for reading (i.e., compatibility, visibility, usage scenarios, and initial trust in services) also impact adoption (Chen & Lin, 2016). Most studies only consider the perspective of a single user. They do not explore interactions among users as they use the technology or service.

A few studies have explored the impact of social factors on adoption behaviors, particularly how image has proven to impact adoption behaviors of existing users. This limitation necessitates

additional research on the influence of social factors on continuous use behaviors related to the use of mobile devices for reading. Therefore, this study analyzes the social perspective of continuous use behaviors related to mobile devices for reading.

The present research also investigates and verifies the status of the use of mobile devices for reading and social apps from the perspective of investments in time and frequency of use. Accordingly, the SOR (Stimuli, Organism, Response) model is introduced to supplement existing research on the social impact of the continuous use of mobile devices for reading. A model of factors affecting the continuous use of mobile devices for reading is constructed. The relationship between social factors and continuous use behaviors is explored both directly and indirectly.

This article is divided into seven parts. The first introduces the research background, significance, and content of mobile devices for reading and user intentions. The second reviews the literature regarding the use of mobile devices for reading. The third constructs a research model for influencing factors on the use of mobile devices for reading and continuous use intention. It also proposes the research hypothesis. The fourth systematically details the variables and measurement items in the research model, determines the questionnaire and research methods, and explains the data analysis methods. The fifth analyzes and draws conclusions from the collected valid questionnaire samples. The sixth assesses and summarizes the research conclusions. The seventh includes research limitations and future research prospects.

2. LITERATURE REVIEW

2.1 Use of Mobile Devices for Reading

The rapid development of the use of mobile devices for reading has attracted the attention of an increasing number of researchers. Scholars in different fields have published research studies on this topic. Nardi (2016) conducted research on the relationship between mobile readers and learning processes. The results show that e-textbooks have been popularized in Italy, the United States, and other countries. Therefore, teachers should focus on the influence of students' age, knowledge, reading skills, attitudes, and preferences on learning processes and results. Factors like satisfaction, perceived usefulness, and perceived entertainment impact continuous use intention (Yang, 2015). Naumann and Salmerón (2016) explored the impact of navigation and comprehension on the use of mobile devices for reading ability. Their research showed that comprehension significantly influences the use of mobile devices for reading ability. A strong understanding, however, does not produce a good use of mobile devices for reading skills. Rasmusson (2016) used the multilevel analysis method to study the overall use of mobile devices on the reading levels of Swedish and Norwegian students. The results showed that the overall use of mobile devices for reading levels is related to the cultural resources of the two countries. In addition, parental pressure impacted the use of mobile devices for reading levels of the Norwegian students. However, the effect of parental stress on Swedish students' use of mobile devices for reading levels was not significant. Overall, research has explored the trend of the use of mobile devices for reading. Few studies have been conducted on continuous use behaviors regarding the use of mobile devices for reading.

2.2 SOR Theoretical Model

The SOR model is a new theoretical model based on the (stimulus-response) theory extended by Mehrabian, a well-known environmental psychologist. This model is widely used in psychology, management, and economics. Stimuli (S) refers to an individual's environment and changes caused by that environment. Organism (O) includes the individual as an organic whole, internalizing the environmental stimulus into the process of individual change. Response (R) is the result of the interaction of the individual environmental stimuli and internalization processes. These are mainly manifested in changes in individual behavior patterns (Arora, 1982). The SOR model explains the

relationship among the environment, internalization, and user behavior, providing a theoretical foundation for studying changes in user behaviors in a new environment.

Zheng, Li, Shen and Zheng (2019) used SOR and grounded theories to analyze the factors impacting user churn regarding the use of mobile devices and reading service platforms. The results showed that the main factors affecting user churn are low cost of user conversion platforms and influence of user social circles. Presently, the SOR model can substantially explain the usage and reading behaviors of users of information systems and those in mobile environments, respectively. Fang and Zhang (2019) used the SOR model to explore the influencing factors and paths of churn behaviors of users of mobile devices for reading. The study demonstrated that reading habits and system quality impact users' feelings of disappointment, thereby causing user churn. Zhao and Ren (2017) also used the SOR model to build a causal model of the continuous use intention of users of mobile devices for reading services. The results indicate that perceived usefulness and satisfaction were important factors for users regarding the continuous use of mobile devices for reading.

