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STUDY ON INFLUENCING FACTORS OF CHILDREN'S CONTINUOUS USE INTENTION OF EDUCATIONAL APP UNDER THE BACKGROUND OF POST EPIDEMIC ERA

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Abstract

With the outbreak of COVID-19 global outbreak, the traditional form of education has to be rapidly transformed into the form of online learning. The variation of strains leads to a recurrent outbreak of the epidemic. Education in the long run of the epidemic will surely become the focus of attention of the whole society. Due to the rapid change of learning forms, a large number of educational online products come out in an instant. Due to the great demand for mobile internet education services, there will be great competition among industries. The core of product development is users. Therefore, it is necessary to study the generation of users' willingness to continue to use. This study mainly focuses on the characteristics of many children's online education apps to enable parents to have a clear choice direction and firm choice will. On this point, combined with relevant literature, this paper combines the technology acceptance model with the information system technology acceptance model, and introduces two external potential variables: content quality and perceived autonomy. The purpose is to explore the influencing factors of parents on children's continuous use of online education app, build a comprehensive theoretical model in line with this study, set assumptions, and then use SPSS 23.0 and Amos24 tool tests the model and

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hypothesis. Explore what factors will affect the willingness of preschool and early school-age parents to let their children continue to use online education apps. The results show that continuous learning intention is directly or indirectly affected by perceived autonomy, content quality, expectation confirmation, perceived usefulness, perceived ease of use and satisfaction. Finally, the paper puts forward some suggestions for the design and management of children's online education app platform for reference.

Keywords: E-learning; Educational app; Continuous use intention

Introduction

By March 2020, the number of online education users in China had reached 423 million, an increase of 110.2% over the end of 2018, accounting for 46.8% of the total Internet users. At the beginning of 2020, the opening of universities, primary and secondary schools nationwide was postponed, 265 million students generally turned to online courses, and the user demand was fully released. Therefore, educational mobile applications ushered in another period of rapid development. According to the analysis report on market prospect and investment strategic planning of online education industry released by forward looking Industry Research Institute, the scale of online education users will continue to grow at a rate of about 15% in the next few years. It is expected to exceed 300 million by 2022, and its market scale will maintain a growth rate of about 10%. By 2022, the market scale will reach about 285.7 billion yuan (Prospective industry research institute network, 2020; CNNIC, 2020) .

In the current fierce competition, whether the online education service can achieve its expected social value depends on whether the platform users can realize their profits, that is, to effectively improve the user stickiness and reduce the loss rate of registered users. Therefore, it is necessary to explore and analyze the factors affecting the continuous use behavior of Online education platform users, so as to make targeted measures To determine the corresponding strategies to improve users' continuous use intention and enhance users' stickiness. Therefore, this paper takes the continuous use intention of children's online education app as the purpose, and combines the technology acceptance model (TAM) and the Expectation Confirmation model based on information system

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(ECM) Combined with the relevant elements of the specific learning situation of online children's education app, this paper constructs a theoretical model of the influencing factors of online children's education app users' continuous use intention, and obtains the sample data through the measurement questionnaire to verify whether the constructed influencing factor model is effective, so as to explore the relevant factors affecting children's online education app's continuous participation behavior and provide a basis for formulating and improving users' continuous use intention Provide reference basis for practical strategies of using behavior

Literature Review

Davis (1989) proposed the Technology Acceptance Model (TAM) based on the Theory of Reasoned Action (TRA) , which is a model that incorporates psychological factors into information systems and computer mobile applications. The technology acceptance model is a model proposed by Davis when using rational behavior theory to study user acceptance of information systems. The original purpose of proposing the technology acceptance model is to explain the decisive factors of widespread computer acceptance (Davis, 1989) . With the continuous deepening of related research, in order to enhance the explanatory power of the technology acceptance model, Davis et al. made continuous improvements to the initial TAM in the follow-up research and proposed a revised TAM model (see Figure 1) ; The TAM technology acceptance model proposes two main determinants: perceived usefulness and perceived ease of use. The perceived usefulness reflects the degree to which a person believes that using a specific system will improve his work performance; and the perceived ease of use , Reflecting the degree to which a person thinks it is easy to use a specific system. The external variables of the modified TAM technology acceptance model include system design characteristics, user characteristics, task characteristics, the nature of the development or execution process, policy
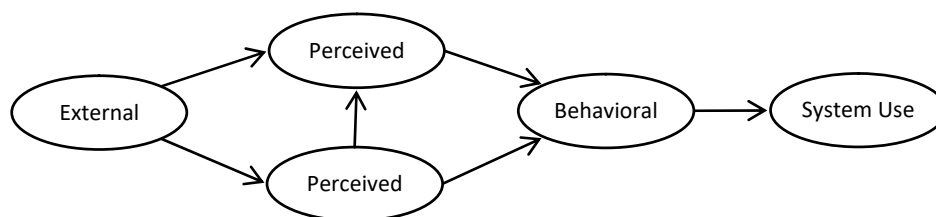

Figure 1. The revised technology acceptance model

influence, organizational structure, etc.. (Venkatesh and Davis, 1996) .

