Research on the Continued Consumption Intention of Virtual Products in Mobile Games -Taking 'Honor of Kings ' as an Example

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Abstract

In recent years, the incremental dividends for players in the mobile game market have disappeared. Whether players are willing to continue to consume mobile games determines their future survival and development of mobile games. In order to provide data reference for the healthy development of mobile games in the market, this article establishes a theoretical model based on TAM and ECM, uses a questionnaire survey method, and studies the players' expectation confirmation and perceived usefulness of the game on virtual products in mobile games. The impact of continued consumption intentions. The results show that: 1) The expectation confirmation of social needs, the expectation confirmation of achievement needs, and perceived usefulness positively impact on mobile game players' satisfaction when purchasing virtual products. 2) Confirmation of expectations of individual needs has no impact on mobile game players' satisfaction when purchasing virtual products. 3) Perceived usefulness and satisfaction positively impact on mobile game players' intentions to continue purchasing virtual goods.

Keywords: *Mobile Game, Continued Consumption Intention, Expectation Confirmation, Perceived Usefulness.*

1. Introduction

With the rapid development of informatization, the application of smartphones to the public has become popular and has become an indispensable part of daily life. The emerging cultural industry ' mobile games ' relying on smart phones has begun to show great commercial value. According to the ' 2022 China Game Industry Report ', mobile game users are about 654 million people, with actual sales revenue of 193.058 billion yuan. . Honor of Kings', one of the early mobile phone games in China, has occupied an extremely important position in the mobile phone game market since its inception. According to the latest Sensor Tower data report, since its release in 2015, the cumulative revenue has exceeded $10 billion (64.4 billion yuan), making it the world's first mobile game with revenue exceeding $10 billion. In March 2023, Tencent's "Honor of Kings " attracted $215 million in the global App Store and Google Play, and became the world 's top seller of mobile games. Among them, Chinese market revenue accounted for 94.1%, and overseas market revenue accounted for 5.9%.

Today, mobile phone games have developed into a mature and huge industry that can bring enormous economic efficiency. However, in recent years, with the demise of the incremental dividend of users in the mobile game market, the continued consumption behavior of game players has attracted increasing attention and determined future market development.

The continued consumption intention was first proposed by Jones & Sasser (1995). The shopping experience of purchasing a product or receiving a service will enable consumers to form a positive experience and promote their next consumption more efficiently. Ye Jing et al. (2023) studied the influencing factors of continued consumption intention on e-commerce platforms and pointed out that customer expectation has a positive and significant effect on consumer perceived value and satisfaction, and both perceived value and

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satisfaction have a positive and significant impact on continued use intention. Hou Ping and Liu Yuyang (2022) studied the influence mechanism of consumers ' continued purchase intention on a fresh e-commerce platform and pointed out that perceived usefulness, satisfaction, and personality characteristics directly positively affect consumers' continued purchase intention, and the degree of expectation confirmation indirectly positively affects consumers' continued purchase intention.

At present, the research on continued consumption intention is relatively rich, but it mainly focuses on the field of physical products and physical services. There are relatively few studies on the influencing factors of the continued consumption intentions of virtual products. With the rapid development of the Internet, virtual products are becoming increasingly important in the digital economy. However, research on the continued consumption intention of mobile game virtual products is still relatively scarce. Existing studies have demonstrated that factors such as perceived value, consumption type, satisfaction, consumption experience, and sociability influence the continued consumption intention of mobile games, yet consumer demand has not received a thorough discussion. In order to further explore the influencing factors of the continued consumption intention of virtual products in mobile games, this paper divides the expectation confirmation degree into three dimensions, the expectation confirmation degree of achievement demand, the expectation confirmation degree of social demand, and the expectation confirmation degree of personality. Combined with perceived usefulness and satisfaction, the theoretical model is constructed, and the mobile game' Honor of Kings' players are taken as the research object. Through the network questionnaire to collect data and analysis, it is expected to find out the internal logic and law of the continued game consumption intention of ' Honor of Kings ' players.