In the field of users and mobile devices for reading, the rise of new technologies and changes in reading environments have led to a change in users' psychological cognition and behavior patterns. In fact, behavior patterns were mainly affected by environmental changes. The core concept of knowledge behavior is consistent. Therefore, the SOR theoretical model indicated the feasibility of exploring the continuous use behavior of users of mobile devices for reading.

3. MODEL CONSTRUCTION AND RESEARCH ASSUMPTIONS

3.1 Research Model

This study used the SOR theory as a basis in building a research model on mobile devices for reading users' continuous use behaviors. Additionally, the study explains the impact mechanism of continuous use behaviors from the perspective of stimulus internalization response. The current research combined prior studies and developments in the use of mobile devices for reading to divide stimuli into external and internal stimuli. External stimuli include stimuli for clients who use mobile devices for reading. The selected indicators include timeliness and credibility of user perception systems. By contrast, internal stimuli focus on users' situations, including perceived usefulness, perceived accessibility, and perceived interest in the use of mobile devices for reading.

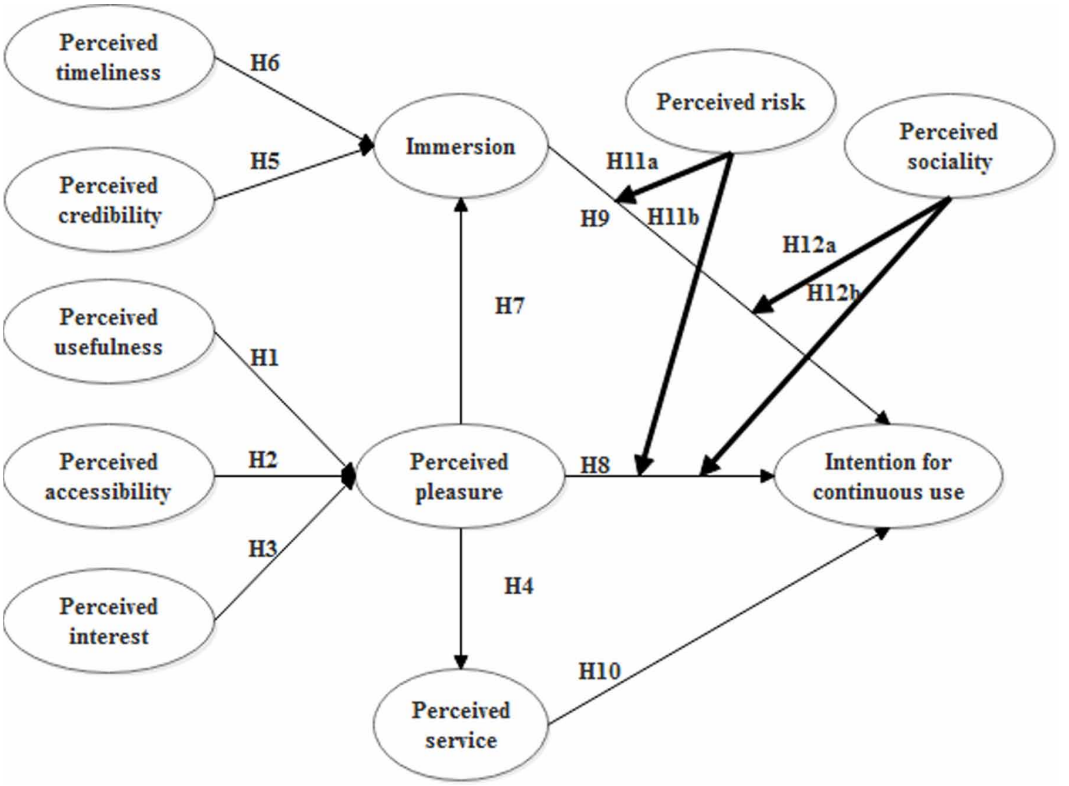
Internalization refers to the psychological changes that occur when users interact with internal and external stimuli. Before users have a continuous intention to use, they may feel good about the use of mobile devices for reading. Therefore, the internally selected observation variables include a sense of immersion and/or pleasure.

Response refers to affiliative and avoidance behaviors. This research studied the continuous use intention of users of mobile devices for reading, which is a specific manifestation of affiliative behavior. Therefore, the response considers affiliative behavior rather than avoidance. Figure 1 shows the specific research model, detailed in the following sections.

