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From Intention to Behavior: Factors Influencing Teachers' Continued Use Behavior of Smart Education Platforms

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Abstract

This study investigated the factors influencing the continued use behavior of smart education platforms among primary and secondary school teachers in China, based on the Expectation-Confirmation Model of Information System Continuance (ECM-ISC) and the Theory of Planned Behavior (TPB). The proposed model incorporates key elements of the ECM-ISC—expectation confirmation, perceived usefulness, satisfaction, and continuance intention, and introduces support systems as a determinant of satisfaction and habit as a moderating variable between intention and behavior. Questionnaire data from 729 teachers were analyzed using structural equation modeling (SEM). The findings revealed that satisfaction mediated the effects of expectation confirmation and perceived usefulness on continuance intention, while support systems significantly enhance satisfaction. Furthermore, habit moderated the intention-behavior relationship, with stronger habits reducing reliance on intention. These results provide theoretical contributions by extending the ECM-ISC framework to incorporate habit as a moderating variable, offering a deeper understanding of its role in shaping the relationship between intention and behavior. This research enhances existing theories on user behavior in educational technology, offering a clearer framework for sustained technology adoption.

Keywords: Continued Use Behavior, Expectation-Confirmation Model of Information System Continuance, SMART Education Platform, Theory of Planned Behavior

Introduction

In recent years, the rapid advancement of digital technologies has driven a global shift toward smart education, transforming how teaching and learning are designed, delivered, and assessed. Smart education platforms are reshaping the educational landscape by enhancing resource allocation and offering diverse, on-demand learning formats(Makinde et al., 2023). Governments and international organizations, including UNESCO and the OECD,

have emphasized the role of these platforms in achieving equitable, inclusive, and high-quality education(UNESCO,2025; OECD,2023). These platforms not only help bridge educational gaps and improve resource utilization but also are pivotal to advancing digital transformation in education (Deng et al., 2023). Studies have shown that the long-term effectiveness and impact of these platforms depend heavily on teachers' continuous participation (Ma et al., 2024). Therefore, ensuring that teachers can continue to use the platform after the initial adoption is the key to maximizing the value of the platform and promoting educational change (ZHANG et al., 2019). With the growing adoption of smart education platforms (Mhlongo et al., 2023), scholars have increasingly focused on understanding teachers' intentions to use these platforms. Although numerous studies have established a link between intentions of usage and actual behavior (Conner & Norman, 2022), the underlying mechanisms driving this relationship remain unclear. Furthermore, existing research predominantly examines the use of smart education platforms by teachers in higher education institutions (Dai et al., 2023), with relatively fewer studies addressing the intentions and behaviors of primary and secondary school teachers. To fill this research gap, this study aims to investigate the behavioral intentions of primary and secondary school teachers to use smart education platforms and examine the factors influencing their continued use behavior.

This study adopts the Expectation-Confirmation Model of Information System Continuance (ECM-ISC) as the theoretical foundation to analyze the factors influencing primary and secondary school teachers' intentions to use smart education platforms. ECM-ISC effectively explains the process by which users' confirmation of expectations leads to perceived usefulness, satisfaction, and ultimately the formation of continuance intention(Bhattacherjee, 2001). The Theory of Planned Behavior (TPB) is employed to examine the factors affecting teachers' continued use of these platforms. TPB emphasizes that individual behavior is driven by intention (Ajzen, 1991), providing an important theoretical framework for exploring how teachers' intention to use smart education platforms is transformed into actual behavior. In addition, research shows that when examining the continued use of new technologies, the impact of habits on users' behavioral intentions toward information technology should not be ignored (Wang & Lin, 2021). Habit, as a form of automated tendency, can significantly influence behavior and may moderate the relationship between intention and behavior(Gardner, 2015). Specifically, The study indicates that habit moderates the relationship between intention and behavior, with its predictive power varying based on the strength of habit (Limayem et al., 2007). By incorporating habit into the ECM- ISC model, this study aimed to examine how intention and habit interact to influence teachers' continued use behavior on smart education platforms. Specifically, this study investigated whether habit moderates the relationship between intention and behavior, hypothesizing that strong habits may reduce reliance on intention as a driver of continued use behavior, while weak habits may enhance the role of intention.