2. Objectives

1) To study whether the player's perceived usefulness of the game, the expectation confirmation of achievement needs, the expectation confirmation of social needs, and personality expectations impact satisfaction.
2) To study whether satisfaction mediates between the expectation confirmation of achievement needs, the expectation confirmation of social needs, the expectation confirmation of personality needs, perceived usefulness, and continued consumption intention.

To explore whether there are gender and age differences in the player's continued consumption intention of virtual products.

3. Materials and Methods

This article studies mobile game players' continued consumption intentions for virtual products, using a combination of qualitative and quantitative methods for analysis. First, the academic literature in related fields at home and abroad is organized and reviewed.

Based on the conclusions of the literature research, industry status statistical yearbooks, industry information summaries, industry reports, and other materials can be used to obtain specific digital data support. Provide a theoretical basis for the next scale design. A certain number of questionnaires will be distributed and collected through the Internet.

After the data collection is completed, SPSS is used to conduct reliability and validity analysis, path analysis, regression analysis, etc. on the data to obtain the influencing factors of mobile game players' willingness to continue consuming virtual products. Cui Jiangtao (2020) studied the consumption behavior of game-virtual products by college students in Wuhan and concluded that sociability is the most influential factor in the continued consumption intention of game-virtual products. . Therefore, hypothesis H1a is put

forward: the expected confirmation of social needs positively affects the satisfaction of mobile game players when purchasing virtual products.

Expectation confirmation: Spreng et al. (1996) expectancy confirmation is defined as the degree to which users' expectations before using an information system are confirmed after use. Although the game platform's virtual products are different from the actual products, players will still form their pre-purchase expectations and actual usage experience. As consumption continues, players will evaluate their initial expectations against their actual experience. Confirming their expectations will enhance their satisfaction. Zhang Jingyang (2019), in an interview with mobile game audiences on factors influencing game consumption, found that players consume virtual products mainly to meet their own competitive needs, emotional entertainment needs, social needs, etc. Zhang Xiaoxue, Wang Bing, and Zhang Weixiao (2022) studied China's domestic mobile game consumption and pointed out that social motivation can significantly positively affect young people's willingness to spend money. Wu Ran (2021) studied the consumption of game skins from the perspective of the youth subculture. He found that the consumption of game skins is attributed to the youth subculture group's individual characteristics, social interaction, and emotional sustenance.

Therefore, this article believes that players will have certain expectations for social needs, achievement needs, and personality needs before purchasing virtual products. The degree of expectation confirmation is divided into three dimensions, namely the degree of expectation confirmation of social needs, the degree of expectation confirmation of achievement needs, and the degree of expectation confirmation of personality needs. Among them, the degree of expected confirmation of social needs refers to the degree to which the user's expectations for interaction and making friends during the game are confirmed after use. The degree of expected confirmation of achievement requirements signifies the extent to which players confirm their expectations of achieving a specific rank, ranking, or obtaining a specific title or reward through the use of virtual goods. The degree of expected confirmation of individual needs refers to the degree to which players' expectations of their own characteristics displayed through virtual goods and virtual goods customization are confirmed after use.

Perceived usefulness: Davis (1989) defined perceived usefulness as the degree to which users believe that using a particular system can improve work performance. Bhattacherjee (2001) introduced perceived usefulness into the expectancy confirmation model. The author believes that users will evaluate the actual effect of virtual products during the first purchase and continued consumption stages. If a product exceeds users' expectations, they are more likely to continue consuming it. Therefore, perceived usefulness plays a crucial role in mobile game users' purchasing decisions, especially when considering continued consumption. In this article, perceived usefulness refers to the extent to which mobile game users perceive that virtual products provide level growth or skill effects.

Satisfaction: Oliver (1981) defined satisfaction as a measure of whether the actual performance perceived by consumers when purchasing a specific product or experiencing a service matches their expectations before using or experiencing the product or service. A contrasting psychological state. The virtual products sold in "Honor of Kings" are different from traditional goods. These are non-physical goods that are not necessary. Customer satisfaction formed after the first purchase is one of the essential conditions for attracting customers to continue consumption. Therefore, this article incorporates satisfaction into the factors that affect the continued purchase intention of mobile game virtual products. Satisfaction in this article refers to the comprehensive psychological state resulting from the comparison between the overall experience and expected performance of mobile game players before and after purchasing virtual products.