3.2 Research Hypothesis

Perceived pleasure is the user's level of happiness when interacting with the environment. This happiness is an unconscious psychological experience. When the environment or interaction scenario changes, the user's perceptions also change. Li and Chen (2019) studied the application of virtual reality technology in the tourism market. Their results showed that perceived accessibility and usefulness positively affect both perceived pleasure and travel intentions. Pe-Than, Goh and Lee (2014) believed that users' performance in computing games significantly affects perceived pleasure. Rodrigues, Oliveira and Costa (2016) investigated user experience in e-banking, finding a positive interaction between accessibility and perceived pleasure. Moghavvemi, Sharabati, Paramanathan and

Figure 1. Research model



Rahin (2017) held that perceived usefulness significantly affects perceived pleasure when students share knowledge.

This study formulated the following hypotheses based on these research conclusions:

H1: Perceived usefulness significantly affects perceived pleasure.
H2: Perceived accessibility significantly affects perceived pleasure.
H3: Perceived interest significantly affects perceived pleasure.
H4: Perceived pleasure significantly affects perceived service.

The field of information systems uses the immersion theory to study users' virtual worlds (Cha, Koo, Kim & Hong, 2019; Tabrizian, Baran, Smith & Meentemeyer, 2018), instant messaging, online shopping (Lombart et al., 2019; Sinesio et al., 2019), and online learning (Cheng & Tsai, 2019; Meyer, Omdahl & Makransky, 2019). Perceived complexity, interactivity, and sociality can affect immersion. Immersion has also been used to study the behavior of mobile users. Jung, Begona and Sonja (2009) believed that the quality of mobile television content significantly impacts users' immersion. Tao & Yaobin (2011) showed that network externalities affect the immersive experience of instant messaging users. The use of mobile devices for reading is a category in virtual worlds. Users are highly concentrated in the use of mobile devices for reading, falling into the immersion experience process. In the era of the mobile Internet, an increasing number of service providers for mobile devices for reading have leveraged the immersion concept to provide extensive experiences for their users.

This study formulated the following hypotheses based on these research conclusions:

H5: Perceived credibility has a significant positive effect on immersion.
H6: Perceived timeliness has a significant positive effect on immersion.
H7: Perceived pleasure has a significant positive effect on immersion.

Perceived pleasure is a dimension of perceived experience. Users' perceived pleasure affects the experience, and users' experience directly affects continuous use intention. Many studies have analyzed perceived pleasure as a factor affecting the willingness to continuously use information systems. Childers, Carr, Peck and Carson (2001) believed that perceived pleasure plays a key role in explaining and predicting Internet user behavior. Both Thong, Hong and Tam (2006) and Zhai, Sun abd Li (2019) used the perspective of user reviews to study the continuous use intention of mobile users on the Internet. The research considered perceived pleasure among the factors affecting continuous use intention, confirming that perceived pleasure significantly affects user satisfaction and continuous use intention. Perceived pleasure has also been seen to significantly affect the continuous intention to use mobile data services (Alalwan, Baabdullah, Rana, Tamilmani & Dwivedi, 2018; Kim, 2010; Sarosa, 2019).

Immersion refers to a state in which people are completely engaged in an activity and disregard the surrounding environment (Csikszentmihalyi, 1975). Initially, immersion was applied in the field of psychology. Recently, it has been introduced into the Internet and information systems. Kim and Thapa (2018) found that immersion has a significant impact on consumers' intention to purchase and repurchase goods, while Leung (2020) explained that immersion and purchase intention have a positive correlation on consumers as they browse Websites.

This study formulated the following hypotheses based on these research conclusions:

H8: Perceived pleasure has a significant positive effect on intention for continuous use.
H9: Immersion has a significant positive effect on intention for continuous use.
H10: Service quality has a significant positive effect on intention for continuous use.

Continuous use behavior is the follow-up development of adoption behavior, thereby necessitating the consideration of influencing factors in adoption behavior. In the study of adoption behavior, social factors play a significant role in continuous use behavior. Compared with adoption behavior, continuous use can better reflect interaction among users. The existing research has confirmed that social factors influence the continued use of mobile instant messaging (Ogara, Koh & Prybutok, 2014; Sheer & Rice, 2017). Klobas, McGill and Wang (2019) believed that perceived risk has a considerable impact on users' continuous intention to use smart homes. The risks perceived by users when using search engines will have a positive impact on behavioral intentions (Chao, Chang, Wu, Lin, & Chen, 2016). Fang, Tang, Yang and Peng (2019) found that social interaction has a positive effect on the intention of learning lessons. Few studies have been conducted on the continuous use behavior of the use of mobile devices for reading; therefore, the impact of social factors is minimal.

