



Research on the Influencing Factors of Students' User Intention in Public Online Education Platform

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Abstract. In 2021, China's Ministry of Education launched a public online education platform to serve primary and secondary school students to reduce students' learning burden and promote educational equity. How to get more student users to use the public online education platform has become an urgent problem. Based on TAM and ECM models, this study constructs a model of factors affecting the usage intention of public online education platform from three aspects: system experience, social factors, and personal motivation. To verify this model, this study uses a questionnaire to conduct an empirical test. Research confirms that system experience factors indirectly influence users' intention to use through perceptual factors, while social factors and personal motivation can directly influence users' intention to use. It is recommended that public online education platform take measures to stimulate student usage intention from three aspects: user experience, student initiative, and social influence.

Keywords: public in education platform · influencing factors · intention to use

1 Introduction

The online education platform carries out teaching activities through information technology, which is the combination of traditional education and information technology [1]. According to the Statistical Report on Internet Development in China released by the China Internet Network Information Center (CNNIC), China's online education platforms have 325 million users as of June 2021, accounting for 32.1% of the total Internet users. In the meantime, many problems emerge as public online education platform develop. Spurred by capital, some online education platforms for primary and secondary education have deviated from the original intent of education. For example, some platforms develop educational products that violate cognitive laws, which leads to an excessive academic burden for students. Moreover, some platforms make use of parents' anxiety about children's education to induce parents to rationally purchase extra online education courses and expensive courses about test skills, which leads to educational injustice. In response to the messy phenomena, the Ministry of Education of China proposed a policy to optimize free online learning services in July 2021 and launched a free public online education platform. Therefore, how to get student users to actively use

public online education platform has become an urgent problem. Most of the previous studies are based on the business perspective, mainly using the questionnaire survey method to explore the influencing factors of users' continuous use behavior from three aspects: system, individual and environment [2]. However, the influencing factors of student users' intention to use are not explored from the perspective of usage. Therefore, this paper uses the technology acceptance model (TAM) and expectation confirmation model (ECM) as the theoretical basis to explore the influencing mechanism of student users' willingness to use public online education platforms from three aspects: user experience factors, personal motivation factors, and environmental factors.

2 Literature Review

2.1 System Experience and User Perception

Systematic experience refers to people's cognitive impressions and reactions to the products, systems or services they use or expect to use. This definition emphasizes the subjectivity of the user experience and focuses on the pleasure and value of its process [3]. Combined with the usage scene of students public online education platforms, the platform should make students feel physical and mental pleasure and learning value through technology and resources. Therefore, this study defines system experience as the perceptions that students develop through their technology experiences and resource experiences while using public online education platforms. A related study based on the technology acceptance model shows that the user perception of the public online education platforms is mainly derived from perceived usefulness and perceived ease of use [4]. Resources have a certain effect on perceived usefulness. For example, Tan Hongxia confirmed through a relevant study on the online learning teaching of college students that course resources affect perceived usefulness [5]. Liu's study on usage behavior on MOOC platforms also confirmed that resources of good quality have a significant effect on perceived usefulness [6]. Technology affects the perceived ease of use. For example, Sun Yumei and other related studies based on BIM technology learning of college students found that technology has a certain correlation with perceived usefulness [7]. Wu Jun and others, based on online user satisfaction research, also found that the ease of technology use affects the perceived ease of use [8]. Students' user experience is particularly critical to the formation of their perception. Student resource experience affects the formation of perceptual usefulness, and student technology experience affects the formation of perceived ease of use. Accordingly, the following hypotheses are proposed in this paper:

H1: Resource experience has a positive effect on perceived usefulness.

H2: Technology experience has a positive effect on perceived ease of use.

2.2 User Perception and Satisfaction

Perceived usefulness and perceived ease of use are the fundamental factors affecting user perception in the TAM model. Student users perceive the usefulness and ease of use of the public online education platforms in the utilization process of the platform,

which affects their satisfaction with the online platform. Perceived usefulness is defined as the degree to which individuals trust that an information system can improve work efficiency, which is an important factor of user satisfaction in the continuous use behavior of information systems [9]. Perceived ease of use refers to the ease of operating a product or technology [10]. It has been established that perceived ease of use has a positive impact on satisfaction [11]. Perceived ease of use has a positive impact on perceived usefulness [12, 13]. In addition, Chen G's study also confirmed that perceived ease of use, perceived usefulness, and satisfaction are the key factors of the continuous usage intention of online education platforms [1]. Accordingly, the following hypothesis is proposed:

H3: Perceived ease of use has a positive effect on perceived usefulness.

