

## **Influencing Factors of Users' Willingness to Use Online Education Platform**

***Jia-min Chen and Ruo-yu Song\****

School of Economics and Management, Chongqing University of Posts and Telecommunications, Chongqing 400065, China

\*Corresponding Author. Email: [1132567232@qq.com](mailto:1132567232@qq.com)

*Received 7 March 2021; accepted 28 April 2021*

**Abstract.** With the rapid development of Internet technology, the society pays more attention to education and the economic level, and the attention of online education industry continues to increase. Under the background of the vigorous development of online education platform, low return rate is one of the important problems it faces. Based on the expectation confirmation model, this study constructs the influencing factor model of the continuous learning intention of the online education platform users according to the actual learning situation of the online education platform users, and explores the structure and quantity relationship between the variables in the model. The results show that the improved model has higher explanatory power for the continuous learning intention of online education platform users, and learners' perceived usefulness experience, learning satisfaction and perceived added-value can have a positive impact on the continuous learning intention. Expectation recognition has a positive impact on learning satisfaction and perceived usefulness experience, and perceived usefulness has a positive impact on perceived added-value. On this basis, this study puts forward some suggestions for the development of online education platform in the future according to the actual situation in China.

**Keywords:** online education, continuous learning intention, expectation confirmation model, influencing factors

### **1. Introduction**

For enterprises with online courses as their products, the cost of developing new users is increasing. In such a market competition pattern, the cost of retaining old users is lower than that of developing new users, and the benefits for enterprises are more obvious. How

Jia-min Chen and Ruo-yu Song

to retain the existing users on the basis of the existing large-scale network video user group is a difficult problem in the development of online education platform. This paper studies the continuous use behavior of online education platform and constructs a continuous use model of online education platform based on expectation confirmation model, which lays a foundation for the next empirical analysis. The research can not only help the existing platform to understand what influencing factors exist, but also help it to promote the optimization and improvement of existing products, and provide some guiding significance for the marketing and promotion process of enterprises. The members of the project will investigate and analyze the development of online education platform at home and abroad and the use of users, and find out the potential influencing factors of users' willingness to use online education platform. And then based on expectation confirmation theory, this paper discusses the influencing factors of online education platform users' decision-making mechanism. According to the results of the study, it provides a theoretical scheme and guidance for the online education platform to improve user stickiness and loyalty, and at the same time, it will put forward the service measures and marketing strategies which will help to improve the users' willingness to use continuously according to the research conclusions.

## **2. Literature review**

### **2.1. Theory of user's continuous use willingness**

User continuous use theory focuses on the evaluation, feedback and enhancement of the process of interaction with information, products and services. For information systems, the continuous use of users is more important than initial acceptance. At present, there are three kinds of models based on technology acceptance model, expectation confirmation model (ECM), and integration of several models.

According to some researchers, the behavior of user's information technology acceptance is the repetition and extension of initial acceptance behavior, so the continuous use behavior of information system is studied based on the extension and improvement of acceptance theory such as plan behavior theory, technology acceptance model and integrated technology acceptance model. For example, Bock study the influencing factors of users' willingness to use electronic knowledge base continuously [1]. Lin and so on verify that perceived usefulness, system satisfaction significantly positively affect the user's intention to use continuously, information quality, technical task matching impact expectation confirmation degree [2]. Some researchers have observed the difference between initial acceptance and continuous use of information systems and constructed new research models. Bhattacherjee introduced the expectation confirmation theory widely used in the field of consumer behavior into the study of

Study on the Influencing Factors of Users' Willingness to Use Online Education Platform continuous use of information systems, combined with the technology acceptance model, the model including perceived usefulness, system satisfaction, expectation confirmation, and continuous use intention were constructed. The empirical study on Gleason's gym in the background of network banking showed that perceived usefulness, system satisfaction and expectation confirmation were important factors affecting users' continuous use intention. And these three variables accounted for 42% of the variation in users' intention to continue using. Based on expectation confirmation theory, Chiu studies perceived usefulness, perceived performance, perceived quality, perceived value influence satisfaction and willingness to use continuously in e-learning environment [3]. Stone and Baker-Eveleth have also constructed a willingness-to-use model based on the expectation confirmation theory, and empirical research has proved that satisfaction and perceived usefulness have a direct positive effect on the intention-to-use [4].