This study formulated the following hypotheses based on these research conclusions:

H11a: Perceived risk regulates the relationship between immersion and intention for continuous use.
H11b: Perceived risk regulates the relationship between perceived pleasure and intention for continuous use.
H12a: Perceived sociality regulates the relationship between immersion and intention for continuous use.
H12b: Perceived sociality regulates the relationship between perceived pleasure and intention for continuous use.

4. DATA ANALYSIS

4.1 Development and Data Collection of Measurement Scales

The data collection in this study focuses on the questionnaire survey method. This process includes two stages. The first stage intends to form an initial questionnaire based on relevant research literature. To ensure the content validity of the latent and measured variables, the mature measurement scales of the relevant studies were used in the design of the questionnaire. Thereafter, these scales were revised and combined with the use of mobile devices for a reading research scenario. Perceived usefulness, satisfaction, and continuous use intention were revised based on (Yang, 2015; Zhao & Ren, 2017). Immersion was based on (Zhu, Fang & Liu, 2017). Perceived timeliness was changed from (Zhao & Ren, 2017). Information interaction quality, interpersonal interaction quality, and system interaction quality were revised according to (Wang, Yang, Li & Wang, 2017). Measurement questions were set for the 11 variables in the form of a 7-point Likert scale to indicate the degree of consent (1 = strongly disagree and 7 = strongly agree). After the initial questionnaire was drafted, 30 undergraduate students from Wuhan Business University were invited to participate in the pre-investigation. The final content and format of the formal questionnaire were modified based on the feedback and test results.

The second stage involves a formal questionnaire to clarify the cognitive and belief statuses surrounding the use of mobile devices for reading, as well as consider the coverage of the sample and quality of the survey results. Studies have identified that the younger generations are the targeted users of mobile devices for reading. This research selected a survey target of mobile device users for reading. Researchers introduced the study's purpose to the qualified participants and asked them to complete the entire questionnaire. The survey, which ran from December 2018 through February 2019, was conducted by WJX.COM, a leading online survey system in China. The questionnaire was distributed to interviewees through the WJX.COM sample service. Confirmed survey participants were given a reward. A total of 348 questionnaires were obtained. Twenty-one invalid results were eliminated, which left 327 valid responses.

4.2 Demographic Characteristics of the Sample

Table 1 illustrates the sample characteristics of the survey. Among the respondents, the proportion of female and male users was 51.07% and 48.93%, respectively. The users' age groups indicated that age was concentrated at the 21-40 age range (21-30 accounted for 44.34% and 31-40 accounted for 40.06%). Regarding education level, bachelor's degrees accounted for 83.49%, master's degrees accounted for 9.79%, and doctorates accounted for 1.22%. Regarding the occupational distribution of users, the company's white-collar workers accounted for 42.51% and technical personnel accounted for 23.55%. The income distribution of users was relatively even, with a ratio of 4001-6000 RMB to 25.38% and a ratio of 6001-8000 RMB to 22.02%.

4.3 Reliability and Validity Test

The reliability and validity of the measurement scale should be analyzed to ensure the validity of the measurement model. The measurement items in this study were from local and overseas mature scales. Therefore, the preliminary questionnaire was pre-tested, making the content of the scale reasonably clear and effective.

Reliability was tested using the composite reliability (CR) and internal consistency coefficient (Cronbach's alpha) of the latent variables. Generally, the CR value and Cronbach's alpha of the latent variable reaching 0.7 can demonstrate the reliability of the measurement model. Table 2 shows the results of the confirmatory factor analysis on the measurement scale. Moreover, Table 2 indicates that the CR values were all large and equal to 0.807. The Cronbach's alpha values were all above 0.651, thereby indicating that the measurement scale has good reliability.

The validity test includes convergence and discriminant validities, which are mainly measured by AVE. AVE is the squared difference of extraction. Generally, when AVE of all factors of the