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Continued consumption intention: Continued consumption intention was first proposed by Jones & Sasser (1995). Continuing purchase intention in this article refers to players' willingness to keep purchasing or repeat purchases on mobile game platforms.

Yin Xuehan (2017) analyzed the consumption behavior of online games, and found that both achievement motivation and personality motivation affected the consumption behavior of players. Therefore, the hypothesis is put forward, H1b: the expectation confirmation of achievement demand positively affects mobile game users' satisfaction in purchasing virtual products.

Wu Ran (2021) studied game skin consumption from the perspective of youth subculture. He found that it was attributed to youth subculture groups' individual characteristics, social interaction, and emotional sustenance. Therefore, hypothesis is put forward, H1c : the expectation of confirmation of individual needs positively affects the satisfaction of mobile game users with purchasing virtual products.

In the study of fresh e-commerce users' continued purchase intention, Shu Wei (2021) expects that the dimensions of confirmation are positively promoting satisfaction, and perceived usefulness is positively promoting user satisfaction and continued purchase intention; Joo (2016) pointed out that perceived usefulness significantly affects users' satisfaction with information systems. Therefore, the hypothesis H2: perceived usefulness has a positive impact on the satisfaction of mobile game users when purchasing virtual products.
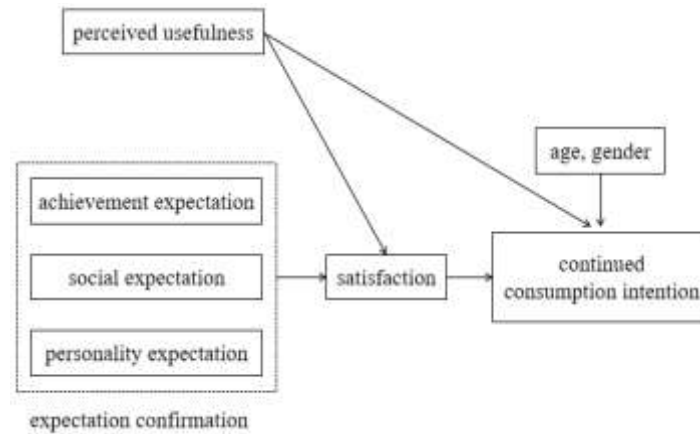
Tang Yuanlin (2019) concluded that in the context of social e-commerce, perceived applicability positively affects user satisfaction and user continued purchase intention, expectation confirmation positively affects perceived applicability and user satisfaction, and user satisfaction positively affects user continued purchase intention. Therefore, we put forward the hypothesis, H3a: Player satisfaction has a positive impact on mobile game players ' continued purchase intention of virtual goods.

Lee et al. (2011) pointed out that user perceptions such as perceived usefulness, perceived value, and reliability can significantly affect users' continued purchase intention. Therefore, we put forward the hypothesis, H3b: perceived usefulness has a positive impact on mobile game players ' continued purchase intention of virtual goods.

Liu Kunpeng, Dang Yu, and Ma Zhuoyue (2021) in the empirical analysis of the characteristics of college students ' game virtual commodity consumption behavior, it is concluded that the consumption intention of potential users is affected by gender, single situation, grade, living cost level, game purpose, and game situation. Therefore, the hypothesis is put forward, H4: players ' willingness to consume virtual products of mobile games is different by age. H5: There are gender differences in players ' willingness to consume mobile game virtual products.

The Technology Acceptance Model (TAM) was proposed by Davis (1989) based on the Theory of Reasoned Action. The model introduces two main influencing factors: perceived usefulness and perceived ease of use, and believes that the user's use of the system is determined by the willingness to act. Bhattacherjee (2001) proposed the Expectation Confirmation Model (ECM) based on the research results of others. This model believes that the comparison between consumers ' expectations before purchase and the perceived performance of actual products will directly affect satisfaction, which in turn affects the willingness to repurchase. In view of the existing research on the continued consumption intention of virtual products, the commonly used basic model is TAM. From the theoretical review, TAM is similar to ECM, but TAM model focuses on the initial acceptance and cognition of information systems, while ECM model focuses on the experience and behavior of users after use, which is more suitable for the study of continued consumption intention. Based on this, the TAM model and ECM model are selected as the basis to construct the research

model of this article, as shown in Figure 1, so as to study the continued consumption intention of mobile game players on virtual products.