The theoretical contribution of this study lies in further extending the applicability of ECM-ISC and TPB models, providing a more comprehensive explanatory frame- work for research on continued use behavior. Additionally, this study offers practical insights for promoting smart education platforms, emphasizing the role of strengthening teachers' usage habits to enhance the sustainability and effectiveness of platform adoption

Literature Review and Hypotheses

Research on Intention and the Use Behavior of Smart Education Platforms

The Smart Education Platform is the technical foundation for implementing the national education digitalization strategic action, marking a key step in digital education. While much research has explored the adoption of technology in educational settings, less attention has been paid to what drives teachers to continue using these platforms after initial adoption, and most studies focus on exploring teachers' intention to use smart education platforms (Guo & Fu, 2023). However, intention to use reflects teachers' readiness or willingness to engage with a platform, often measured before actual use (Davis, 1989). Continued use behavior goes beyond intention (Limayem et al., 2007), capturing the actual, ongoing interaction with the platform over time. This distinction between intention-to-use and continued-use behavior is important, as a teacher may express an intention to use a platform but still not engage with it consistently in practice. For example, one model integrates information systems (IS) continuance theory, IS success model, self- efficacy theory, and social influence theory to explore the dynamics shaping teachers' intention to use online teaching resources (Ma et al., 2024). However, these studies often overlook the transition from intention to continued use behavior, particularly in sustained and repeated usage contexts.

Wohlfart and Wagner conducted a longitudinal study tracing the evolving pat- terns of technology acceptance among secondary school teachers during the COVID-19 transition (Wohlfart & Wagner, 2024). The study revealed that teachers' initial intentions to use digital tools were strong predictors of their subsequent integration of these tools into teaching practices over time. This highlights the importance of understanding how intention evolves into actual usage. Similarly, Chun and Yunus examined English as a Second Language (ESL) teachers' technology acceptance levels in Malaysia post-COVID-19 (Chun & Yunus, 2023). Their cross-sectional survey revealed that factors such as performance expectancy, effort expectancy, and social influence significantly affect teachers' behavioral intentions toward technology use, which are strong predictors of actual usage in ESL classrooms.

Building on above insights, this study seeks to extend the focus beyond intention to use and investigates the factors that influence teachers continued use behavior of smart education platforms, providing a more comprehensive understanding of how intention evolves into sustained continued use behavior in educational practice .

Theoretical Basis

The Expectation-Confirmation Model of Information System Continuance (ECM- ISC) includes four core variables: expectation confirmation, perceived usefulness, satisfaction, and continuance intention, which explains and predict users' continuance intention after their initial use of an information system. Based on the ECM-ISC model, this study analyzes teachers' continued use behavior of smart education plat- forms. Expectation confirmation refers to the extent to which teachers assess whether the performance of the smart education platform meets initial expectations (Lee, 2010). Perceived usefulness is the teacher's belief in the value of the platform in promoting their teaching practice (Teo, 2011). Satisfaction is a key factor, which refers to the overall attitude and perception of primary and secondary school teachers towards the platform after using the smart education platform. Continuance

intention refers to the degree to which individuals are willing to continue using a system or technology after initial adoption. In the context of this study, continuance intention reflects teachers' determination to keep using the smart education platform (Venkatesh et al., 2012).

The ECM-ISC explains how these variables interact to influence users' decisions about the continued use of information systems. Specifically, users' experiences with the performance and functionality of a system shape their expectation confirmation. Positive confirmation can enhance their perception of the system' s usefulness, which in turn influences their satisfaction and intention to continue using the system. The ECM-ISC has been widely used in information systems. Smart education platforms have the characteristics and basic functions of information systems. Therefore, this study aimed to use expectation confirmation, perceived usefulness, and satisfaction as factors that influence primary and secondary school teachers' continuous use intention of smart education platforms.

Hypotheses

Prior research has shown that positive expectation confirmation can lead to an increased perception of usefulness in technology adoption contexts (HE et al., 2024). For example, Rekha et al. combined the expectation confirmation model (ECM) with MOOC characteristics to explore the intention of Indian students to continue using MOOCs, showed that expectation confirmation significantly affected perceived usefulness, which in turn affected students' continued use intention (Rekha et al., 2023). Li et al. showed that expectation confirmation positively affected perceived usefulness and satisfaction, thereby enhancing continued use intention (Li et al., 2022). In the context of smart education platforms, if teachers find that their actual experience matches or surpasses their initial expectations, their perceived usefulness of the platform is likely to be enhanced. This is because when the platform meets or exceeds teachers' expectations, it enhances their belief in the platform's effectiveness and usefulness in supporting their teaching activities. Given this theoretical background, this study proposes the following hypothesis:

H1: Teachers' expectation confirmation of the smart education platform is positively related to their perceived usefulness of the platform.
H2: Teachers' perceived usefulness of the smart education platform is positively related to their satisfaction with the platform.
H3: Teachers' satisfaction with the smart education platform is positively related to their intention to continue using the platform.
H4: Support systems (technical support and institutional support) have a positive impact on teachers' satisfaction with the platform.
H5: Teachers' intention to continue using the platform is positively related to their continued use behavior with the platform.
H6: Teachers' habit of using the smart education platform moderates the effect of continued usage intention on continued use behavior.