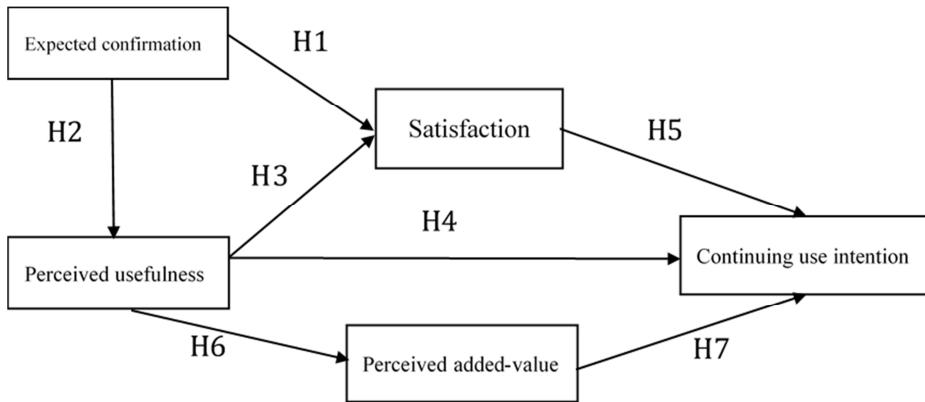
**2.2. Determinants of users' continuous use willingness: Expected Recognition Model**  
Expected confirmation model was first proposed by Bhattacherjee [5]. It is suggested that because of its high prediction ability for users' continuous use intention, it has become the most commonly used theoretical model to explore the sustainable development of information system. The model holds that the user has an initial expectation of the utility of the information system before use, and will produce a perceptual understanding of the actual utility of the system after use. The difference between the two is the degree of expectation confirmation. The higher the degree of expectation confirmation, the more useful the user thinks the system is, the more satisfied the user is, thus forming the intention of continuous use. Since the expectation confirmation model was put forward, it has been widely used by researchers to explore the problems related to the continuous use of new information systems or information technologies by users.

According to the expectation confirmation model, whether the user is willing to use a certain information system continuously is mainly affected by the degree of expectation confirmation, perceived usefulness and satisfaction. It can be seen from the model that the user's satisfaction with the information system has a positive effect on the willingness to use continuously, and the perceived usefulness of the information system directly affects the willingness to use continuously and positively affects the satisfaction.

### **3. Research hypotheses**

#### **3.1. Research model**

Based on the expectation confirmation model, this study introduces the influence factor of perceived added-value, that is, the new added-value to the original value of the product perceived by the user. The conceptual model proposed in this study is shown in figure 1.



**Figure 1:** Conceptual model of the study

### 3.2. Research hypotheses

The expected confirmation degree is an important variable proposed by the Bhattacherjee that affects the continuous use of the user. It refers to the prediction and actual matching degree of the user before and after using the service. Based on the improved expectation confirmation model, Zhang Zhe et al. (2016) verify that the degree of expectation confirmation has a positive effect on MOOC learners' satisfaction and perceived usefulness [6]. Many scholars have verified in many areas that the theory of expectation confirmation has an impact on the willingness to buy products again and the associated use of continuing services. For example, when consumers expect too much and actual performance does not exceed expectations, the lower the degree of recognition and indirectly affects consumer satisfaction. On the contrary, the original expectation is lower and the actual performance is higher, which improves the degree of recognition and indirectly improves the satisfaction. Alshurideh et al. found that the degree of expectation confirmation has A positive impact on satisfaction when studying the intention and actual usage of mobile learning system (MLS) drivers of students in the higher education background of the United Arab Emirates. These factors have a positive impact on students' willingness to use MLS [7]. In this study, the expectation confirmation degree is used to reflect the degree of conformity between the perceived effect of the user after the actual use of the online education platform and the expected degree before use, and the following hypothesis is put forward.