Figure 1: research model

Table 1: Scales of measurement

Measured variable	Measurement items	Source
Achievement expectation	In ' Honor of Kings ', I can demonstrate my self-worth by achieving my goals. I enjoy the process of role growth and upgrading in the 'Honor of Kings'. I will be very successful if I get a higher ranking in the 'Honor of Kings'. I enjoy the feeling of defeating my opponent in 'Honor of Kings' and winning.	Zhang Yao (2020)
Social expectation	I can make a lot of friends through ' Honor of Kings '. 'Honor of Kings' can be a conversation between me and a good friend 'Honor of Kings' often requires the cooperation of many people, can enhance my feelings with friends	Dou Jingjing (2017)
Personality expectation	Having virtual objects such as skins and props in 'Honor of Kings' can make my world / role more beautiful. Having the skin, props and other virtual items in the 'Honor of Kings' makes me different and more confident. Having a limited number of virtual items such as skin and props in the ' Honor of Kings ' is a symbol of my identity in the game and can show my personality.	Zhang Hengs (2014)

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Perceived useful	The skin, props and other virtual items in the 'Honor of Kings' can improve my game level. The skin, props and other virtual items in the 'Honor of Kings' can enhance my game experience. Virtual items such as skins and props in 'Honor of Kings' are very useful.	Davis (1989)
satisfaction	My overall evaluation of the products and services provided by 'Honor of Kings' is very good. It is a wise choice for me to consume in the 'Honor of Kings'. Generally speaking, I am satisfied with my consumption experience in 'Honor of Kings'.	Bhattache rjee (2001)
continued consumption intention	I am willing to pay for the purchase of virtual items such as skins and props in 'Honor of Kings'. If a virtual product is what I need, I 'm willing to pay for it In order to get a better experience of 'Honor of Kings', I will conduct more frequent consumption activities.	Ming-Chi Lee (2010)

After consulting a large number of pieces literatures, this paper selects mature scales at home and abroad, and makes appropriate modifications according to the characteristics of virtual products in 'Honor of Kings'. Finally, a total of 20 items are selected to measure the six variables. The measurement items use the Crete scale 5-point method, in which the numbers 1-5 indicate' very disagree = 1, very disagree = 2, agree = 3, very agree = 4, very agree = 5 '. The measurement items and sources are shown in Table1.

This article uses the Questionnaire Star program to create an online questionnaire, and uses Weibo, WeChat and other online platforms to randomly distribute 410 questionnaires. The issuance time starts on December 1, 2023, and ends on January 15, 2024, for a total of 15 days. According to statistics, 407 questionnaires were received, 35 invalid questionnaires were eliminated through screening questions, and a total of 372 valid questionnaires were obtained. The data were organized and analyzed using SPSS. This article tests the quality and reliability of the questionnaire through reliability and validity analysis, uses structural equation analysis to test the fitness of the model, verifies the hypothesis through path analysis, confirms the relationship between variables, and finally tests satisfaction through regression analysis and the Bootstrap method the mediating effect.

4. Results and Discussion

Table 2: Sample descriptive statistics

Name	Option	Frequency□	Percentage (%)□	Accumulative □perception (%)
Gender	male	102	27.42	27.42
	female	270	72.58	100.00
Age	under 18 years old	42	11.29	11.29
	18-28 years old.	313	84.14	95.43

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Name	Option	Frequency	Percentage (%)	Accumulative perception (%)
	over 28 years old	17	4.57	100.00
Education level	high school and below	41	11.02	11.02
	junior college, undergraduate	248	66.67	77.69
	master's degree or above	83	22.31	100.00
Monthly income	under 5000 yuan	287	77.15	77.15
	5001-10000 yuan	69	18.55	95.70
	10000 yuan or more	16	4.30	100.00
Total		372	100	100