Based on the aforementioned hypotheses, this study constructs a conceptual model to depicts how expectation confirmation, perceived usefulness, satisfaction, support systems, continuance intention and habit collectively influence teachers' use behavior of the smart education platform. Specifically, the arrows in the model represent causal pathways between variables. The hypothesized model is presented Figure 1.

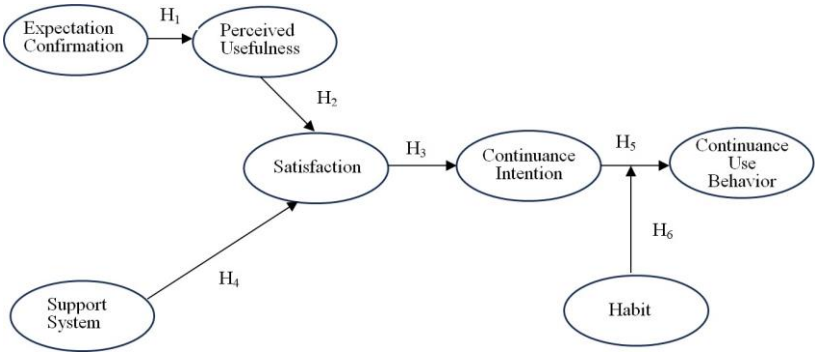

Figure. 1 Hypothetical model

Methodology

This study aimed to explore the behavior of primary and secondary school teachers in continuously using smart education platforms. A quantitative non-experimental correlational design is used to construct a theoretical model of multifactor influence. Through quantitative research methods, this study will reveal how these factors jointly shape teachers' intention to continue using and actual behavior.

Participants

This study surveyed a total of 729 primary and secondary school teachers from various regions in China. The sample consisted of 515 females (70.7%) and 214 males (29.3%). in this study. In terms of teaching experience, the largest group of participants had 11-20 years of teaching experience (30.7%), followed by those with 1-5 years (26.4%), more than 21 (24%), and 6-10 years of experience (18.5%). Regarding educational background, the majority of participants held a Bachelor's degree (79.9%), with 16.9% holding a Master's degree or above, and 3.2% holding an Associate degree.

Participants represented a wide range of teaching subjects, with the most common being Moral Education (26.6%), followed by Chinese (19.2%), Mathematics (18.1%), and Science (11.5%). The remaining subjects included Foreign Language, PE/Mu- sic/Art, Information Technology, and other subjects. The majority of participants worked in urban areas (61.4%), while 35.6% were from county-level schools, and 2.8% were from rural schools, as shown in Table 1.

Table 1
Demographic Information of Participants

Variable	Category	Frequency	Percentage (%)
Gender	Male	214	29.3
	Female	515	70.7
Years of Teaching Experience	1-5 years	192	26.4
	6-10 years	135	18.5
	11-20 years	224	30.7
Education Level	Associate degree	24	3.2
	Bachelor's degree	583	79.9
	Master's degree or above	122	16.9
Teaching Subject	Chinese	140	19.2
	Mathematics	132	18.1
	Foreign Language	80	10.9
	Science (Physics, Chemistry, Biology, Geography)	84	11.5
	PE, Music, Art	62	8.5
	Information Technology	14	1.9
	Moral Education	194	26.6
	Other	23	3.1
Region	Urban	448	61.4
	County	260	35.6
	Rural	21	2.8

Note. n = 729

Instrument

The data was collected using an adapted questionnaire(Marshall, 2005). The questionnaire comprised two parts: demographic information and measurement items for seven variables, including expectation confirmation, perceived usefulness, satisfaction, continuance intention, support system, habit and continuance use behavior. The measurement items in the questionnaire were drawn from existing research in the relevant field (Bhattacherjee, 2001; Bhattacherjee et al., 2008; Vasuthevan et al., 2024; Venkatesh et al., 2012). Table 2 shows the definitions of each construct and sample item. A five- point Likert scale was used to measure all latent variables in the hypothesized model, with response options ranging from 1 (strongly disagree) to 5 (strongly agree).