H4: Perceived usefulness has a positive effect on satisfaction.

H5: Perceived ease of use has a positive effect on satisfaction.

2.3 Social Factors, Satisfaction, and Usage Intention

Relevant studies confirm that social factors can have an impact on individuals' information system usage behavior [14]. Venkatesh et al. define the social impact as the extent to which users feel about being affected by the surrounding environment; that is, the higher the influence degree of the surrounding population on the use of a certain information system or information technology, the stronger the user's willingness to use [15]. Domestic and overseas studies have also confirmed that social factors positively affect satisfaction and usage intention. For example, Alruwaie M et al., based on the study of citizen e-government services, found that social factors have some influence on user satisfaction [16]. Based on research on the use behavior of mobile users' learning platforms, Xu Xueqi found that the influence of social impact on usage intention was significant [14]. Accordingly, the following hypothesis is proposed:

H6: Social impact has a positive effect on satisfaction.

H7: Social impact has a positive effect on usage intention.

2.4 Personal Motivation and Usage Intention

Perceived autonomy comes from self-determination theory. Self-determination theory proposes two main types of motivation. One is intrinsic motivation, which refers to doing something for their benefits because people enjoy the process itself. The other is extrinsic motivation, which refers to activities performed for outcomes rather than the activity itself, such as pursuing a reward or avoiding punishment [17]. Related studies have shown that perceived autonomy enhances intrinsic motivation. Some studies have shown that intrinsic motivation can help people maintain longer persistence, provide better performance, and achieve greater satisfaction when dealing with various tasks in various domains (e.g., education, behavioral health, organization) [18]. Related studies have also confirmed that perceived autonomy affects satisfaction and usage intention. For example, in Y Jung's (2011) study of online virtual world social networking, it was found that perceived autonomy affects usage intention [19]. J Kim and JH Park's (2021) study of library user behavior found that perceived autonomy affects user satisfaction [20]. Student usage intention of the public online education platforms mainly comes from internal motivation. Students' perceived autonomy will have some influence on their

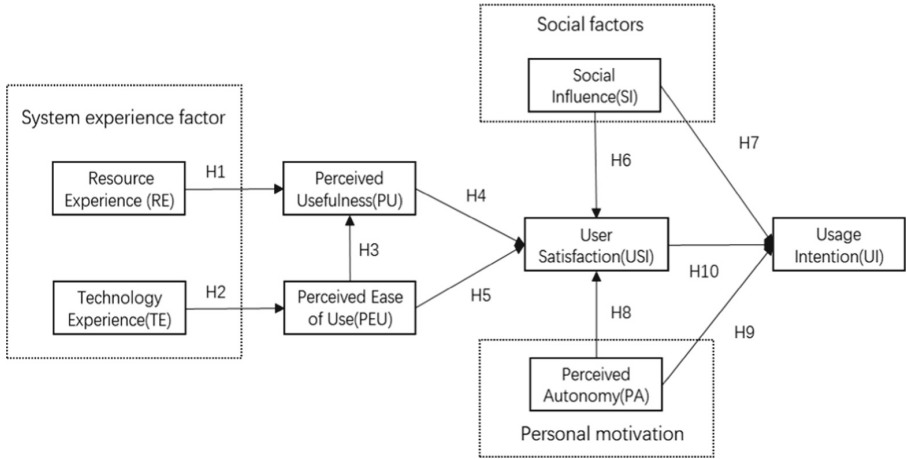


Fig. 1. Research framework and research assumptions.

usage intention and satisfaction with the public online education platforms. Accordingly, the following hypothesis is proposed:

H8: Perceived autonomy has a positive effect on satisfaction.

H9: Perceived autonomy has a positive effect on usage intention.

2.5 Satisfaction and Usage Intention

In previous studies on public online education platforms, satisfaction was regarded as a key variable that can affect usage intention. The higher the satisfaction is, the stronger the usage intention. In the ECM model, satisfaction is also the decisive factor in determining usage intention [9]. Learner satisfaction is an important criterion to measure the success of education platforms. High satisfaction promotes the success of public online education platform and improves continuous usage intention [21]. This study defines satisfaction as the evaluation given by student users after using and experiencing the online education platform, which plays a mediating role between the variables of user perception (perceived usefulness and perceived ease of use) and usage intention. Accordingly, the following hypothesis is proposed:

H10: Satisfaction has a positive effect on usage intention.

