The Influence of Expectation Confirmation on College Students' Satisfaction and Continued Use of M-Learning App in Private Collage in China

Qinghao Wu[1], Norhayati Mohd Yusof[*2]

[1] Shenyang Institute of Science and Technology, China

[2]Faculty of Education, Universiti Teknologi MARA (UiTM), Cawangan Selangor, Kampus Puncak Alam, Bandar Puncak Alam 42300, Malaysia

***Correspondence Author**

DOI: https://dx.doi.org/10.47772/IJRISS.2025.9010158

Received: 04 January 2025; Accepted: 08 January 2025; Published: 08 February 2025

ABSTRACT

Summary: This study examines the determinants influencing private college students' intents to persist in utilising mobile learning applications, particularly the Superstar Learning App in China. Based on the Expectation-Confirmation Model, the study utilises a survey methodology to analyse user behaviour. The results indicate that expectation confirmation substantially improves students' pleasure and perceived utility. Moreover, both contentment and perceived utility are demonstrated to positively affect the intention to continue utilising the application. These observations present practical implications for the design and optimisation of mobile learning platforms, offering techniques to enhance sustained engagement among college students.

Purpose: The objective of this study is to investigate the factors affecting private college students' intents to persist in using mobile learning applications, particularly the Superstar Learning App, in China. This research, grounded in the Expectation-Confirmation Model, empirically investigates the relationships among expectation confirmation, perceived usefulness, satisfaction, and intentions for continued usage. The research aims to provide theoretical and practical contributions by delivering insights to improve user happiness and foster ongoing engagement with mobile learning platforms.

Method: This study employs a questionnaire-based survey approach, utilising the Superstar Learning App as a case study, and collects data via an online survey administered to students at a private college in Liaoning Province, China. The questionnaire includes essential elements such as students' expectations, actual usage experiences, perceived usefulness, satisfaction, and their intention to persist in using the mobile learning application. The gathered data are examined with SPSS software for reliability, validity, and regression analysis to evaluate the submitted research hypotheses.

Results: The reliability study verifies that the research scale and variables demonstrate good dependability and robust stability. Validity testing demonstrates the data's appropriateness for factor analysis, evidenced by elevated KMO values for all variables. The results of the regression analysis indicate that expectation confirmation has a large and favourable impact on both perceived usefulness and satisfaction. Furthermore, perceived utility and enjoyment significantly positively impact the desire to persist in using the application. All proposed hypotheses have been satisfactorily validated.

Conclusion: : This study delineates the pivotal aspects affecting college students' intentions to persist in utilising the Superstar Learning App, based on empirical research rooted in the Expectation-Confirmation Model. The results emphasise that enhancing students' expectation confirmation, perceived utility, and happiness is crucial for promoting ongoing engagement with mobile learning applications. It is advised that developers of mobile learning applications focus on comprehending customer requirements, refining product design, and improving the overall user experience to facilitate the wider acceptance and progression of mobile learning technologies.

Keywords Expectation-Confirmation Model, Mobile Learning, Superstar Learning App, Continued Usage Intention, Perceived Usefulness, Satisfaction

INTRODUCTION

The emergence of the information age has dramatically altered global lifestyles, with information technology instigating substantial transformations across multiple sectors, including education (Westera, 2015). Conventional educational approaches are progressively insufficient in meeting the changing requirements of students and instructors. Innovative educational methodologies, including online learning, mobile learning, and the widely embraced Massive Open Online Courses (MOOCs), have transformed traditional pedagogical frameworks (Pimmer, Mateescu, & Gröhbiel, 2016; García-Peñalvo, Fidalgo-Blanco,&Sein-Echaluce, 2018; Dhawan, 2020).

Technological advancements and enhanced access to gadgets have allowed mobile learning to surpass the constraints of conventional educational settings. Students can now participate in instructional activities without being restricted to certain locations or dependent on conventional teaching resources (Pimmer, Mateescu, & Gröhbiel, 2016). This adaptability is especially revolutionary for areas with little access to educational resources (Paudel, 2021).