Table 2
The definitions and sample items of each construct

Constructs	Definitions	Sample item	Number
Expectation Confirmation (EC)	The extent to which the performance of the smart education platform meets or exceeds the initial expectations of the user.	I hold positive expectations for the functionality of the smart education platform in primary and secondary schools	3
Perceived Usefulness (PU	The degree to which a user believes that using the smart education platform will enhance their teaching effectiveness.	The smart education platform in primary and secondary schools can provide abundant teaching resources	3
Continuance Intention (CI)	The user's intention to continue using the smart education platform in the future.	I am willing to continue using the smart education platform in primary and secondary schools	3
Continuance use Behavior (CB)	The actual use behavior of the smart education platform over time.	Over the past semester, I frequently used the smart education platform in primary and secondary schools	2
Satisfaction (SAT)	The level of contentment of the user regarding the overall experience of using the smart education platform.	I am satisfied with the overall effectiveness of the smart education platform in primary and secondary schools.	3
Support Systems (SS)	The perceived availability of organizational and technical support for using the smart education platform.	I can get timely technical support when using the smart education platform in primary and secondary schools.	3
Habit (HB)	The extent to which the use of the smart education platform hasbecome automatic	The extent to which the use of the smart education platform has become automatic	3

Reliability and Validity Testing

To ensure the reliability and validity of the measurement scales, a series of tests were conducted using SPSS 26.0 and AMOS 24.0. Reliability was assessed using Cronbach's Alpha and Composite Reliability (CR), with a Cronbach's Alpha value of 0.70 or higher indicating good internal consistency (Afifi et al., 2019). Convergent validity was evaluated through Average Variance Extracted (AVE) and factor loadings. The results of these tests are presented in Table 3.

Table 3
Results of Reliability and Validity Testing

Item	**Standardized Factor Loading**	Cronbach alpha	AVE	CR
Expectation1	0.884	0.905	0.765772	0.907011
Expectation2	0.946			
Expectation3	0.788			
Confirmation1	0.931	0.958	0.886799	0.959183
Confirmation2	0.950			
Confirmation3	0.944			
Satisfaction1	0.961	0.971	0.915874	0.970291
Satisfaction2	0.960			
Satisfaction3	0.950			
Support System1	0.958	0.951	0.863302	0.950615
Support System2	0.946			
Support System3	0.885			
Continuance Intention1	0.953	0.966	0.898737	0.963801
Continuance Intention2	0.951			
Continuance Intention3	0.940			
Habit 1	0.950	0.961	0.889311	0.960161
Habit 2	0.947			
Habit 3	0.932			
Continuance use Behavior 1	0.955	0.921	0.852953	0.920554
Continuance use Behavior 2	0.891			

As shown in Table 3, all standardized factor loadings were significant and exceeded 0.70, indicating a high level of reliability in the measurement scale. Additionally, the AVE values all exceeded 0.50, and the CR values also exceeded 0.7, further confirming the composite reliability of the scale.

Before conducting the validity analysis, correlation tests were carried out to assess whether the data was suitable for further factor analysis. KMO and Bartlett's test of sphericity were used to evaluate the suitability of the data, are shown in Table 4.

Table 4
KMO and Bartlett's Test

Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy		*0.974*
Bartlett's test of sphericity	*Approximate Chi-Square*	*24152.272*
	df	*190*
	p-value	*0.000*

As seen in Table 4, the KMO value was 0.974, which was close to 1, indicating that the data was suitable for factor analysis. Additionally, Bartlett's test of sphericity was significant at the 0.001 level, further supporting the strong correlation among the data and its suitability for further factor analysis.

Data Analysis

SEM (Structural Equation Modeling) is widely used to analyze conceptual frameworks. This study will utilize SEM for data analysis, with AMOS software being employed to construct and validate the research model. SEM allows for the simultaneous con- sideration of complex relationships between multiple variables, including direct and indirect effects.

Before applying Structural Equation Modeling (SEM), the normality of the data was assessed to ensure that the assumptions underlying SEM were not violated. Descriptive statistics were computed for each variable, including mean, standard deviation, skewness, and kurtosis, as shown in Table 5.