Table 2 above shows the gender ratio of the respondents. Female players account for 72.58 % of the total sample, and male players account for 27.42 %. The questionnaire survey reveals a higher proportion of female participation. In addition, the survey results show that young players aged 18-28 years old account for the largest proportion, 84.14 %. The proportion of young players under the age of 18 is 11.29 %, and the proportion of players over the age of 28 is 4.57 %. This shows that young people are the main respondents in the survey, which is in line with the mobile game audience. Among the respondents, people with junior college and undergraduate education accounted for 66.67 %. People with a bachelor's degree or above accounted for 22.31 %, and people with a high school degree or below accounted for 11.02 %. Therefore, in this survey, the population with college and undergraduate education accounted for the main body. As for the monthly income, 77.15 % of the people's monthly income is below 5000 yuan, 18.55 % of the people's monthly income is between 5001 and 10000 yuan, and only 4.30 % of the people 's monthly income is above 10000 yuan. This shows that most respondents had lower monthly incomes in the survey.

Based on the above data results, it can be preliminarily inferred that the respondents are mainly young people, mainly women. Compared with men, women may be more willing to participate in online questionnaires to show their consumption preferences and levels. At the same time, most of the respondents 'education level is mainly college and undergraduate, and the economic situation is relatively limited.

Table 3: Reliability Analysis Table

	Name	CITC	Deleted α coefficient	Cronbach's α	Total Cronbach's α
	Q6	0.788	0.883		
Achievement expectation	Q7	0.783	0.884	0.908	0.950
	Q8	0.811	0.874		
	Q9	0.788	0.882		

	Q10	0.684	0.791	
Social expectation	Q11	0.718	0.757	0.838
	Q12	0.699	0.776	
	Q13	0.723	0.746	
Perceived useful	Q14	0.657	0.811	0.836
	Q15	0.714	0.755	
	Q16	0.656	0.861	
Personality expectation	Q17	0.721	0.836	0.871
	Q18	0.746	0.825	
	Q19	0.774	0.814	
	Q20	0.696	0.838	
Satisfaction	Q21	0.712	0.824	0.859
	Q22	0.798	0.742	
	Q23	0.800	0.711	
Continued consumption intention	Q24	0.670	0.835	0.850
	Q25	0.691	0.818	

Table 3 reveals that all six dimensions' reliability coefficient values exceed 0.8, with a total reliability coefficient value of 0.950, signifying the high reliability quality of the research data. For the 'deleted α coefficient ', after any item is deleted, the reliability coefficient will not increase significantly, indicating that the existing items are reasonable and do not need to be deleted. The CITC values are mostly 0.6-0.8, greater than 0.4, indicating that there is a good correlation between the analysis items, and also indicating that the reliability level is good. In summary, the data reliability quality is high, making it suitable for further analysis.

Table 4: Tests by KMO and Bartlett

KMO		**0.945**
	approximate chi-square	5139.077
Bartlett	df	190
	p	0.000

Table 4, it can be seen that the KMO value is 0.945, greater than 0.7, the approximate chi-square value is 5139.077, and the significance test passes ($p < 0.05$), indicating that the data can be effectively extracted. The information is suitable for factor analysis.

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Table 5: T-test

	Gender (mean ± standard deviation)		t	p
continued consumption intention	Male (n = 102)	Female (n = 270)		
	3.12±1.15	3.47±0.97	-2.740	0.007**

The difference between players ' genders in continued consumption intention was studied by t-test. As shown in Table 5, gender showed a significant level of 0.01 for continuous consumption intention (t = -2.740, p = 0.007). The average value of male players was 3.12, which was significantly lower than that of female players (3.47). It shows that there are differences in the continued consumption intentions of players of different genders in this sample.

Table 6: Variance Analysis

	Age (mean ± standard deviation)			F	p
continued consumption intention	under 18 (n = 42)	18-28 (n = 313)	over 28 (n = 17)		
	2.35±1.38	3.52±0.89	3.24±1.11	27.268	0.000**

Variance analysis was used to study the differences in the willingness of players of different ages to continue to consume. From table 6, we can see that age has a significant level of 0.01 for the willingness to continue consumption (F = 27.268, p = 0.000). According to the comparison, the average value of the group is '18-28 years old > over 28 years old > under 18 years old '. It shows that there are differences in the willingness of players of different ages to continue consumption intention.