In 2019, China's State Council underscored the necessity of expediting educational reform in the digital era, promoting the profound integration of information technology into pedagogical methods. The program sought to utilise internet-based solutions and various technology tools to enhance the whole educational process (MOE of PRC, 2019).

Subsequently, a series of policy initiatives enabled the co-creation and dissemination of online educational settings and materials (MOE of PRC, 2018, March 18; MOE of PRC, 2019; MOE of PRC, 2021, January 28). This policy impetus also catalysed the creation of varied, feature-laden online learning platforms, solidifying online education as an essential element of the "Internet Plus" education model (Ma & Li, 2021, November).

In 2019, China became the preeminent global leader in online education (Zhou, Wu, Zhou, & Li, 2020). In this field, mobile learning (M-learning) has garnered growing recognition, providing learners with new and flexible educational experiences via many channels (Al-Emran, Elsherif, & Shaalan, 2016). Consequently, mobile learning has attracted significant interest. The emergence of COVID-19 in early 2020 interrupted conventional in-person teaching methods, hence underscoring the benefits of online education (Saikat, Dhillon, Wan Ahmad, & Jamaluddin, 2021). In response, the Chinese Ministry of Education implemented the "suspend classes without stopping learning" regulation on February 6, 2020. This program engaged universities, elementary and secondary schools, and other educational institutions to implement high-quality mobile learning resources and online platforms to enable synchronous teaching for students and teachers, irrespective of physical location (Huang et al., 2020).

The COVID-19 epidemic offered both prospects and obstacles for the advancement of mobile learning. The situation challenged the robustness of China's education system and simultaneously expedited the development of mobile and online learning technology. The acceptance, contentment, and ongoing usage intentions of college students, as major users of mobile learning applications, have emerged as crucial subjects for examination.

Certain researchers advocate for interpreting education via consumer behaviour theory, positing that students may be regarded as "consumers" within the educational framework (Cheney,McMillan, & Schwartzman, 1997; Bunce & Bennett, 2019). Mobile learning applications, which furnish online course resources for college students, essentially function as service providers. Thus, the relationship between college students and mobile learning platforms can be examined as a service-oriented interaction between consumers and suppliers. Expectation-confirmation theory posits that consumer pleasure with a product or service is a crucial driver of ongoing engagement (Bhattacherjee, 2001). This concept corresponds with Thorndike's law of effect, which asserts that favourable outcomes, such as attaining satisfactory learning results, enhance the probability of sustained learning behaviour (Islam, 2015).

This study analyses college students' use of mobile learning applications to identify the principal elements affecting their desire to persist in using these platforms. These findings offer significant direction for the design

and improvement of mobile learning applications. The study provides pragmatic ideas to foster and promote ongoing engagement with mobile learning applications among students.

LITERATURE REVIEW

Usage Continuance Intention (CI) denotes a user's intention to persistently utilise an information system following initial exposure. This notion is grounded in behavioural theory, wherein Ajzen and Fishbein (1972) highlighted that behavioural intention is a crucial predictor of an individual's propensity to engage in a behaviour, significantly influencing future actions. User intention can be classified into two categories: initial adoption intention, which signifies the psychological impetus encouraging a user to experiment with a product or service, and continuous use intention, which denotes the readiness to persist in utilising the product or service over time following initial adoption (Rovai, 2003). Bhattacherjee (2001) was the inaugural proponent of the concept of continuous usage intention, characterising it as the impetus that compels users to willingly interact with an information system for prolonged durations.

The swift progression of technology has transformed the education sector, notably through the emergence of mobile learning (M-learning), which is an extension of e-learning that utilises mobile devices. M-learning permits students to access educational materials and services at any time and from any location (Sarrab, 2019). The behaviour of students regarding mobile learning applications is variable, with their initial intention to adopt often diverging from their desire to sustain usage, impacted by many factors. This signifies that initial adoption does not inherently ensure continued usage. The diverse learning possibilities available to students render their pleasure with mobile learning applications crucial for their continued usage intentions. Dissatisfaction frequently results in the cessation of use. The notion of satisfaction, originally grounded in marketing and customer satisfaction theory (Cardozo, 1965), has been thoroughly examined (Ok, Suy, Chhay & Choun, 2018; Sánchez-Rebull, Rudchenko & Martín, 2018; Kamrul Islam Shaon & Rahman, 2015). Satisfaction denotes the disparity between a user's initial expectations and the actual experience with a product or service. A reduced disparity between expectations and perceived experience results in increased satisfaction (Oliver, 1977; Olson & Dover, 1979; Tse & Wilton, 1988; Narasimhan, Gupta, Foster & Niraj, 2006).