Table 5
Descriptive Statistics and Normality Tests

Variable	*Mean*	*Standard Deviation*	*Skewness*	*Kurtosis*
Expectation1	*4.34*	*0.846*	*-1.188*	*1.125*
Expectation2	*4.25*	*0.900*	*-1.116*	*1.025*
Expectation3	*4.48*	*0.754*	*-1.344*	*1.278*
Confirmation1	*4.14*	*0.908*	*-0.746*	*-0.073*
Confirmation2	*4.12*	*0.921*	*-0.752*	*-0.015*
Confirmation3	*4.19*	*0.884*	*-0.885*	*0.404*
Satisfaction1	*4.24*	*0.857*	*-0.925*	*0.447*
Satisfaction2	*4.25*	*0.842*	*-0.853*	*0.072*
Satisfaction3	*4.16*	*0.895*	*-0.765*	*-0.038*
Support System1	*4.16*	*0.907*	*-0.808*	*0.121*
Support System2	*4.17*	*0.890*	*-0.758*	*-0.136*
Support System3	*4.25*	*0.847*	*-0.919*	*0.460*
Continuance Intention1	*4.27*	*0.878*	*-1.135*	*1.031*
Continuance Intention2	*4.18*	*0.920*	*-0.939*	*0.450*
Continuance Intention3	*4.28*	*0.828*	*-0.942*	*0.404*
Habit 1	*4.06*	*0.986*	*-0.754*	*-0.091*
Habit 2	*4.02*	*1.003*	*-0.663*	*-0.350*
Habit 3	*3.88*	*1.057*	*-0.522*	*-0.539*
Continuance use Behavior 1	*3.95*	*1.027*	*-0.604*	*-0.424*
Continuance use Behavior 2	*4.08*	*0.964*	*-0.710*	*-0.266*

According to Kline, skewness values within the range of ±2 and kurtosis values within the range of ±7 are considered acceptable for SEM analysis. The descriptive statistics of the

sample reveal that the mean values for most variables range between 4.0 and 4.5, indicating relatively high overall ratings. The standard deviations mostly fall between 0.8 and 1.0, suggesting a moderate degree of data dispersion. The skewness of the sample ranges from -0.522 to -1.344, and the kurtosis ranges from -0.539 to 1.278, all within the acceptable range as suggested (Kline, 2011). This indicates that the sample data approximate a normal distribution.

Results

Descriptive Statistical Analysis

To better understand the demographic characteristics and the distribution of research variables in the sample, descriptive statistical and correlations for all variables analysis was conducted, as shows as in Table 6. Results showed significant positive associations among several key variables. Specifically, expectation confirmation was positively correlated with support systems (r = 0.91), satisfaction with support systems (r = 0.93), and habit with continuance use behavior (r = 0.91). These results provided a foundation for the subsequent structural equation modeling analysis, which aims to further explore the hypothesized path relationships and examine potential causal links.

Table 6

Descriptive statistics and correlations for all variables (N=729)

Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1.Gender	*1.00 ****											
2.Years of Teaching Experience	*0.00*	*1.00 ****										
3.Education Level	*-0.07*	*-0.09 **	*1.00 ****									
4.Teaching Subject	*-0.09 **	*-0.10 ***	*-0.10 ***	*1.00 ****								
5.Region	*-0.08 **	*-0.10 **	*-0.07 **	*-0.11 **	*1.00 ****							
6.Expectation Confirmation	*0.04*	*0.029*	*-0.04*	*-0.05*	*-0.14 ****	*1.00 ****						
7. Perceived Usefulness	*0.07*	*-0.01*	*-0.09 **	*-0.010*	*-0.10 **	*0.85 ****	*1.00 ****					
8.Satisfaction	*0.07*	*-0.04*	*-0.06*	*-0.10 ***	*-0.037*	*0.85 ****	*0.95 ****	*1.00 ****				
9.Support Systems1	*0.07 **	*-0.012*	*-0.07*	*-0.11 ***	*-0.09 **	*0.81 ****	*0.91 ****	*0.93 ****	*1.00 ****			

10.Continuance Intention	*0.104***	*-0.036*	*-0.039*	*-0.050*	*-0.108***	*0.842***	*0.862***	*0.888***	*0.882***	*1.000****	
11.Habit	*0.923****	*0.000*	*-0.073*	*-0.099**	*-0.088**	*0.757****	*0.855****	*0.843****	*0.859****	*0.889****	*1.000****
12.Continuance use Behavior	*0.003*	*0.003*	*-0.072*	*-0.089**	*-0.083**	*0.727***	*0.808***	*0.813***	*0.819***	*0.829***	*0.918***	*1.000****

*Note. ***p < .001, **p < .01, and *p < .05; gender is a dummy variable (male = 1, female = 0); all other continuous variables represent mean scores on their respective scales.*

Exploratory Factor Analysis (EFA)

To explore the underlying structure of the measurement items, this study conducted EFA using principal component analysis. The analysis used an eigenvalue greater than 1 as the criterion for factor extraction and employed Varimax rotation to extract common factors. The data analysis results are presented in Table 7.