H1: the degree of recognition (CF) has a positive effect on satisfaction (SA);

After users actually use the online education platform, their perceived usefulness is related to their expectations of the platform before they use it. If users meet their expectations after using the platform, they will be more likely to feel the help of online education to their learning. Therefore, this study assumes that:

## **Study on the Influencing Factors of Users' Willingness to Use Online Education Platform**

H2: the degree of recognition (CF) has a positive effect on perceived usefulness (PU);

Perceived usefulness perceived usefulness refers to the degree to which the user subjectively considers the improvement of job performance when using a particular system. When the user's perceived usefulness is higher, the more positive the user's attitude is, and the user's perceived usefulness plays a positive role in its satisfaction, so the user's perceived usefulness is very important to the user satisfaction of the online education platform. In this study, perceived usefulness is used to reflect the extent to which users believe that the use of online education platforms is helpful to their learning, and thus the following assumption is proposed.

H3: perceived usefulness (PU) has a positive effect on satisfaction (SA);

From the results of the survey, as more and more people begin to choose online education, can continue to use a platform mainly depends on whether it can satisfy the users' learning needs, provide a rich learning resources, has help to the improvement, which need high customer perceived usefulness, users continue to use it up, Zhu Shenqi (2019) found in the empirical study of music platform users' intention to continue using that perceived usefulness has a positive impact on their intention to continue using [8]. Eunil Park proved that users' intention to continue using smart wearable devices is determined by perceived usefulness [9]. Therefore, the following hypotheses are proposed.

H4: perceived usefulness (PU) has a positive effect on continuous use intention (CI);

Oliver(1980) the theory of expectation confirmation that consumers are satisfied with products or services by comparing pre-purchase expectations with post-purchase performance, perceived satisfaction provides a reference for re-purchase or use [10]. Satisfaction is a psychological state of the consumer, the relative relationship between the customer's prior expectation of the product or service and the actual feelings obtained after the actual use of the product or service. Based on the empirical research of expectation confirmation model, Yiling (2016) and other scholars found that user satisfaction is an important factor affecting the willingness of system to continue to use<sup>[11]</sup>. The research results of Carlos Tam et al. show that the driving factor of continuous intention in mobile applications is satisfaction [12]. Customer satisfaction is an important factor affecting the willingness of the system to use continuously. In this study, satisfaction is used to reflect whether users are satisfied and satisfied with the online education platform after using it, and the following assumption is put forward.

H5: satisfaction (SA) has a positive effect on continuous use intention (CI);

Perceived added-value refers to the difference between the value perceived by the customer and the cost incurred. The value of a product can only be perceived by the customer to bring benefits to the enterprise. Increasing added-value is the foundation of

Jia-min Chen and Ruo-yu Song

all business models, economic growth models and economic development models. Therefore, many online education platforms choose to add some additional added-value services and additional services, such as free learning resources, free courses and so on, hoping to enhance the user's sense of use.

In this study, perceived added-value variables were added to the expectation confirmation model, assuming that the perceived usefulness of online learning can have a positive impact on perceived added-value. In this study, perceived added-value is used to reflect the degree of unexpected services and experiences felt by users of online education platforms, and the relevant assumption is as follows:

H6: perceived usefulness (PU) has a positive effect on perceived added-value (PAV);

When users perceive more added value, they will think that the greater the degree to which the online education platform can be helpful to their future work or study, the more trusted the platform will be, and its intention to continue to use will be improved. Liu Xiaoli and Zhang Lei proved that perceived added value has a positive impact on users' intention to pay for online knowledge [13]. Kim, Bae and Jeon demonstrated in their experiments that perceived added value has a positive effect on the willingness to continue using accommodation applications [14]. We therefore assume that:

H7: Perceived added-value (PAV) has a positive effect on the intention (CI) of continuous use.