Table 7: Correlation analysis

	average value	standard value	Achievement expectation	Social expectation	Perceived useful	Personality expectation	Satisfaction	Continued consumption intention
Achievement expectation	3.853	0.978	1					
Social expectation	3.632	0.930	0.608**	1				
Perceived useful	3.557	0.948	0.584**	0.507**	1			
Personality expectation	3.607	0.971	0.596**	0.542**	0.704**	1		
Satisfaction	3.297	0.985	0.670**	0.596**	0.656**	0.632**	1	
Continued consumption intention	3.377	1.036	0.519**	0.487**	0.658**	0.634**	0.685**	1

The Pearson correlation coefficient was used to study the correlation between achievement expectations, social expectations. From Table 7, perceive usefulness, personality expectations, satisfaction,

and continuation consumption intention. From Table 6, we can see that there is a significant positive correlation between the six variables (p<0.05), which can be used for subsequent analysis.

Establish a structural equation model to analyze model fitness and understand the influence of each factor on the corresponding variable through path analysis and regression analysis.

Table 8: Model fitting index results

Index	x^2/df	RMSEA	GFI	AGFI	RMR	IFI	NFI	TLI
Acceptable range	< 5	< 0.10	0.7~0.9	0.7~0.9	< 0.10	0.7~0.9	0.7~0.9	0.7~0.9
Good range	< 3	< 0.08	> 0.9	> 0.9	< 0.08	> 0.9	> 0.9	> 0.9
Model fitting index	2.037	0.053	0.968	0.89	0.045	0.968	0.939	0.961

The results of the structural equation model are shown in Table 8, x^2/ df was 2.037, in a good range, RMSEA was 0.053, in a good range, GFI was 0.968, greater than 0.9, AGFI was 0.89, in an acceptable range, RMR was 0.045, in a good range, IFI, NFI, and TLI were 0.968, 0.939, and 0.961, respectively, all in a good range. It demonstrates that the model's overall fitness is good.

Table 9: Model regression coefficient

X	→	Y	Non-standardized regression coefficients	SE	z (CR)	p	standardized regression coefficient
Achievement expectation	→	satisfaction	0.314	0.066	4.779	0.000	0.322
Social expectation	→	satisfaction	0.197	0.068	2.89	0.004	0.189
perceived usefulness	→	satisfaction	0.331	0.089	3.716	0.000	0.341
Perceived usefulness	→	continued consumption intention	0.535	0.091	5.856	0.000	0.434
Personality expectation	→	satisfaction	0.111	0.094	1.182	0.237	0.105
Satisfaction	→	continued consumption intention	0.574	0.093	6.173	0.000	0.452

From Table 9, it can be seen that when the expectation confirmation of achievement needs has an impact on satisfaction, the standardized path coefficient is 0.322 > 0, showing a significant level of 0.01 (z = 4.779, p = 0.000 < 0.01), indicating that the expectation confirmation of achievement needs will have a significant positive impact on satisfaction.

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When the expected confirmation of social needs affects satisfaction, the standardized path coefficient is 0.189 > 0, showing a significant level of 0.01 (z = 2.89, p = 0.004 < 0.01), indicating that the expected confirmation of social needs will have a significant positive impact on satisfaction.

When perceived usefulness affects satisfaction, the standardized path coefficient is 0.341 > 0, showing a significant level of 0.01 (z = 3.716, p = 0.000 < 0.01), indicating that perceived usefulness will have a significant positive impact on satisfaction.

The expectation confirmation of personality needs does not show a significant effect on satisfaction (z = 1.882, p = 0.237 > 0.05), indicating that the expectation confirmation of personality needs does not have an impact on satisfaction.

When perceived usefulness affects the continued consumption intention, the standardized path coefficient is 0.434 > 0, showing a significant level of 0.01 (z = 5.856, p = 0.000 < 0.01), indicating that perceived usefulness will have a significant positive impact on the continued consumption intention.

When satisfaction affects the continued consumption intention, the standardized path coefficient is 0.452 > 0, showing a significant level of 0.01 (z = 6.173, p = 0.000 < 0.01), indicating that satisfaction will have a significant positive impact on the continued consumption intention.