The research framework and research assumptions are shown in Fig. 1.

2.6 Methodology

Data Collection and Profile of Survey Respondents

In this study, resource experience (RE), technology experience (TE), perceived usefulness (PU), perceived ease of use (PE), usage intention (UI), user satisfaction (USI), perceived autonomy (PA), and social influence (SI) were selected as measurement variables. The source of the questionnaire questions is shown in Table 1.

Table 1. Operational definition of constructs and measurement items.

Construct	Definition	Source
Resource Experience (RE)	Student user's perceive the resource richness, update speed and playback effect in the process of using the public online education platform.	Wang C et al. (2020) [22]
Technology Experience (TE)	Student users' perception of the responsiveness, recovery, and effectiveness in the process of using the public online education platform.	Kim J et al. (2009) [23], Guan Lei (2010) [24]
Perceived Autonomy (PA)	Student's hope to have the internal psychological needs of learning independently in the process of using the public online education platform.	O Sorebo et al. (2009) [25], Juan Carlos Roca et al. (2008) [18]
Social Influence (SI)	The impact of individuals and policies in the environment of student users, such as students, parents and teachers.	Lu J, Yu C S, Yao J E. (2007) [26]
Perceived Usefulness (PU)	The perceived improvement of learning efficiency is in the process of using the online platform.	Davis F D. (1989) [27] and Moorthy K et al. (2019) [28]
Perceived Ease of Use (PEU)	Student users feel how easy to operate in the process of using the public online education platform.	Davis F D. (1989) [27] and Yoon S et al. (2016) [29]
User Satisfaction (USI)	Student users' needs and overall expectations in the service process are evaluated after using the public online education platform.	Bhattacharjee, A. (2010) [30]
Use Intention (UI)	Student users' willingness to continue using the learning platforms after trying the public online education platform.	Bhattacharjee, A. (2010) [30]

Table 2. Descriptive statistics of sample data.

Statistical items	Category	Frequency	Percentage
Gender	Male	169	48
	Female	184	52
	Total	353	100
Age	6–12	175	49.6
	13–15	170	48.2
	16 and above	8	2.3
	Total	353	100
Phase of studying	Primary school	177	50.1
	Junior middle school	176	49.9
	Total	353	100

3 Data Collection

In March-April 2022, this study distributed online questionnaires to users of public online education platforms in partner institutions (33 secondary and elementary school in 13 cities in Northeast, Northwest, Central, South and Southwest China), and a total of 525 questionnaires were returned, which were carefully screened by the authors of this paper, and finally 353 valid survey data were obtained, with a data validity rate of about 67%. The number of data recovered from the questionnaire was more than 10 times the total number of study variables, meeting the reference standard of more than 10 times proposed by Hair et al. [31]. Descriptive statistics of the samples are presented in Table 2.

4 Results

4.1 Analysis of Reliability and Validity

The data analysis of this study adopts the variance-based partial least squares method (PLS method), which is suitable for measuring complex models and can test both measurement and structural models [32]. Therefore, PLS 3.0 was selected as the data analysis software for this study. Since the measurement model of this study belongs to the reflective measurement model, we test the reliability, convergence validity and discriminant validity of the scale. The results of data analysis are shown in Table 3.

Comparing the correlation coefficient between the square root of AVE and the latent variable can reveal the discriminant validity. As shown in Table 4, the AVE square root values (in black font) of all variables are larger than the correlation values between latent variables.

Table 3. Results of reliability and validity analysis of the measurement model.

Variables	Question item	IL	AVE	CR	Cronbach's Alpha
Social Impact (SI)	SI 1	0.909	0.843	0.942	0.907
	SI 2	0.926			
	SI 3	0.920			
Perceived Autonomy (PA)	P A 1	0.932	0.862	0.949	0.920
	P A 2	0.926			
	P A 3	0.927			
Perceived Easy to Use (PEU)	PEU1	0.926	0.847	0.943	0.910
	PEU2	0.918			
	PEU3	0.917			
Perceived Usefulness (PU)	PU1	0.937	0.878	0.950	0.930
	PU2	0.925			
	PU3	0.948			
Resource Experience (RE)	RE1	0.897	0.769	0.909	0.851
	RE2	0.821			
	RE3	0.910			
Technology experience (TE)	TE1	0.897	0.787	0.917	0.864
	TE2	0.896			
	TE3	0.867			
User satisfaction (USI)	UI1	0.938	0.857	0.947	0.916
	UI2	0.934			
	UI3	0.905			
User Intention (UI)	US1	0.926	0.866	0.950	0.923
	US2	0.929			
	US3	0.937			

4.2 Hypothesis Testing

Structural model path coefficient analysis analyses the internal relationship between latent variables by calculating the standardized path coefficient, T value, confidence interval (CI), P value, and other parameters, as shown in Table 5.