The Expectation Confirmation Theory (ECT) was proposed by Oliver (1980) . It studies the basic theory of consumer satisfaction. The main concept is that consumers are based on the comparison of pre-purchase expectations and post-purchase performance to determine whether it is correct. The product or service is satisfied, and satisfaction becomes a reference for the next purchase or use (Oliver, 1980) . Bhattacheijee believes that consumer buying behavior is actually similar to the user's use of an information system: the user's initial experience will also affect the intention to use an infor-

mation system again. Based on the analogy of the two, combined with the actual situation when the information system is used, the two variables of "expectation before purchase" and "perceived effect after purchase" in the expectation confirmation theory are integrated into an information system technology acceptance model ("perceived usefulness" in TAM) is a contextual modification to Oliver's expectation confirmation theory. In 2001, it was the first to propose an Expectation Confirmation Model of Information System Continuance (ECM-ISC) that includes four variables: expectation confirmation, perceived usefulness, satisfaction, and continuous use intention (Bhattacherjce, 2001) .
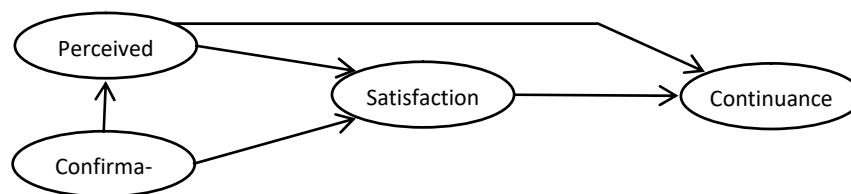

Figure 2. Expectation confirmation model of information system continuance

This research integrates TAM and ECM-ISC, also constructs the five basic latent variables of the research model, namely: perceived ease of use, perceived usefulness, satisfaction, and expectation confirmation Degree, continuous use intention. In view of the previous related research on online

learning, two new latent variables related to the online education system have been added, namely content quality and perceived autonomy (Genfu, 2016) . This study constructed a theoretical model of the factors affecting the continuous use of children's online education apps based on the above 7
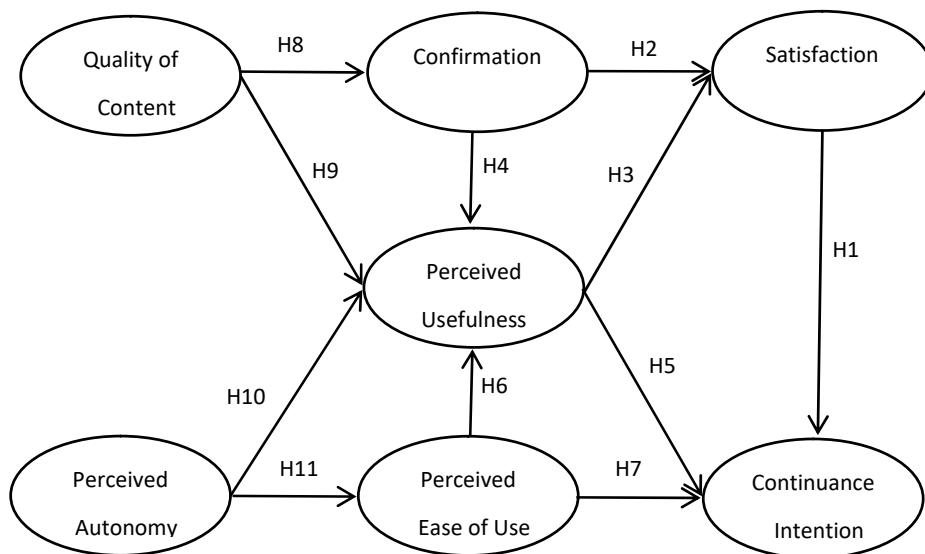
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Figure 3. An integrated model of TAM and ECM-ISC

latent variables.