## 4. Results

### 4.1. Data collection

#### 4.1.1. Questionnaire design

In the design of the questionnaire, combined with the characteristics of the online education platform, the existing scale of each variable was adjusted to get the initial questionnaire, and the final questionnaire was formed by the initial questionnaire through small-scale interviews, questionnaire pre-test, correction.

The first draft of the questionnaire consists of two parts. First part includes the basic situation of the respondents, covering the basic information such as gender, occupation and education level; the second part is the evaluation of the measurement index of each variable. The measurement questions of the model all use the Richter 5 scale, 1~5 respectively indicate that the attitude of the respondents is changed from very disagree to very agree. Five variables, such as confirmation degree, perceived usefulness, satisfaction degree, perceived added-value, and willingness to continue to use, were measured, with a total of 21 items.

## Study on the Influencing Factors of Users' Willingness to Use Online Education Platform

### 4.1.2. Data collection

This research chooses the users of online education platform as the research object. Since young people are the main users of online education platforms, the respondents are mostly university students and young employees of enterprises. The questionnaire was published on the website Questionnaire star (<https://www.wjx.cn/>), and then users who have used the online education platform were invited to fill in the questionnaire through QQ group, WeChat group, Weibo and email. In addition, questionnaires were also distributed to people gathering places and friends around. A total of 500 questionnaires were sent out and 450 were returned. Among them, 410 were valid questionnaires. The effective recovery rate was 82%.

## 4.2. Factor analysis

### 4.2.1. Reliability analysis of data

SPSS 23.0 software was used to test the reliability of the questionnaire.

Cronbach coefficient (Cronbach's  $\alpha$ ) method is used to analyze the internal reliability. Nunnally<sup>[15]</sup> believes that the value of  $\alpha$  coefficient should be greater than 0.7, and that when the value of  $\alpha$  coefficient is less than 0.6, the questionnaire must be redesigned. In Table 1, the  $\alpha$  coefficient of expected validation, perceived usefulness and perceived added-value is greater than 0.7, indicating a high degree of stability and reliability. The  $\alpha$  coefficient of intention for continuous use is 0.699, and the  $\alpha$  coefficient of satisfaction is 0.681, slightly lower than 0.7. The results of reliability analysis are acceptable to a certain extent. In summary, the measurement questions of each research variable in the continuous use behavior questionnaire have good stability and consistency, and the reliability of the questionnaire is high.

### 4.2.2. Validity analysis of data

#### (1) Exploratory factor analysis

Through structural validity analysis, the KMO value of this questionnaire is 0.919, the KMO value of each variable is more than 0.5, the overall explanation is higher, the Bartlett statistical value is 0.000, the validity of the sample is good, so the interpretation rate of cumulative variance is 56.722%. According to the component matrix after rotation, PU1, PU2, SA2, CF2, CI4, CI5, PAV4 and PAV5 items are deleted, and the factor load values of other items are all above 0.5 (Table 2), and the remaining items can be used for factor analysis.

Jia-min Chen and Ruo-yu Song

**Table 1:** Cronbach  $\alpha$  coefficient for study variables

Variable	Correlation coefficient	Cronbach's $\alpha$ after	Cronbach's $\alpha$
Expected confirmation			0.775
CF1	.604	.671	
CF2	.574	.689	
CF3	.599	.658	
Perceived usefulness			0.719
PU1	.585	.613	
PU2	.517	.653	
PU3	.473	.677	
PU4	.463	.684	
Satisfaction			0.681
SA1	.517	.613	
SA2	.424	.653	
SA3	.446	.677	
SA4	.471	.684	
Perceived added-value			0.726
PAV1	.459	.689	
PAV2	.519	.665	
PAV3	.534	.659	
PAV4	.461	.688	
PAV5	.452	.691	
Continuing use intention			0.699
CI1	.501	.636	
CI2	.472	.642	
CI3	.467	.644	
CI4	.376	.687	
CI5	.477	.640	