Table 1. Statistics of the sample's basic information

Variable	Category	Frequency	Percentage
Age	20 and below	19	5.81%
	21-30	145	44.34%
	31-40	131	40.06%
	41-50	29	8.87%
	Above 50	3	0.92%
Gender	Male	160	48.93%
	Female	167	51.07%
Education	Below high school	3	0.92%
	High school	15	4.59%
	Junior college/Bachelor's	273	83.49%
	Master's	32	9.79%
	Doctorate	4	1.22%
Occupation	Students	30	9.17%
	Civil servants	32	9.79%
	Technicians	77	23.55%
	White collar	139	42.51%
	Workers	19	5.81%
	Self-employed workers	6	1.83%
	Freelancers	24	7.34%
Monthly income	Below 2000 RMB	31	9.48%
	2001-4000 RMB	55	16.82%
	4001-6000 RMB	83	25.38%
	6001-8000 RMB	72	22.02%
	8001-10000 RMB	44	13.46%
	Above 10000 RMB	42	12.84%
How many hours per day do you use mobile devices for reading?	< 1 hour	31	9.48%
	1-2 hours	55	16.82%
	2-3 hours	83	25.38%
	> 3 hours	72	22.02%
Habit of using mobile devices for reading	Turn page with up and down	98	29.97%
	Turn page with left and right	163	49.85%
	Turn page with simulation book	66	20.18%
How long have you been using mobile devices for reading?	< 1 year	30	9.17%
	1-5 years	196	59.94%
	5-10 years	80	24.46%
	> 10 years	21	6.42%

model is above 0.5, the convergence validity of the latent variable is considered good. When the square root of the latent variable AVE is higher than the correlation coefficient of the other related variables, the model is considered to have a good discriminant validity. If the AVE values in Table 2 are all above 0.577, then the measurement model has an ideal convergence validity. Table 3 shows that the square root of a latent variable AVE was higher than the correlation coefficient between the latent variable and other latent variables. This result indicates that the measurement model has a good discriminant validity.

5. RESEARCH RESULTS

Partial least square (PLS) is a new method of multivariate data analysis. Compared with other methods, PLS calculation results are more reliable and stable. PLS is also suitable for the analysis of small sample data. It can achieve modeling prediction, comprehensive simplification of multivariable systems, and correlation analysis between two sets of variables. It can also solve collinearity problems effectively. The purpose is to construct regression models between multiple dependent and independent variables. PLS can set the external relationship type in the structural equation flexibly according to the actual situation when constructing the model. That is, it supports the constitutive model and reflective model. This study used the Smart PLS3.0 software to analyze the model.

5.1 Path Coefficients and Hypothesis Testing

The path coefficient indicates the strength of the relationship between the independent and dependent variables. Table 4 shows the results of the path coefficient analysis of the proposed model. All hypotheses are supported.

R^2 is the variance variability explained by the dependent variable. This research used the bootstrapping repeated sampling method to select 1,000 samples to calculate the t value of the significance test. The interpretation degrees of immersion, perceived pleasure, service quality, and intention for continuous use were 0.141, 0.369, 0.353, and 0.516, respectively. The results indicated that the model has a good interpretation effect.

This study used the bootstrapping method to test the significance of the path coefficients of the structural model. Table 4 shows the results. Perceived usefulness significantly affects perceived pleasure ($\beta = 0.193$, $t = 2.964$), and significantly affects users' continuous use intention through perceived pleasure, which is consistent with the results of (Zhao & Ren, 2017). Thus, H1 is proven. Perceived interest had a significant positive effect on perceived pleasure ($\beta = 0.393$, $t = 6.185$). Hence, H3 is supported. Perceived pleasure had a significant positive effect on perceived service ($\beta = 0.595$, $t = 13.616$), thereby proving H4. Perceived pleasure had a significant positive effect on immersion ($\beta = 0.348$, $t = 4.230$). Thus, H7 is proven. Perceived pleasure had a significant positive effect on intention for continuous use ($\beta = 0.369$, $t = 5.625$). (Yang, 2015) supported this conclusion. Thus, H8 is supported. Immersion had a significant positive effect on intention for continuous use ($\beta = 0.205$, $t = 4.374$), thereby proving H9. Perceived service had a significant positive effect on intention for continuous use ($\beta = 0.207$, $t = 3.243$). Hence, H10 is proved. However, H2, H5, and H6 were not confirmed.

5.2 Regulatory Effect Test

The independent and adjusted variables were processed centrally to test the regulatory effects of the perceived risk and perceived sociality. The product terms of perceived risk, perceived sociality, perceived pleasure, and immersion were constructed; a multi-level regression analysis was performed. Perceived sociality has a regulating effect on the relationship between perceived pleasure and intention for continuous use. It has a regulating effect on the relationship between immersion and intention for continuous use.