Research Method

The sample objects are parents who have 3-6 year old preschool children and 6-12 year old school-age children who have used online education APP. The questionnaire measures 7 latent variables. Before the large-scale questionnaire was distributed, a small-scale questionnaire survey was conducted, and then the questionnaire was revised, the fuzzy semantic options were changed, the length of the questionnaire was simplified, etc., and the online questionnaire was used. 300 questionnaires were distributed in this way. After the subsequent identification and screening of the returned questionnaires, after excluding invalid

questionnaires, the number of valid questionnaires was 205, with a recovery rate of 68.30%, and a total of 19 questions, all measured by Likert 7-level scale. This research tests a total of 11 research hypothesis:

H1: Satisfaction has a significant positive impact on willingness to continue using.

H2: It is expected that the degree of confirmation has a significant positive impact on satisfaction.

H3: Perceived usefulness has a significant positive impact on satisfaction.

H4: Expected confirmation has a significant positive impact on per-

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ceived usefulness.

H5: Perceived usefulness has a significant positive impact on willingness to continue using.

H6: Perceived ease of use has a significant positive impact on perceived usefulness.

H7: Perceived ease of use has a significant positive impact on the willingness to continue use.

H8: Content quality has a significant positive impact on expected confirmation.

H9: Content quality has a significant positive impact on perceived usefulness.

H10: Perceived autonomy has a significant positive impact on perceived usefulness.

H11: Perceived autonomy has a significant positive impact on perceived ease of use.

Results And Discussion

As shown in Table 1 and Table 2, 26.8% of the 205 respondents use education apps every day, and 52.7% of them use every week, indicating the use of education apps for the data source of this survey The concentration is relatively high; among the 205 respondents, parents of children aged 4-6 and 7-9 accounted for 40.5% and 31.7%, respectively, indicating that the data source of this survey is concentrated on parents of children aged 4-9.

Table 1. Description of the use of online education apps (n=205)

Frequency	Percentage	Cumulative percentage
Use everyday	26.8%	26.8%
Use every week	52.7%	79.5%
Use every month	15.1%	94.6%
Rarely use	5.4%	100.0%

As shown in Table 3, 13 of the 20 parents of 10-12-year-old children interviewed said that they use APP to study every day, and their daily usage rate of 65% is higher than that of other age groups in this study. Many; among the 65 interviewed parents of children aged 7-9, 18 said that they use APP every day to learn. Compared with the daily use of 83 parents of children aged

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Table 2. Sampling object description table

Age group	Percentage	Cumulative percentage
3-year old and below	18.0%	18.0%
4-6 years old	40.5%	58.5%
7-9 years old	31.7%	90.2%
10-12years old	9.8%	100.0%

Table 3. Cross-description table of sampling objects and usage

	Use everyday	Use every week	Use every month	Rarely use	Total
3-year old and below	7	15	10	5	37
4-6 years old	17	52	10	4	83
7-9 years old	18	37	8	2	65
10-12years old	13	4	3	0	20
Total	55	108	31	11	205

4-6, 7-9-year-old children use APP every day The proportion of learning is larger. The above analysis results show that older children will be more willing to use online education apps to learn. It is possible that in addition to parents' recognition of online learning, there are also children's own wishes. Children aged 3 and under are more affected by the wishes of their parents. It can be seen that parents' willingness to use online learning is not particularly high. However, from the survey data of the four age groups in the study, the total online willingness to learn is quite high. Therefore, during the operation of online education apps, the promotion of its advantages and strengths will be strengthened, while meeting the needs of parents and children, providing more high-quality courses that are recognized by parents will have a positive effect on the continued use of registered users.

Through the result of factor analysis, the cumulative variance contribution rate can reach 64.309%, the information loss is less, the overall variance can be better explained, and the factor analysis is ideal. This model

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measures the reliability and validity of the scale before hypothesis verification. The reliability test is judged by observing the composite reliability (CR) and Average Variance Extracted (AVE) (Nunnally, 1979) ; it is generally believed that when the CR value is greater than 0.7 and the AVE value is greater than 0.5, one of the measurement variable items The consistency between the two is acceptable (Fornell and Larcker, 1981) .

As shown in Table 4: SMC is greater than 0.3, representing reliability of the question; CR is greater than 0.7, representing sufficient internal consistency between dimensions; AVE is basically greater than 0.5, representing good convergence validity between dimensions (dimension" expected confirmation degree" has an AVE of 0.451,

but it is considered acceptable if it is close to 0.5) . After confirmatory factor analysis, it can be known that the loading Std value of all the effective factors in the common factor is greater than 0.6, reaching the standard range, thus ensuring the structural validity of the scale. Therefore, the reliability of the measurement items of this model and the validity of convergence between dimensions are better.

As shown in Table 5, the bold font on the diagonal is the AVE root value, and the lower triangle is the Pearson correlation of the dimension. The AVE root value of all dimensions is greater than the correlation between the dimension and other dimensions, representing the relationship between the dimension and There is discriminative validity between dimensions.