**Table 2:** Factor loads for validity tests

Variable	CF1	CF3	PU3	PU4	SA1	SA3	SA4	PAV1	PAV2	PAV3	CI1	CI2	CI3
Loading	.681	.517	.547	.507	.579	.606	.586	.756	.607	.532	.671	.648	.589

## Study on the Influencing Factors of Users' Willingness to Use Online Education Platform

### (2) Validation factor analysis

According to the previous exploratory factor analysis, the influencing factors of users' willingness to use online education platform have five dimensions, and each dimension contains different number of measurement items. In order to test the adaptability of the model of influencing factors of users' willingness to use online education platform, statistical analysis software is used A MOS 25.0 confirmatory factor analysis. The test results show that the adaptability index values of the influencing factor model of users' willingness to continue using on the online education platform are as follows (Table 3).

**Table 3:** Fitness of Factors

$\chi^2/df$	RMSEA	GFI	AGFI	CFI	IFI	TLI
2.166	0.053	0.957	0.928	0.954	0.955	0.953

In terms of the criteria of model fit, this research adopts the seven adaptation degree judgment index, respectively is: chi-square freedom ratio ( $\chi^2/ df$ ), fitting index (GFI), after fitting index (AGFI), gradual adjustment residual mean square and square root (RMSEA), compare the fitting index (CFI), non - standard fitting index (TLI) and added value fitting index (IFI). When evaluating the fitting degree and structural validity of the model constructed, the relevant indicators proposed by Minglong (2009) [16] have been relatively mature and widely used by domestic scholars. According to the comparison between the values of each fitness evaluation index of the model and the standard values of good fitness, its  $\chi^2/DF$  value is about  $2.166 < 3$ ,  $CFI = 0.957 > 0.9$ ,  $GFI = 0.954 > 0.9$ ,  $RMSEA = 0.053 < 0.08$ ,  $TFI = 0.954 > 0.9$ ,  $IFI = 0.954 > 0.9$ . It can be seen that all the fitting indicators of the model meet the standards, indicating that the overall fitting degree of the influencing factor model of users' willingness to continue using on the online education platform is high, and the model can be established.

Table 4 shows that the range of standardized load change is 0.562~0.739, which is higher than the standard of 0.50. The range of C.R. value change is 8.548~12.171, which is greater than the critical value of 1.96. At the same time, the statistical significance level is reached, indicating that each item has a good explanation effect on the latent variables.

Jia-min Chen and Ruo-yu Song

**Table 4:** Validation Factor Analysis (N=410)

		Path	Non-standard loads	C.R.	P	Standard load
CF3	<---	Expected confirmation	1.000			.739
CF1	<---	Expected confirmation	.775	12.171	***	.732
PU4	<---	Perceived usefulness	1.000			.647
PU3	<---	Perceived usefulness	.900	9.789	***	.629
SA4	<---	Satisfaction	1.000			.610
SA3	<---	Satisfaction	.934	9.300	***	.562
SA1	<---	Satisfaction	1.031	10.648	***	.673
PAV3	<---	Perceived added-value	1.000			.669
PAV2	<---	Perceived added-value	.974	8.548	***	.605
PAV1	<---	Perceived added-value	.893	8.692	***	.628
CI3	<---	Continuing use intention	1.000			.574
CI2	<---	Continuing use intention	1.094	8.702	***	.624
CI1	<---	Continuing use intention	.968	8.989	***	.664

#### 4.3. Hypothesis testing

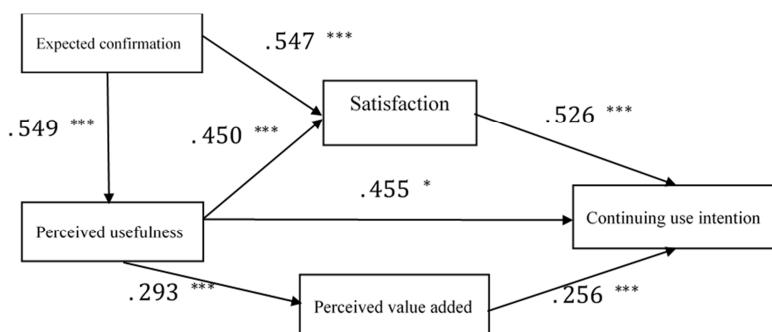
The SPSS 23.0 software is used to analyze the data by linear regression, and the verification results of the research hypothesis are obtained, shown in table 5. The results in table 5 reveal that the research hypotheses from H1 to H7 are all significant at the level of 0.001, demonstrating that all the hypotheses are accepted.