Table 4. Correlation coefficients among latent variables of the measurement model.

Latent variable	SI	PA	PEU	PU	RE	TE	UI	USI
SI	0.918							
PA	0.645	0.928						
PEU	0.491	0.670	0.920					
PU	0.637	0.779	0.720	0.937				
RE	0.589	0.695	0.635	0.766	0.877			
TE	0.466	0.640	0.778	0.705	0.625	0.887		
UI	0.635	0.803	0.651	0.808	0.716	0.639	0.926	
USI	0.577	0.760	0.730	0.834	0.721	0.708	0.828	0.931

* The number on the diagonal is the square root of the AVE value

Table 5. Standardized path coefficient of structural equation modelling.

Hypothesis	Standardized total effect	T value	Confidence interval (CI)	Significance (P value)
RE - > PU	0.518	12.416	[0.439–0.601]	* * *
TE - > PEU	0.778	30.891	[0.728–0.825]	* * *
PEU - > PU	0.391	9.419	[0.307–0.469]	* * *
PU - > USI	0.501	7.913	[0.375–0.620]	* * *
PEU - > USI	0.416	7.79	[0.304–0.514]	* * *
SI - > USI	0.011	0.277	[0.069–0.092]	0.781
SI - > UI	0.134	2.813	[0.047–0.232]	* * *
PA - > USI	0.215	3.032	[0.083–0.358]	* *
PA - > UI	0.454	8.005	[0.339–0.560]	* * *
USI - > UI	0.490	10.108	[0.395–0.585]	* * *

Note 1: * * * p < 0:01 (two-tailed). Note 2: * * p < 0:05 (two-tailed)

5 Conclusions

- (1) System experience factors (resource experience and technology experience) do not directly affect student usage intention on public online education platform but indirectly affect student usage intention through perceived factors (perceived usefulness, perceived ease of use and satisfaction). According to the data analysis, resource experience affects user satisfaction through perceived usefulness, which means indirectly affects usage intention. Technology experience indirectly affects usage intention through perceived ease of use; technology experience indirectly affects satisfaction and usage intention through perceived ease of use and perceived usefulness. Among them, perceived usefulness affects usage intention more strongly than perceived ease

of use. Specifically, perceived usefulness is directly affected not only by resource experience and perceived ease of use but also by technology experience. Perceived ease of use is only directly affected by the technology experience. Perceived usefulness and perceived ease of use indirectly affect usage intention by affecting user satisfaction. Perceptual usefulness affects usage intention to a greater extent than perceived ease of use. In addition, during the process of using public online education platform, the higher the technology experience level of student users (such as loading speed, system stability, and system recovery), the higher perceived usefulness and satisfaction, and the stronger usage intention. Therefore, the functional modules related to student users in the public online education platform should focus on the practical value and pay attention not only to student user resource experience but also to student user's technology experience.

- (2) Social factors (social impact) directly affect student usage intention on public online education platform, but the impact on satisfaction is not significant. According to the data analysis, social impact positively affects usage intention, while social impact does not significantly affect satisfaction. The results show that student usage intention on public online education platform is affected by society; that is, students, teachers, parents, policy and other factors can improve students' willingness to use learning platforms. However, the effect of the social impact on satisfaction is not significant because the formation of student users' satisfaction with the public online education platform comes from the perception after actual use. Social influences affect students' usage intention but not their satisfaction.
- (3) Personal motivation (perceived autonomy) directly influences students' usage intention of public online education platform and indirectly influences satisfaction. According to the data analysis, perceived autonomy positively affects usage intention and indirectly positively affects satisfaction. The result shows that perceived autonomy directly enhances student usage intention on the public online education platform. Specifically, if students have autonomy in learning duration, course content, learning progress and other aspects, students' willingness to use the public online education platform will increase. In addition, when the students' perceived autonomy is higher, the students' satisfaction is higher, and the intention to use is stronger.

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