Table 4. Reliability and convergence validity test data table

Dimension	Item	Std	SMC	CR	AVE
PA	PA3	.827	.684	.764	.523
	PA1	.711	.506		
	PA2	.615	.378		
QC	QC1	.741	.549	.763	.518
	QC3	.711	.506		
	QC2	.706	.498		
PEU	PEU1	.765	.585	.738	.585
	PEU2	.765	.585		

PU	PU2	.811	.658	.794	.658
	PU1	.811	.658		
CF	CF1	.741	.549	.710	.451
	CF2	.643	.413		
	CF3	.624	.389		
SA	SA1	.774	.599	.755	.507
	SA2	.684	.468		
	SA3	.674	.454		
CI	CI1	.759	.576	.765	.521
	CI3	.752	.566		
	CI2	.650	.423		

Table 5. The correlation coefficient between the
square root of AVE and the latent variable

	AVE	PA	QC	PEU	PU	CF	SA	CI	Mean	Std	Case
PA	.523	.723							5.748	.651	205
QC	.518	.342	.720						5.808	.629	205
PEU	.585	.447	.519	.765					5.754	.656	205
PU	.658	.434	.439	.469	.811				5.834	.707	205
CF	.451	.484	.607	.630	.491	.672			5.797	.568	205
SA	.507	.485	.495	.538	.583	.569	.712		5.857	.622	205
CI	.521	.436	.561	.538	.520	.671	.639	.722	5.909	.610	205

In the structural equation model, the model fitting index is a statistical indicator that examines the degree to which the theoretical structural model fits the data. Considering that the Chi-square x2 (Minimum Fit Func-

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tional Chi G square) value of the absolute fit index is easily affected by the sample size, some scholars suggest that the ratio of the chi-square value to its degrees of freedom be used as the standard, combined with the goodness of fit index (GFI) , Standardized Fitting Index (NFI) , Increased Fitting Index (IFI) , and Comparative Fitting Index (CFI) as supplements. The value range is between 0-1, and the closer to 1, the better. The approximate error is average The root square (RMSEA) should be less than 0.05, the smaller the better [9]. Goodness of Fit Index (Goodness of Fit Index, GFI) and Adjusted Goodness of Fit Index (Adjusted Goodness of Fit, AGFI) . GFI and AGFI reflect the proportion of covariance that can be explained by the hypothetical model. The larger the goodness of fit index, the higher the degree of interpretation of the dependent variable by the independent variable, and the higher the percentage of the total change caused by the independent variable. It is generally believed that GFI and AGFI greater than 0.9 indicate a high degree of fit between the model and the data. Segars & Grover (1993) proposed that GFI and AGFI greater than 0.8 are also acceptable (Segars and Grover 1993) . This study calculated the model fit through the AMOS24.0 version. Table 6 shows all the measured fit index values, except that the NFI value does not reach the recommended range, but because the rest of the values are within the recommended range, it is believed that the model fits the sample data well, and the model has a good degree of fit and can perform the next operation.

Table 6. Results of structural model goodness of fit index

Fitting index	Acceptable	Fitted value of this model
Chi-square/df	1—5	1.17
RMSEA	< 0.05—0.08	0.03
NFI	> 0.9	0.85
NNFI	> 0.9	0.97
CFI	> 0.9	0.97
IFI	> 0.9	0.97
GFI	> 0.8	0.85

Table 7 shows VIF value <5 means there is no collinearity between dimensions, R-square value is 0.479, 0.446, 0.335, 0.368 in turn, represent-

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ing moderate explanatory ability, R-square value 0.2 means low explanatory ability; confidence interval interval The range does not include 0, and the P value is less than 0.05, so all the assumptions in this study are all established. From the Bata value: (1) Satisfaction (SA) has the greatest impact on continuous use intention (CI) , followed by ease of use (PEU) , and perceived usefulness (PU) has the lowest impact. (2) Expected confirmation (CF) has a greater impact on satisfaction (SA) , while perceived usefulness (PU) has a lower impact. (3) Perceived autonomy (PA) has the greatest impact on perceived usefulness (PU) , followed by ease of use (PEU) and expected confirmation (CF) , while content quality (QC) has the lowest impact .