Table 7
Total Variance Explained

Component	*Initial Eigenvalues*			*Extraction Sums of Squared Loadings*			*Rotation Sums of Squared Loadings*		
	Total	*% of Variance*	*Cumulative %*	*Total*	*% of Variance*	*Cumulative %*	*Total*	*% of Variance*	*Cumulative %*
1	*8.039*	*80.193*	*80.193*	*8.039*	*80.193*	*80.193*	*5.833*	*29.167*	*29.167*
2	*6.923*	*4.615*	*84.808*	*6.923*	*4.615*	*84.808*	*5.289*	*26.443*	*55.610*
3	*5.550*	*2.752*	*87.561*	*5.550*	*2.752*	*87.561*	*2.225*	*11.124*	*66.734*
4	*3.393*	*1.964*	*89.525*	*3.393*	*1.964*	*89.525*	*1.861*	*9.303*	*76.037*
5	*2.299*	*1.496*	*91.020*	*2.299*	*1.496*	*91.020*	*1.689*	*8.445*	*84.482*
6	*2.257*	*1.285*	*92.306*	*2.257*	*1.285*	*92.306*	*1.360*	*6.800*	*91.282*
7	*1.219*	*1.095*	*93.401*	*1.219*	*1.095*	*93.401*	*1.024*	*2.119*	*93.401*
8	*0.179*	*0.895*	*94.296*						
9	*0.152*	*0.760*	*95.056*						

Table 7 indicated that the initial eigenvalues reveal seven factors with eigenvalues greater than 1. This aligned with the hypothesized seven latent variables in this study. These factors respectively accounted for 80.193%, 4.615%, 2.752%, 1.964%, 1.496%, 1.285%, and 1.095% of the variance, explaining a total of 93.40% of the total variance. This suggested that the extracted factors can effectively explain the relationships among the research variables and provide strong support for the subsequent confirmatory factor analysis. Additionally, the sums of squared loadings and the rotation sums of squared loadings further support the selection of these factors. The rotation sums of squared loadings using Varimax rotation indicate that these factors effectively explain the variance of each measurement variable,

thereby validating the effectiveness of the measurement scales used in this study. Moreover, Table 8 presents the loadings of each measurement item on different latent variables, demonstrating the degree of association between the measurement items and the latent variables.

Table 8
Rotated component matrix.

	Component						
	1	*2*	*3*	*4*	*5*	*6*	*7*
Expectation Confirmation1	*0.739*						
Expectation Confirmation2	*0.936*						
Expectation Confirmation3	*0.750*						
Perceived Usefulness1		*0.971*					
Perceived Usefulness2		*0.901*					
Perceived Usefulness3		*0.971*					
Satisfaction1			*0.959*				
Satisfaction2			*0.996*				
Satisfaction3			*0.973*				
Support System1				*0.715*			
Support System2				*0.783*			
Support System3				*0.975*			
Continuance Intention1					*0.988*		
Continuance Intention2					*0.752*		
Continuance Intention3					*0.842*		
Habit1						*0.780*	
Habit2						*0.861*	
Habit3						*0.946*	
Continuance use Behavior1							*0.965*
Continuance use Behavior2							*0.989*

Based on the analysis of the rotated component matrix, the rotated loadings of seven extracted factors with eigenvalues greater than 1 are all greater than 0.7, suggesting a strong association between the latent variables and measurement items (Cliff, 1988). Additionally, the distribution of the rotated loadings for each item aligns with the expectations of the research hypotheses. This demonstrates that the extracted factors effectively capture the original variables and can proceed to the next step of confirmatory factor analysis.

Confirmatory Factor Analysis (CFA)

To further verify the reliability of the path coefficients between the measurement items and latent variables, this study conducted CFA. The analysis provided standardized factor loadings for each measurement item, as shown in Table 9. These loadings reflect the explanatory power of each measurement item for its corresponding latent variable, thus providing information on the structural validity and reliability of the measurement instruments.