Table 2. Reliability and validity analyses

Variable	Measured item	Factor load	Cronbach's α	CR	AVE
Perceived usefulness	PU1	0.775	0.800	0.870	0.625
	PU2	0.797			
	PU3	0.785			
	PU4	0.806			
Perceived accessibility	PA1	0.780	0.781	0.858	0.602
	PA2	0.783			
	PA3	0.792			
	PA4	0.747			
Perceived interest	PI1	0.807	0.756	0.845	0.577
	PI2	0.769			
	PI3	0.703			
	PI4	0.757			
	PI5	0.755			
Perceived credibility	PC1	0.729	0.770	0.867	0.686
	PC2	0.905			
	PC3	0.841			
Perceived timeliness	PT1	0.801	0.761	0.862	0.675
	PT2	0.823			
	PT3	0.840			
Perceived pleasure	PP1	0.781	0.732	0.867	0.686
	PP2	0.844			
	PP3	0.794			
Immersion	IM1	0.863	0.835	0.900	0.749
	IM2	0.864			
	IM3	0.870			
Perceived service	PS1	0.835	0.752	0.858	0.669
	PS2	0.820			
	PS3	0.797			
Perceived risk	PR1	0.954	0.779	0.893	0.807
	PR2	0.839			
Perceived sociality	PSO1	0.706	0.651	0.807	0.585
	PSO2	0.853			
	PSO3	0.727			
Intention for continuous use	ICU1	0.715	0.717	0.841	0.640
	ICU2	0.863			
	ICU3	0.815			

Table 3. Differential validity

	ICU	PC	PP	PA	PU	PS	IM	PSO	PI	PR	PT
ICU	**0.800**										
PC	0.430	**0.828**									
PP	0.621	0.523	**0.807**								
PA	0.328	0.446	0.438	**0.776**							
PU	0.338	0.405	0.475	0.432	**0.791**						
PS	0.528	0.592	0.595	0.457	0.396	**0.818**					
IM	0.415	0.094	0.344	0.232	0.125	0.212	**0.866**				
PSO	0.408	0.323	0.308	0.093	0.299	0.347	0.186	**0.765**			
PI	0.446	0.527	0.577	0.609	0.591	0.507	0.333	0.254	**0.760**		
PR	−0.104	−0.197	−0.130	0.090	−0.102	−0.117	0.172	−0.006	−0.011	**0.898**	
PT	0.508	0.526	0.563	0.591	0.439	0.559	0.255	0.218	0.552	0.030	**0.822**

Table 4. Results of the hypothesis testing

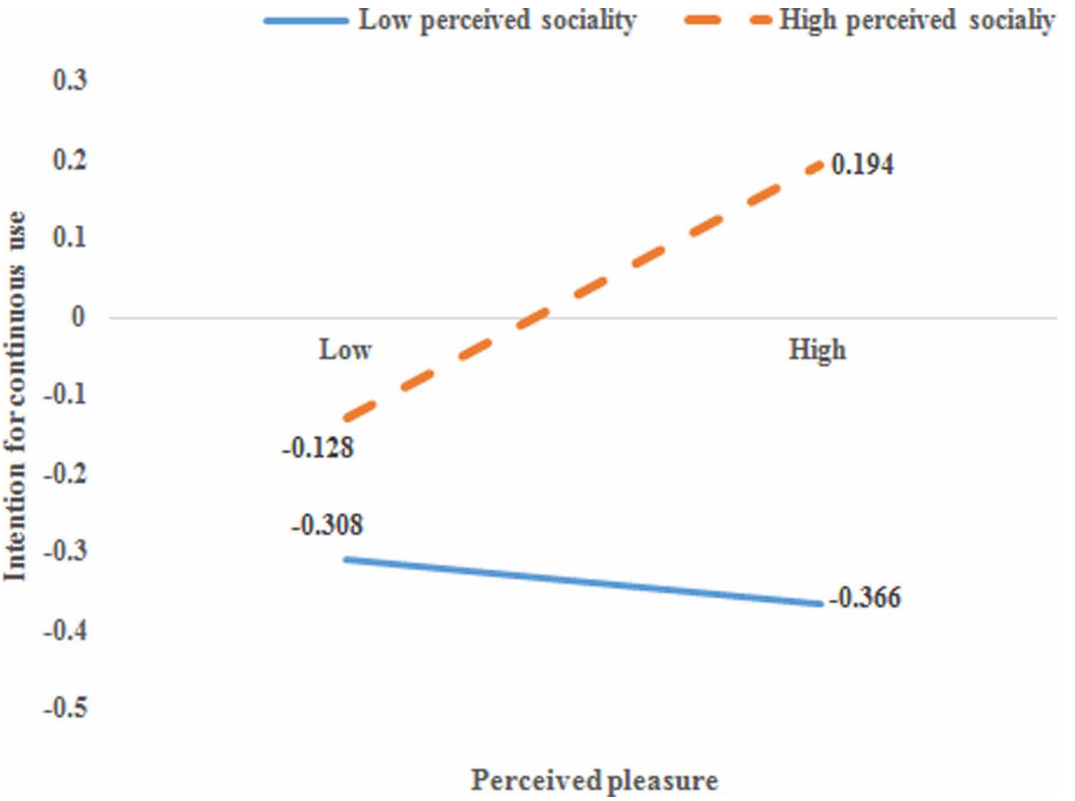
Hypothesis	Path	Path coefficient	S.E.	*t*	*p*	Whether supported or not
H1	Perceived usefulness→perceived pleasure	0.193	0.065	2.964	0.003	Yes
H2	Perceived accessibility→perceived pleasure	0.115	0.076	1.514	0.130	No
H3	Perceived interest→perceived pleasure	0.393	0.064	6.185	0.000	Yes
H4	Perceived pleasure→perceived service	0.595	0.044	13.616	0.000	Yes
H5	Perceived credibility→immersion	−0.164	0.089	1.837	0.066	No
H6	Perceived timeliness→immersion	0.145	0.082	1.781	0.075	No
H7	Perceived pleasure→immersion	0.348	0.082	4.230	0.000	Yes
H8	Perceived pleasure→intention for continuous use	0.369	0.066	5.625	0.000	Yes
H9	Immersion→intention for continuous use	0.205	0.047	4.374	0.000	Yes
H10	Perceived service→intention for continuous use	0.207	0.064	3.243	0.001	Yes