User satisfaction in information systems is the degree to which the system meets users' expectations and satisfies their informational requirements (Ives, Olson & Baroudi, 1983). In educational contexts, learning satisfaction is assessed by contrasting students' pre-learning expectations with the actual advantages they derive from the learning experience. Satisfaction arises when the actual value meets or surpasses expectations, whereas unmet expectations result in dissatisfaction (Fernandes, Ross & Meraj, 2013). Satisfaction is a psychological emotion arising from the comparison of previous expectations with actual events. This evaluative procedure is essential for comprehending user behaviour across multiple domains. Expectation Confirmation Theory (ECT), introduced by Oliver (1980), offers a paradigm for elucidating the correlation between user happiness and ongoing behavioural intentions. Expectancy Confirmation Theory asserts that the validation of expectations is essential for fostering user happiness and promoting future involvement with a product or service.

Although ECT effectively elucidates consumer behaviour, it has drawbacks, notably its emphasis on conventional product purchasing behaviours and its neglect of the developing utilisation of information systems (Bhattacherjee, 2001). To overcome these constraints, Bhattacherjee (2001) augmented the Expectation-Confirmation Theory by integrating Perceived Usefulness into the model, hence improving its relevance to technology adoption research. The resultant model has achieved extensive acceptance in research, exhibiting excellence in forecasting ongoing usage intentions (Veeramootoo, Nunkoo & Dwivedi, 2018).

The Expectation Confirmation Model (ECM) posits that Perceived Usefulness and Expectation Confirmation substantially affect user happiness, which then motivates the desire to persist in utilising the information system (Bhattacherjee, 2001). Perceived Usefulness denotes a user's evaluation of how an information system enhances their job or study (Adams, Nelson & Todd, 1992), whereas Expectation Confirmation transpires when users analyse the system's performance against their initial expectations (Brown, Venkatesh & Goyal, 2014). User satisfaction refers to the user's contentment with the system's efficacy (Bhattacherjee, 2001). The Expectation Confirmation Model has been extensively utilised in diverse fields, including instant messaging (Oghuma, Libaque-Saenz, Wong, & Chang, 2016), knowledge sharing (Pang, Bao, Hao, Kim, & Gu, 2020), and online

banking (Rahi & Abd. Ghani, 2019), illustrating its efficacy in forecasting user satisfaction and ongoing usage intention. The use of mobile learning applications, a manifestation of user behaviour in which students obtain knowledge, corresponds with the tenets of this model, as students' happiness with these applications arises from the juxtaposition of their pre-use expectations and the subsequent experiences they encounter. Consequently, the Expectation Confirmation Model is particularly relevant for examining the determinants that affect the sustained intention to use mobile learning applications.

RESEARCH VARIABLE AND HYPOTHESIS

Variable Definition

This research examines college students' desire to persist in utilising mobile learning applications through the framework of the Expectation Confirmation Model. The model includes four essential variables: expectation confirmation, perceived usefulness, satisfaction, and desire to persist in usage. This study defines each variable according to published academic literature and contextualises it within the framework of mobile learning applications. The definitions of all variables are as follows

Expectation confirmation

The notion of expectation confirmation is commonly utilised to evaluate the disparity between users' pre-engagement expectations and their actual experiences following interaction with a product or service. User satisfaction generally rises when experiences surpass original expectations. Conversely, when users' expectations exceed their actual experience, contentment diminishes, resulting in adverse perceptions of the product or service (Oliver, 1980; Bhattacherjee, 2001). In this study, expectation confirmation is defined as the correspondence between college students' anticipations prior to utilising mobile learning applications and their actual experiences and perceptions post-usage.