Table 9
Confirmatory Factor Analysis (CFA)

Measurement Item		*Latent Variable*	*Path Coefficient*	*Standard Error*	*T-Value*	*Significance Level*
Expectation Confirmation 1	*<---*	*Expectation*	*1*			
Expectation Confirmation 2	*<---*	*Expectation*	*1.133*	*0.028*	*40.383*	*****
Expectation Confirmation 3	*<---*	*Expectation*	*0.794*	*0.029*	*27.726*	*****
Perceived Usefulness 1	*<---*	*Confirmation*	*1*			
Perceived Usefulness 2	*<---*	*Confirmation*	*1.034*	*0.02*	*51.911*	*****
Perceived Usefulness 3	*<---*	*Confirmation*	*0.986*	*0.02*	*50.552*	*****
Satisfaction 1	*<---*	*Satisfaction*	*1*			
Satisfaction 2	*<---*	*Satisfaction*	*0.979*	*0.015*	*64.752*	*****
Satisfaction 3	*<---*	*Satisfaction*	*1.032*	*0.017*	*60.731*	*****
Support System 1	*<---*	*Support System*	*1*			
Support System 2	*<---*	*Support System*	*0.968*	*0.017*	*57.677*	*****
Support System 3	*<---*	*Support System*	*0.861*	*0.02*	*43.729*	*****
Continuance Intention 1	*<---*	*Continuance Intention*	*1*			
Continuance Intention 2	*<---*	*Continuance Intention*	*1.046*	*0.018*	*57.574*	*****
Continuance Intention 3	*<---*	*Continuance Intention*	*0.931*	*0.017*	*54.27*	*****
Habit 1	*<---*	*Habit*	*1*			
Habit 2	*<---*	*Habit*	*1.014*	*0.018*	*55.926*	*****
Habit 3	*<---*	*Habit*	*1.052*	*0.02*	*52.034*	*****
Continuance use Behavior 1	*<---*	*Continuance Behavior*	*1*			
Continuance use Behavior 2	*<---*	*Continuance Behavior*	*0.877*	*0.02*	*43.225*	*****

*Note ***p < 0.001*

Table 9 shows that the path coefficients between all measurement items and their respective latent variables are close to 1 and are significant at a significance level of 0.001. This indicates a strong relationship between the measurement items and the latent variables, supporting the structural validity and reliability of the measurement model. Furthermore, the low standard errors and high T-values indicate that the measurement model is statistically reliable. These results further validate the structural effectiveness and consistency of the measurement tools used in this study.

Structural Model Analysis

This study conducted path analysis using structural equation modeling (SEM) with AMOS 24.0 to evaluate the path coefficients in the hypothesized model. Before performing path analysis, a model fit analysis was conducted, as shown in Table 10.

Table 10
Model Fit Summary.

Fit Index	*Chi-square*	*df*	*X2/df*	*RMSEA*	*TLI*	*CFI*	*GFI*	*AGFI*
Acceptable compliance values			*<3*	*<0.08*	*>=0.9*	*>=0.9*	*>=0.9*	*>=0.9*
Measured Value	*335.041*	*161*	*2.081*	*0.072*	*0.929*	*0.94*	*0.911*	*0.953*

Based on the model fit analysis presented in Table 10, the fit indices of the research model are mostly close to or within the acceptable compliance values, indicating a good fit between the model and the data.

The results of the path coefficient analysis show that expectation confirmation significantly influenced perceived usefulness. Perceived usefulness has a significant positive impact on satisfaction, and satisfaction have a significant positive effect on continuance intention. Additionally, although the influence of continuance intention on continuance behavior is small, it is significant. Support systems also have a significant positive effect on user satisfaction. These results validate the study's hypotheses, emphasizing the key roles of expectation confirmation, perceived usefulness, satisfaction, and support systems in the process of users continued use of the smart education platform.

Moderating Effect Test

To further explore the moderating role of habit on the relationship between continuance intention and continuance use behavior (H6), a simple slope analysis was conducted using Mplus Version 8.3, as shown in Figure 2.