## Study on the Influencing Factors of Users' Willingness to Use Online Education Platform

**Table 5:** Regression analysis between variables

The regression equation		Overall fitting index		The significance of regression coefficient	
The dependent variable	Predictor variable	R <sup>2</sup>	F	$\beta$	t
Satisfaction (SA)	Expected confirmation (CF)	0.422	150.008	0.449	10.223
	Perceived usefulness (PU)			0.294	6.698
Perceived usefulness (PU)	Expected confirmation (CF)	0.265	148.210	0.516	12.174
Perceived added-value (PAV)	Perceived usefulness (PU)	0.072	32.693	0.272	5.718
Continuing use intention (CI)	Perceived usefulness (PU)	0.346	73.164	0.336	7.135
	Perceived added-value (PAV)			0.093	2.100
	Satisfaction (SA)			0.292	5.807

Therefore, the final tested model and corresponding path coefficients of the model are shown in figure 2.



**Figure 2:** Path analysis results of the research model

### 5. Conclusion and discussion

Based on the theory of expectation confirmation and the characteristics of online education platform, this study constructs a theoretical model of continuous use of video websites, and verifies the model of influencing factors of users' willingness to continue to use online education platform. The results show that:

- (1) the perceived usefulness, satisfaction and perceived added-value formed by users in the process of using the online education platform are important factors that affect their continued use of the platform;

Jia-min Chen and Ruo-yu Song

- (2) the perceived usefulness formed in the process of using the online education platform will have an impact on satisfaction and perceived added-value;
- (3) at the same time, the degree of expectation confirmation will significantly affect the perceived usefulness and satisfaction of users.

According to the results of this paper, the following suggestions are put forward for the operators of online education platform. Firstly, to make users feel the use of online education platforms to improve perceived usefulness, because it is verified that perceived usefulness has significant positive effects on online education platform user satisfaction, perceived added-value, and continuous use intention. The more users feel that the online education platform is useful, the higher their satisfaction with the online education platform, the greater the added-value of the products, and the stronger the intention to continue to use the online education platform. The online education platform should expand the propaganda of the online education platform, enhance the popularity through many ways, such as creating hot topics online, so that more people can really understand the online education platform, let users know the function of the online education platform, the advantages of the online education platform, and how to use the online education platform. Through these measures, users can have a practical understanding of the usefulness of online education platform, thus promoting the continuous use of online education platform.

Secondly, it is important to make the online education platform meet the expectations of users to improve the expectation confirmation. Expectation confirmation has a significant positive effect on the perceived usefulness and satisfaction of online education platform users. Therefore, first of all, we should do a good job in the function design of the online education platform, so that the functions of all aspects of the online education platform can meet the user's expectations. Secondly, to carry out accurate propaganda, blindly expand the propaganda, exaggerate the advantages of online education platform can easily lead to learners to produce too high learning expectations, so that users in the use of too big gap, is not conducive to the improvement of their expectations confirmation. Therefore, we should carry out reasonable propaganda and promotion of online education platform, so as to ensure that more learners understand the advantages of online education platform, while not allowing learners to expect too much from the learning process and results.