Perceived usefulness

Perceived usefulness is a crucial determinant in comprehending users' sustained interaction with technology (Al-Emran, Arpaci, & Salloum, 2020; Gupta, Prashar, Vijay, & Parsad, 2021). It denotes users' subjective conviction that utilising a specific program will improve their performance. Users are more inclined to accept and persist in utilising a technology when they believe it enhances their productivity (Davis, 1989). This study defines perceived usefulness as the degree to which college students believe the mobile learning app influences their learning performance, efficiency, and overall quality throughout its usefulness.

Satisfaction

The principal objective of product development is to engage a substantial consumer demographic, with consumer happiness being a vital element that organisations must meticulously oversee (Oliver, 1980; Bhattacherjee, 2001). User happiness has historically been a primary emphasis in studies on user behaviour (Verdegem & Verleye, 2009; Kiseleva et al., 2016). In this study, satisfaction denotes undergraduates' subjective emotional assessment of their experience with the mobile learning application. It signifies the favourable emotions and sense of accomplishment they encounter while utilising the program, which subsequently affects their purpose to persist in its use.

Continuous use intention

The efficacy of an information system is frequently assessed by users' initial acceptance and sustained usage patterns. The long-term viability of an information system is predominantly influenced by users' continued engagement. The aim to persist in utilising the system significantly impacts ongoing usage behaviour (Venkatesh et al., 2011). Bhattacherjee (2001) characterises continuous intention to use as the users' determination to maintain use of an information system beyond their initial encounter. Harrison (1997) defines persistent behavioural intention as the intensity of an individual's deliberate desire to perform a certain behaviour. This study defines ongoing usage intention as the intention of college students to maintain usage of the mobile learning app in the future after their initial use. This study employs the desire to continue utilising the app as the dependent variable, instead of actual user behaviour, to forecast long-term usage trends.

Proposal of research hypothesis

In the expectation confirmation model, expectation confirmation is an influencing variable of perceived usefulness and satisfaction. It represents the user's evaluation of the technology after using it, based on their perceptions (Bhattacherjee, 2001).

Subsequent scholars have verified the contribution of expectation confirmation to users' perceived usefulness and satisfaction across different research areas(Lee, 2010; Kim, Hwang, Zo&Lee,2016; Ashfaq, Yun, Yu&Loureiro, 2020).

Hence, this study concludes that the higher the degree of expectation confirmation generated by undergraduates' use of Superstar Learning, the more it indicates that undergraduates' expected use needs are met. Furthermore, the satisfaction of these needs drives the perception of usefulness and contentment.

Based on this, this study formulates the following hypotheses (As shown in Figure 1):

H_1：College students' confirmation of expectations has a significant positive impact on their perceived usefulness of the Superstar Learning app.

H_2：College students' confirmation of expectations has a significant positive impact on their satisfaction with the Superstar learning app.

In this study, perceived usefulness and satisfaction serve as key variables within the model. Perceived usefulness refers to an individual's assessment of the utility or usefulness of something. Satisfaction is the emotional response to using a product or service. Cho (2016) investigated user adoption behavior in the context of a health app based on ECT and discovered that users' perceived usefulness has a significant impact on satisfaction. Both of these factors combine to influence users' intention to continue using the app.

Therefore, this research posits that if the needs of college students for Superstar Learning app are not fulfilled, it implies that Superstar Learning app is not beneficial for college students. Consequently, college students may feel dissatisfied with Superstar Learning app and potentially discontinue its use.