The perceived sociality regarding users of mobile devices for reading in this study is divided into high and low situations. It is convenient to clarify the role of the regulating variable. Excel was used to plot the effect of perceived pleasure on the intention for continuous use in two situations. The main, moderator, and moderation effects were 0.066, 0.185, and 0.095, respectively.

Figure 2 shows the regulating effect. The results show that when the perceived sociality of the use of mobile devices for reading users was high, the effect of perceived pleasure on intention for continuous use was weak. Hence, H12b is confirmed.

To reflect the moderating role of the use of mobile devices for reading users' perceived sociality, the average number and standard deviation of perceived sociality were calculated by taking the average plus or minus one standard deviation as the two levels of perceived sociality regarding the use of mobile devices for reading users. The main, moderator, and moderation effects are 0.584, 0.185, and -0.097, respectively. Figure 3 shows the regulating effect. When perceived sociality was high, the perceived immersion had a strong effect on the intention for continuous use. Thus, H12a is confirmed. This conclusion was also proven in (Zheng et al., 2019).

Figure 2. Regulating effect of perceived sociality on the relationship between perceived pleasure and intention for continuous use



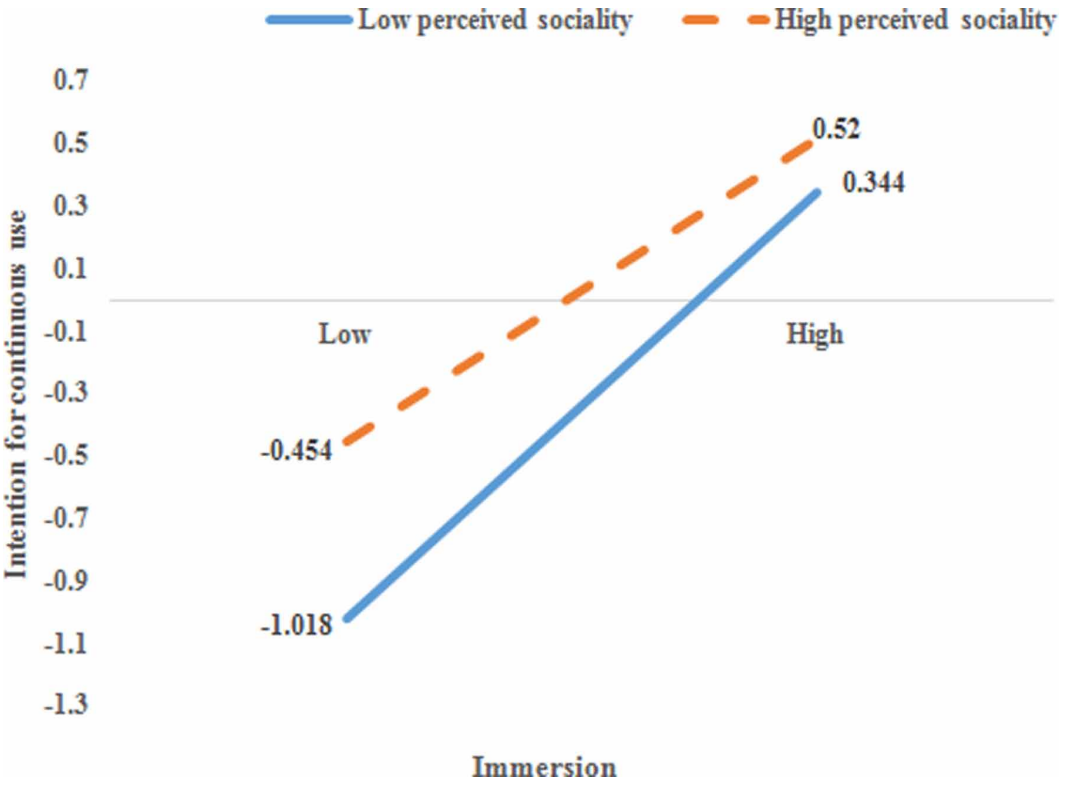
6. CONCLUSION

This study used the SOR model and characteristics of the use of mobile devices for reading users to analyze factors that impact the continuous use of mobile devices for reading users from the following aspects: (1) qualities of social interaction; (2) information interaction; and (3) system interaction. Consequently, a research model of the factors affecting the continuous use of mobile devices for reading users was constructed. The results present both theoretical and practical values.

The theoretical significance of this research is as follows. First, it confirms the widespread applicability of the continuous use behavior model of information systems. Perceived usefulness and perceived interest are important variables that affect users' intention for continuous use. Second, this study enriches and expands the continuous use behavior model of information systems. This research considers users' cognitive (i.e., perceived usefulness and perceived interest) factors and adds social and emotional factors like immersion. The interpretation effectiveness of the proposed model is also improved. Last, this study enriches research results regarding user behaviors and the use of mobile devices for reading. The complex effects of various variables are analyzed and verified, providing a valuable reference for understanding factors that affect continuous use intention of users of mobile devices for reading.

The practical significance of this research is as follows. This study supports service providers of mobile devices for reading in retaining existing users and increasing customer stickiness. The following aspects should be considered in terms of improving users' perceived usefulness: (1) service providers of mobile devices for reading should consider users' information needs; (2) content producers should be encouraged to create high-quality original work; and (3) providers should prioritize the improvement