Thirdly, it is vital to ensure that content-added services are matched with fees to improve user satisfaction and perceived added-value. User satisfaction and perceived added-value in the process of online education platform are important reasons for their continued use of the platform. The essence of added-value is use value, increasing added-value is very important for enterprise management and development. If products

## Study on the Influencing Factors of Users' Willingness to Use Online Education Platform

want to have higher cost-performance ratio, they must improve user perception of added-value. Innovation is the fundamental way to increase added-value. We should continue to optimize community interaction, interface design, customer service attitude, etc. In addition, product features should allow users to customize as much as possible. Because each user's habits are different, if the product is developed, the user can have a random customization of the content and the time period of learning according to his own preference. Then the user's experience will not solidify, thus forming a better user experience, improve satisfaction.

Lastly, it is crucial to develop user's paying habit and copyright consciousness. The essence of online education platform is that users can get the best information in the fastest time by paying professional teams. At present, high quality original content and large effective user group are the main driving force of content realization, reversing the deep-rooted free habits of Internet users is still the key factor for the sustainable development of online education platform. On the other hand, we should cultivate users' copyright awareness and reduce the possibility of paying users to forward the content twice. Respect the intellectual labor of content producers and create a better environment for high-quality original content production.

## REFERENCES

1. G.Bock, M.Mahmood, S.Sharma, et al., The impact of information overload and contribution overload on continued usage of electronic knowledge repositories, *Journal of Organizational Computing and Electronic Commerce*, 3 (2010) 257—278.
2. W.Lin and C.Wang, Antecedences to continued intentions of adopting e-learning system in blended learning instruction: a contingency framework based on models of information system success and task-technology fit, *Computers & Education*, 1 (2012) 88—99.
3. C.Chiu, M.Hsu, S.Sun, et al., Usability, quality, value and e-learning continuance decisions, *Computers & Education*, 4 (2005) 399—416.
4. R.W.Stone and L.Baker-Eveleth, Students' expectation, confirmation, and continuance intention to use electronic textbooks, *Computers in Human Behavior*, 3 (2013) 984—990.
5. A.Bhattacherjee, Understanding information systems continuance: an expectation -confirmation model, *MIS Quarterly*, (2001) 351-370.
6. Z.Zhang, Y.Wang, X.Chen, et al., An empirical study on the influencing factors of mooc continuous learning intention - based on the improved expectation confirmation model, *Audio-visual Education Research*, 37(5) (2016) 30-36.

Jia-min Chen and Ruo-yu Song

7. M.Alshurideh, B.Al Kurdi and S.A.Salloum, Examining the main mobile learning system drivers' effects: a mix empirical examination of both the expectation-confirmation model (ECM) and the technology acceptance model (TAM), *Proceedings of the International Conference on Advanced Intelligent Systems and Informatics*, (2019) 406-417.
8. S.Zhu, An empirical study on the continued use intention of digital music platform users-based on the expectation confirmation model, *Modern Information Technology*, 3(12) (2019) 170-178.
9. E.Park, User acceptance of smart wearable devices: An expectation-confirmation model approach, *Telematics and Informatics*, 47 (2020) 101318.
10. R.L.Oliver, A cognitive model of the antecedents and consequences of satisfaction decisions, *Journal of Marketing Research*, 17(4) (1980) 460-469.
11. Dai Yiling, Gu Dongxiao, Lu Wenxing, et al., Research on the willingness to continue using hospital information systems-based on technology acceptance model and expectation confirmation theory, *Computer Science*, 43(7) (2016) 240-244.
12. T.Carlos, S.Diogo and O.Tiago, Exploring the influential factors of continuance intention to use mobile apps: extending the expectation confirmation model, *Information Systems Frontiers*, 22(1) (2020) 243-257
13. Liu X.Li, and L.Zhang, Research on the influence mechanism of platform interactivity on users'willingness to pay online knowledge, *New Century Library*, 8 (2020) 22-28.
14. S.H.Kim, J.H.Bae and H.M.Jeon, Continuous intention on accommodation apps: integrated value-based adoption and expectation-confirmation model analysis, *Sustainability*, 11(6) (2019) 1578.
15. J.C.Nunnally, *Psychometric Theory*, New York, McGraw Hill, (1978).
16. Wu Minglong, *Operation and Application of Structural Equation Model*, Chongqing: Chongqing University Press, (2009).