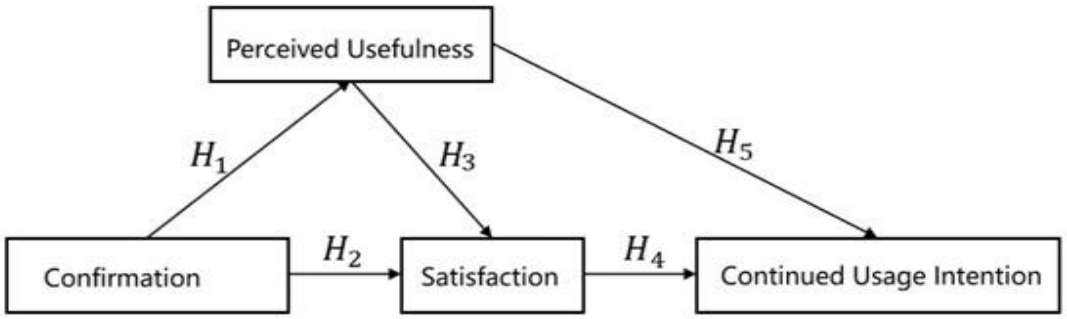
Accordingly, this study hypothesized that：

H_3:College students' perceived usefulness of the Superstar Learning app has a significant positive impact on their satisfaction with the app.

H_4:College students' satisfaction with the Superstar Learning app has a significant positive impact on their intention to continue using it.

H_5:College students' perceived usefulness of using the Superstar Learning app has a significant positive influence on their intention to continue using the app.

Figure 1



RESEARCH METHODOLOGY

Procedure and participants

This study investigated the perceptions of private school pupils regarding the Superstar Learning App, a prevalent educational platform. Considering that internet surveys provide a rapid and effective means of data collecting, the researcher utilised an online survey platform named Sojump. In February 2024, the researcher disseminated the online questionnaire to students at a private institution in Liaoning Province.

Measurement of instruments

The aim of this study is to investigate the factors that influence college students' continuous use of the Superstar learning app. Grounded in the well-established scales of intention to use information systems developed by Oliver (1980), Bhattacherjee (2001), and Davis (1989), appropriate modifications were made to the measurement scale.

The questionnaire consists of two parts. The first part collects demographic information about college students, including gender, grade, and major. The second part is the core section of the questionnaire, focusing on the factors that influence college students' intention to continue using Superstar Learning app. It mainly explores aspects such as expectation confirmation, perceived usefulness, and satisfaction.

The questionnaire utilizes a five-point Likert scale, which assigns numerical values from 1 to 5 to respondents' levels of agreement. Each number represents a distinct agreement level in ascending order:

Strongly Disagree: The user strongly disagrees with the item.

Disagree: The user disagrees with the item.

Neutral: The user is uncertain about the item.

Agree: The user agrees with the item.

Strongly Agree: The user strongly agrees with the item.

This scale ensures that respondents can clearly and specifically indicate their level of agreement, enabling more accurate data collection and analysis.

In February 2024, a total of 600 questionnaires were sent out, and 545 were recovered, resulting in a recovery rate of 90.8%. After excluding data from those who had not used the LearnPass software and any vacant data, 519 valid questionnaires were obtained. Among these respondents, 50.7% were male, and 59.3% had majored in science and technology. Detailed descriptive statistics of the respondents' characteristics are presented in Figure 2.

Figure 2 Descriptive statistics of respondents’ characteristics

Distribution (n = 519)			
Category	variable	population	Percent (Total 100%)
Gender	Male	263	50.7%
	Female	256	49.3%
Major	Humanities and Social Sciences	211	40.7%
	Natural Science	308	59.3%
Grade	Freshman	172	33.1%
	Sophomore	272	52.4%
	junior	61	11.8%
	senior	14	2.7%
Learning time	Within 6 months	184	35.5%
	6-12 months	53	10.2%
	Within 2 years	192	37%
	More than 2 years	90	17.3%

DATA ANALYSIS AND RESULTS

Figure 3 Reliability

	Cronbach's Alpha	Number of Terms
Total	.989	18
Expectation confirmation	.967	3
Perceived usefulness	.986	8
Satisfaction	.971	4
Continuous use intention	.955	3

The reliability scale of this study is 0.989, and the variable reliability ranges from 0.955 to 0.986, indicating that the research scale and variables have high reliability, good stability, and consistency.