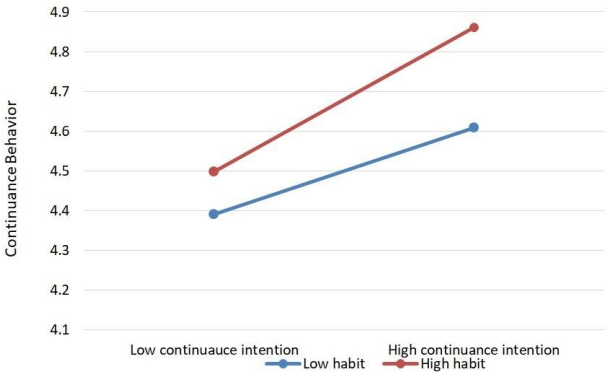

Figure. 2 The Moderating Role of habit on the relationship between Continuance intention and Continuance use behavior

Figure 2 indicates a significant moderating effect of habit on the relationship between Continuance Intention and Continuance Behavior. When the moderator variable (Habit) is high, the positive effect of the independent variable (Continuance Intention) on the dependent variable (Continuance Behavior) is weaker. In contrast, when the moderating variable is low, the independent variable has a greater effect on the dependent variable. This finding further supports the hypothesis regarding Habit's moderating role.

Discussion

Based on the ECM-ISC and TPB, this study constructed a theoretical framework to explore the factors that affect teachers' continued use behavior of smart education platforms.

The results provide strong support for the chain mediation model of "expectation confirmation → perceived usefulness → satisfaction" in influencing the continuance intention of primary and secondary school teachers to use smart education platforms.

Expectation confirmation plays a foundational role by enhancing teachers' perception of the platform's usefulness. This occurs because when the platform meets or exceeds teachers' initial expectations, it reinforces their belief in the platform's ability to sup- port their teaching needs and expectations [28,29]. Heightened perceived usefulness contributes to greater levels of satisfaction. This relationship arises from the perception that the platform is both effective and valuable in teaching practice, fulfilling a dual function of addressing practical challenges and enhancing instructional outcomes. Satisfaction acts as a key mediator, bridging teachers' evaluation of the plat- form's usefulness and their intention to continue using it. These findings not only validate the proposed hypothetical model but also provide deeper insights into the mechanisms driving teachers' continued use behavior with smart education platforms.

The results highlight the critical role of external support systems in enhancing teacher satisfaction. Consistent with the findings of Shen et al. (2024), school sup- port, including technical assistance and institutional backing, significantly improves teachers' experiences with educational technologies(Shukla, 2023). By providing timely techni- cal support and clear guidance, schools can help reduce teachers' frustration, enhance their confidence in using smart education platforms, and ultimately improve their satisfaction. These findings emphasize that while internal evaluations of usefulness and satisfaction are critical, the role of external support systems cannot be overlooked in shaping teachers'continued use behavior with smart education platforms.

This study further highlights the moderating effect of habit in the intention- behavior relationship. This aligns with prior studies, such as Lampo et al. (2023), which emphasized the importance of habit for battery electric vehicle user acceptance in the UTAUT2 model. Similarly, this is also consistent with the results of the study on mobile payment acceptance, which analyzed the impact of habit from an ecosystem perspective. Therefore, in designing smart education platforms, it is crucial not only to consider teachers' intention to use, but also to cultivate their usage habits to promote continued use.

This study extends the theoretical frameworks of the Expectation-Confirmation Model (ECM) and the Theory of Planned Behavior (TPB) by highlighting the moderating role of habit in long-term technology usage. Prior studies have largely focused on exploring the willingness of primary and secondary school teachers to use smart education platforms. While these studies reveal generally positive intentions, intentions do not always translate into actual continued usage behaviors. This disconnect indicates the presence of an intention-behavior gap, a phenomenon often overlooked in existing research.

From a practical perspective, the findings underscore the importance of fostering teachers' usage habits to promote continued use behavior with smart education plat- forms. For example, regular training sessions, institutional support, and user-friendly platform designs can encourage consistent usage, leading to habit formation. Moreover, easily accessible and valuable platform functions can enhance the frequency of use, further reinforcing habits over time. These strategies are critical to enhance teachers' continued use behavior of smart education platforms.

Conclusion

This study employed structural equation modeling to validate six hypotheses, demonstrating significant positive relationships among teachers' expectation confirmation, perceived usefulness, satisfaction, continuance intention, and continued use behavior of smart education platforms. It also highlighted the moderating role of habit between intention and behavior, as well as the critical impact of technical and institutional support on teacher satisfaction. By extending existing studies that primarily focus on usage intention, this study highlights the role of habit as a moderating factor between intention and behavior, and the critical impact of technical and institutional support on teacher satisfaction. These findings offer practical insights for the design and implementation of smart education platforms, particularly by guiding platform developers and educators to foster usage habits and strengthen support systems, thereby ensuring sustained teacher engagement.

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