Table 7. Path analysis table

		Non-standard factor		Standard factor	t	Sig	95.0% Confidence interval		Collinearity statistics	R^2
		B	Standard error	Beta			Lower limit	Upper limit	VIF	
DV:CI	(Cons)	1.422	.333		4.271	.000	.766	2.079		.479
	SA	.406	.066	.414	6.138	.000	.275	.536	1.754	
	PEU	.220	.058	.237	3.815	.000	.106	.333	1.484	
	PU	.145	.056	.168	2.609	.010	.035	.254	1.598	
DV:SA	(Cons)	1.438	.355		4.046	.000	.737	2.139		.446
	CF	.408	.06	.372	6.192	.000	.278	.538	1.318	

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	B	Std. Error	Beta	t	Sig.	Lower	Upper	VIF	R²
		6							
PU	.352	.053	.400	6.654	.000	.248	.457	1.318	
DV:PU									
(Cons)	1.048	.481		2.180	.030	.100	1.997		.335
CF	.217	.105	.175	2.065	.040	.010	.425	2.159	
CQ	.190	.084	.169	2.270	.024	.025	.354	1.665	
PA	.232	.073	.213	3.169	.002	.088	.376	1.366	
PEU	.190	.084	.176	2.268	.024	.025	.355	1.815	
DV:CF									
(Cons)	2.613	.294		8.872	.000	2.032	3.193		.368
QC	.548	.050	.607	10.875	.000	.449	.648	1.000	
DV:PEU									
(Cons)	3.164	.366		8.642	.000	2.442	3.886		.200
PA	.451	.063	.447	7.119	.000	.326	.575	1.000	

Conclusions

Based on the combination of the Technology Acceptance Model (TAM) and the Information System Expectation Confirmation Model (ECM-ISC) , the research introduced two external latent variables, content quality and perceived autonomy, and constructed whether parents continue to use online education apps for their children The relationship model that affects intentions, analyzes the correlation between perceived autonomy, content quality, expected confirmation, perceived usefulness, perceived ease of use, satisfaction and willingness to continue to use, and then validates the technology acceptance model and information system expectation confirmation The role of the model in the influencing factors of willingness to continue to use.

From the path analysis data in the study, we can get: (1) Satisfaction (SA) has a relatively large impact on continuous use intention (CI) , and expectation confirmation (CF) has a large impact on satisfaction (SA) . At the same time, it is assumed that H8 is also established, which means that parents' experience and effect evaluation of children after using APP account for a large proportion of whether they will continue to use the app. The quality of the platform content affects parents' experience and evaluation of the platform after use. (2) Perceived autonomy (PA) has the greatest impact on perceived usefulness (PU) , followed by ease of use (PEU) and expected confirmation (CF) , while content quality (QC) has the lowest impact .On behalf of parents and children in educational APP learning, independent decision of learning time, selection of course content and setting of learning goals are important indicators reflecting the usefulness of software. The information age has created a sense of "convenience" for contemporary people, and the awareness of convenience indicates "Design" direction. As the rapid update of electronic information technology has accelerated the replacement of electronic products and service platforms, the ease of operation of the platform will save users unnec-

essary time and experience, so the ease of use of the platform is still crucial.

Suggestions

It is possible to establish and improve content quality standards, including course content quality standards and teacher quality standards. Among them, the content quality standard is an important guarantee for the production of a high-quality platform, and it also helps to select more professional course service providers. As far as the quality standards of course service providers are concerned, it is directly related to the user's experience. A good service experience is particularly important for users who use the APP platform for the first time, which will help improve the retention rate of users and further continuous use. On the other hand, the establishment of a trust system helps to enhance users' sense of identity with the APP platform, helps to form a word-of-mouth effect, and enables users who continue to use to recommend and share to their friends, colleagues, family members, etc., and thereby make more new Users join, a virtuous circle and the formation of positive feedback and scale effects. The diversification of course content and the integration of disciplines are all good ways to improve learning efficiency. For example: sin-

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gle English learning has been unable to keep up with the times and the needs of users, listening, speaking, reading and writing are no longer an integral part of English learning. English education has gradually spread to other disciplines, whether it is combined with games. It is still the method of using human psychology to learn, which is gradually adopted by more learners. This integration of disciplines is the only way to learn English effectively.

From the analysis of the results, it can be seen that the ease of use of the APP platform has a significant positive impact on the usefulness of the software. Therefore, APP platform designers and operators should reduce the complexity of user search and course selection operations, make the entire use process easier and more visually intuitive, and set the user's course requirements, content range browsing and interest The collection and analysis of collection and other data adopt intelligent methods to recommend to users. Strengthen the selection of APP course content and autonomous and humanized design, and subdivide customized course content. For example, the English subject is not only set to each chapter, but can also be subdivided into the learning of each word, so that parents and children can freely

match Course content, increase the degree of freedom in the formulation of the course content. Due to the different needs and degrees of each user, it is recommended that if there is personalized customization, it may better meet user needs and increase user viscosity.

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