Figure 4 Validity

	KMO	Approximate chi-square	Degrees of freedom	Significance
Total	.971	17520.401	153	.000
Expectation confirmation	.767	1975.241	3	.000

Perceived usefulness	.954	7568.318	28	.000
Satisfaction	.862	2898.243	6	.000
Continuous use intention	.778	1643.677	3	.000

Before conducting factor analysis, KMO test and Bartlett's test of sphericity are mainly adopted to verify whether each item in this paper is suitable for factor analysis.

Kaiser (1991)provided common KMO measurement criteria: above 0.9 indicates very suitable; 0.8 indicates suitable; 0.7 indicates average; 0.6 indicates not very suitable; below 0.5 indicates extremely unsuitable.

According to Table 5, the overall KMO of this analysis is 0.971, and the variable KMO ranges from 0.767 to 0.954, indicating that the data is suitable for factor analysis. The chi-square of Bartlett's test of sphericity is significantly less than 0.01, indicating a good relationship between each item, thus factor analysis can be performed.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized coefficient	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(constant)	.498	.058		8.564	.000		
	Confirmation	.874	.015	.928	56.593	.000	1.000	1.000
Adjusted R^2 .861								
Sig..000[b]								
a. Dependent variable: perceived usefulness								

The model explains 86% of the variance in perceived usefulness. Expectation confirmation has a significant positive impact on perceived usefulness (B=0.874, p<0.001), thus confirming H_1.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized coefficient	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(constant)	.876	.088		9.913	.000		
	Confirmation	.767	.023	.821	32.674	.000	1.000	1.000
Adjusted R^2.673								
Sig..000[b]								
a. Dependent variable: satisfaction								

The model explains 67.3% of the variance in satisfaction. Expectation confirmation significantly and positively affects satisfaction (B=0.767, p<0.001), verifying H_2.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized coefficient	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(constant)	.425	.076		5.597	.000		
	Perceived usefulness	.906	.054	.914	16.883	.000	.139	7.195
Adjusted R^2.789								
Sig..000[b]								
a. Dependent variable: satisfaction								

The model explained 78.9% of the variation in satisfaction. Perceived usefulness had a significant positive effect on satisfaction (B=0.906, p<0.001), thus confirming the H_3..

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized coefficient	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(constant)	.485	.082		5.918	.000		
	Perceived usefulness	.864	.022	.869	39.980	.000	1.000	1.000
Adjusted R^2.755								
Sig..000[b]								
a. Dependent variable: continuous use intention								

The model explains 75.5% of the change in intention to continue using. The perceived usefulness had a significant positive effect on the intention of continuous use (B=0.864, p<0.001), thus confirming H_4.

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized coefficient	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(constant)	.176	.053		3.359	.001		
	Satisfaction	.952	.014	.949	68.423	.000	1.000	1.000
Adjusted R^2.900								
Sig..000[b]								
a. Dependent variable: continuous use intention								

The model explains 90% of the variation in intention to continue use. Satisfaction had a significant positive effect on continuous use intention (B=0.952, p<0.001), thus confirming the hypothesis of H_5.

DISCUSSION AND CONCLUSION

This study uses the expectation confirmation model to explore the factors that affect college students' continuous use of the Superstar Learning app. The analysis shows that the confirmation of private university students' expectations of learning is an important driving factor for their satisfaction and perceived usefulness. Consistent with previous studies of expectation confirmation models, perceived usefulness can enhance both satisfaction and intention to continue use. In other words, when college students think that the Superstar Learning app can be helpful to their studies, then college students will be satisfied with Superstar Learning app and will be willing to continue using the software. On the contrary, when college students use Superstar Learning app, they do not perceive the usefulness of the APP, and think that the APP cannot bring any convenience to them and does not help them. Once this "useless" impression is created, college students are likely to uninstall the APP, or leave it idle, no longer using it. This situation will lead to a decline in the original intention to continue to use it, and is also one of the reasons for the low APP usage rate.

At the same time, the satisfaction of college students is an important factor influencing their intention to continue using the app. Satisfaction is the positive psychological evaluation of college students after using the Superstar learning app. When college students are more satisfied with the Superstar learning app, their intention to continue using the software will be strengthened. However, when the experience provided by the APP is no longer novel or favorable to college students, their satisfaction will decline, and their intention to continue using the app will weaken. This means that the life cycle of the Superstar learning app will be indirectly shortened.