Figure 3. Regulating effect of perceived sociality on the relationship between perceived immersion and intention for continuous use



of content quality of mobile devices for reading to meet the many needs of users based on content diversification, personalization, and satisfaction. Additionally, service providers of mobile devices for reading should: (1) focus on the cultivation of users' immersion; (2) build strategic relationships with users based on their psychological needs; (3) strengthen communication with users; and (4) strive to establish emotional connections between products and users. The function of services for the use of mobile devices for reading should be improved to cultivate users' reading habits.

7. RESEARCH LIMITATIONS AND PROSPECTS

This research studied factors that affect the continuous use of mobile devices for reading from the aspects of perceived accessibility, perceived usefulness, perceived pleasure, perceived immersion, and perceived sociality. However, it has its limitations.

First, this study used a cross-sectional study of the research object based on a certain time node. To provide an improved explanation of the influential factors of the continuous use of mobile devices for reading, a set of diachronic research plans can be designed to: (1) conduct tracking research on the changes of the same batch of research objects over time; (2) investigate and compare the perceived changes of social, emotional, and cognitive factors of users in the different stages of the use of mobile devices for reading; and (3) determine the factors or change of the same factor in different stages that affect the continuous use intention of users of mobile devices for reading.

Second, although the model proposed in this study has been proven to substantially explain the continuous use intention of users of mobile devices for reading, some results may not be applicable to other countries. This study's respondents used mobile devices for reading in China. Future studies

should expand the collection of samples to other countries, focusing on multiple cultural contexts. Future studies can also offer a comparative study of the complex effects of various model variables. These additions can improve the interpretation of the proposed model.

Last, the proposed model has systematically analyzed the occurrence mechanism that affects the use of mobile devices for reading users' continuous use intention from the three levels of SOR. A representative construct is selected in the variable measurement. This aspect inevitably disregards the impact of other variables on the continuous use intention of users of mobile devices for reading. In the future, variables should be added to the research model to offer improvements.

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Conflicts of Interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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