The sample of this study is limited to college students from private colleges in Liaoning Province, which may limit the generality of the research conclusions. In future studies, researchers can collect samples from a wider range through random sampling to draw more universally applicable research conclusions. Secondly, in the process of constructing the research model, this study may have overlooked some other important factors, such as perceived entertainment (Tam, Santos& Oliveira, 2020).and perceived ease of use(Hansen, Saridakis & Benson,2018)., which are considered key drivers of users' intention to use. In future studies, researchers can incorporate additional antecedent variables to develop a more comprehensive and reasonable research model for the factors influencing users' intention to continue using learning APP.

REFERENCES

1. Adams, D. A., Nelson, R. R., & Todd, P. A. (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. MIS Quarterly, 16(2), 227. https://doi.org/10.2307/249577
2. Ajzen, I., & Fishbein, M. (1972). Attitudes and normative beliefs as factors influencing behavioral intentions. Journal of Personality and Social Psychology, 21(1), 1-9. https://doi.org/10.1037/h0031930
3. Al-Emran, M., Elsherif, H. M., & Shaalan, K. (2016). Investigating attitudes towards the use of mobile learning in higher education. Computers in Human Behavior, 56, 93-102. https://doi.org/10.1016/j.chb.2015.11.033
4. Ashfaq, M., Yun, J., Yu, S., & Loureiro, S. M. (2020). I, chatbot: Modeling the determinants of users' satisfaction and continuance intention of AI-powered service agents. Telematics and Informatics, 54, 101473. https://doi.org/10.1016/j.tele.2020.101473
5. Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. MIS Quarterly, 25(3), 351. https://doi.org/10.2307/3250921
6. Briggs, R. O., Reinig, B. A., & De Vreede, G. (2011). The yield shift theory of satisfaction and its application to the IS/IT domain. Information Systems Theory, 185-217. https://doi.org/10.1007/978-1-4419-9707-4_11
7. Brown, S. A., Venkatesh, V., & Goyal, S. (2014). Expectation confirmation in information systems research: A test of six competing models. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3681718
8. Bunce, L., & Bennett, M. (2019). A degree of studying? Approaches to learning and academic performance among student 'consumers'. Active Learning in Higher Education, 22(3), 203-214. https://doi.org/10.1177/1469787419860204
9. Cardozo, R. N. (1965). An experimental study of customer effort, expectation, and satisfaction. Journal of Marketing Research, 2(3), 244. https://doi.org/10.2307/3150182

10. Cho, J. (2016). The impact of post-adoption beliefs on the continued use of health apps. International Journal of Medical Informatics, 87, 75-83. https://doi.org/10.1016/j.ijmedinf.2015.12.016
11. Dhawan, S. (2020). Online learning: A Panacea in the time of COVID-19 crisis. Journal of Educational Technology Systems, 49(1), 5-22. https://doi.org/10.1177/0047239520934018
12. Fernandes, C., Ross, K., & Meraj, M. (2013). Understanding student satisfaction and loyalty in the UAE HE sector. International Journal of Educational Management, 27(6), 613-630. https://doi.org/10.1108/ijem-07-2012-0082
13. Gan, C., & Wang, W. (2017). The influence of perceived value on purchase intention in social commerce context. Internet Research, 27(4), 772-785. https://doi.org/10.1108/intr-06-2016-0164
14. García-Peñalvo, F. J., Fidalgo-Blanco, Á.,&Sein-Echaluce, M. L. (2018). An adaptive hybrid MOOC model: Disrupting the MOOC concept in higher education. Telematics and Informatics, 35(4), 1018-1030. https://doi.org/10.1016/j.tele.2017.09.012
15. Garrett, J., & Gopalakrishna, S. (2010). Customer value impact of sales contests. Journal of the Academy of Marketing Science, 38(6), 775-786. https://doi.org/10.1007/s11747-010-0187-4
16. Cheney, G., McMillan, J. J.,&Schwartzman, R. (1997). Should we buy the" student-as-consumer" metaphor. The Montana Professor, 7(3), 8-11.
17. Hansen, J. M., Saridakis, G., & Benson, V. (2018). Risk, trust, and the interaction of perceived ease of use and behavioral control in predicting consumers' use of social media for transactions. Computers in Human Behavior, 80, 197-206. https://doi.org/10.1016/j.chb.2017.11.010
18. Harrison, D. A., Mykytyn, P. P., & Riemenschneider, C. K. (1997). Executive decisions about adoption of information technology in small business: Theory and empirical tests. Information Systems Research, 8(2), 171-195. https://doi.org/10.1287/isre.8.2.171
19. Hsu, C., & Lin, J. C. (2015). What drives purchase intention for paid mobile apps? – An expectation confirmation model with perceived value. Electronic Commerce Research and Applications, 14(1), 46-57. https://doi.org/10.1016/j.elerap.2014.11.003
20. Huang, R., Tlili, A., Chang, T., Zhang, X., Nascimbeni, F., & Burgos, D. (2020). Disrupted classes, undisrupted learning during COVID-19 outbreak in China: Application of open educational practices and resources. Smart Learning Environments, 7(1). https://doi.org/10.1186/s40561-020-00125-8
21. Ives, B., Olson, M. H., & Baroudi, J. J. (1983). The measurement of user information satisfaction. Communications of the ACM, 26(10), 785-793. https://doi.org/10.1145/358413.358430
22. Islam, M. H. (2015). Thorndike theory and it's application in learning. At-Ta'lim: Jurnal Pendidikan, 1(1), 37-47.
23. KAISER, H. F. (1991). Coefficient Alpha for a principal component and the kaiser-Guttman rule. Psychological Reports, 68(3), 855. https://doi.org/10.2466/pr0.68.3.855-858
24. Kim, K., Hwang, J., Zo, H., & Lee, H. (2014). Understanding users' continuance intention toward smartphone augmented reality applications. Information Development, 32(2), 161-174. https://doi.org/10.1177/0266666914535119
25. Lee, M. (2010). Explaining and predicting users' continuance intention toward E-lEarning: An extension of the expectation–confirmation model. Computers&Education, 54(2), 506-516. https://doi.org/10.1016/j.compedu.2009.09.002
26. Kamrul Islam Shaon, S., & Hasebur Rahman, M. (2015). A theoretical review of CRM effects on customer satisfaction and loyalty. Central European Business Review, 4(1), 23-36. https://doi.org/10.18267/j.cebr.116
27. Ma, S., & Li, J. (2021). Research on construction of online learning platform in colleges and universities. 2021 5th International Conference on Education and E-Learning. https://doi.org/10.1145/3502434.3502472
28. Melone, N. P. (1990). A theoretical assessment of the user-satisfaction construct in information systems research. Management Science, 36(1), 76-91. https://doi.org/10.1287/mnsc.36.1.76
29. Ministry of Education of the People's Republic of China. (2018, March 18). Ministry of Education on Issuing the Education Informatization 2.0 Action Plan. http://www.moe.gov.cn/srcsite/A16/s3342/201804/t20180425_334188.html
30. Ministry of Education of the People's Republic of China. (2019, February 23). China's education modernization 2035. The Communist Party of China Central Committee and the State]

Council. https://www.moe.gov.cn/jyb_xwfb/gzdt_gzdt/201902/t20190223_370857.html?eqid=ffa10fa70001ecf800000004645351f4

31. Ministry of Education of the People's Republic of China. (2021, January 28). Ministry of Education on Issuing the Education Informatization 2.0 Action Plan. http://www.moe.gov.cn/srcsite/A16/s3342/201804/t20180425_334188.html
32. Narasimhan, C., Gupta, M. R., Foster, G., & Niraj, R. K. (2006). Customer level profitability implications of satisfaction programs: A retailer satisfaction Field study. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.903985
33. Oliver, R. L. (1977). Effect of expectation and disconfirmation on postexposure product evaluations: An alternative interpretation. Journal of Applied Psychology, 62(4), 480-486. https://doi.org/10.1037//0021-9010.62.4.480