Table 10: Effect proportion (bootstrap method)

Item	c Gross effect	a	b	c' Direct effect	a*b Mediation effect value	a*b 95% BootCI	Formula	Proportion of effect	Conclusion
AE =>S =>I	0.550**	0.676**	0.644**	0.115*	0.435	0.325 ~ 0.493	a * b / c	79.088%	partial mediation
SE =>S =>I	0.543**	0.631**	0.644**	0.136**	0.407	0.285 ~ 0.442	a * b / c	74.933%	partial mediation
PE =>S =>I	0.676**	0.641**	0.498**	0.357**	0.319	0.231 ~ 0.368	a * b / c	47.16%	partial mediation
PU =>S =>I	0.719**	0.682**	0.468**	0.400**	0.319	0.219 ~ 0.366	a * b / c	44.405%	partial mediation

As shown in Table 10, using the Bootstrap method, the data were iterated 2000 times at a confidence level of 95%, and the mediating effect was analyzed. The 95 % confidence interval of each path does not contain 0, which verifies the existence of the mediating role of satisfaction. Among them, the mediating effect of satisfaction between achievement expectation, social expectation, personality expectation, perceived usefulness, and continued consumption intention accounted for 79.088%, 74.933%, 47.16 % and 44.405% respectively. (Among them, AE represents achievement expectation, SE represents social expectation, PE represents personality expectation, PU represents perceived usefulness, S represents satisfaction, and I represent continued consumption intention.)

Table 11: Hypothesis test summary

Serial number	Hypothesis	Result

H1a	The expectation of confirmation of social needs positively affects the satisfaction of mobile game players when purchasing virtual products.	support
H1b	The expectation of confirmation of achievement needs positively affects the satisfaction of mobile game players when purchasing virtual products.	support
H1c	The expectation confirmation of personality expectation positively affects the satisfaction of mobile game players to purchase virtual products.	Not supported
H2	Perceived usefulness positively affects the satisfaction of mobile game players when purchasing virtual products.	support
H3a	Satisfaction positively affects the willingness of mobile game players to continue to consume virtual goods.	support
H3b	Perceived usefulness positively affects the willingness of mobile game players to continue to consume virtual goods.	support
H4	There are age differences in the willingness of mobile game players to continue to consume virtual products.	support
H5	There are gender differences in the willingness of mobile game players to continue to consume virtual products.	support

Based on the above analysis, it is shown that H1a, H1b, H2, H3a, H3b, H4, and H5 are supported by the original data of the questionnaire. As shown in Table 11.

5. Conclusion
Through the analysis of 372 data collected, the following conclusions are drawn:

1. Players' perceived usefulness of the game, expectation confirmation of achievement needs, and expectation confirmation of social needs directly and positively affect satisfaction, while personality expectations have no impact on satisfaction.

It can be seen from the ECM and TAM models that perceived usefulness and expectation confirmation will have an impact on satisfaction and further affect satisfaction. The conclusion of this article also verifies this theory. As a 5v5 mobile game, "Honor of Kings" has a large number of players, and its social attributes are very obvious. Whether players interact through games or purchase virtual products as gifts to others, expected social needs and expectations can be met, thereby affecting satisfaction. The display of ranks and rankings in "Glory of Kings," as well as the joy of defeating enemies and winning, all stimulate players to continue participating in the game. After obtaining the expected rank or ranking, the player's achievement expectations are confirmed, thereby increasing their satisfaction with the game. Perceived usefulness is to provide players with level growth or skill effects through virtual products. When the virtual products purchased by players meet this expectation, their satisfaction with the game will also be improved.

2. Players' perceived usefulness and satisfaction with the game directly and positively affect their continued consumption intentions.

In "Honor of Kings," virtual goods such as skins and personalized buttons can improve players' combat effectiveness, increase their sense of involvement in the game, and ultimately improve the game experience. When players believe that the purchased virtual goods are helpful for them to succeed in the game, improve the game experience, or achieve game goals, perceived usefulness can directly affect the player's continued consumption intention. When players experience the actual value brought by purchasing virtual goods, build trust with the game platform, and generate high satisfaction, they also directly form a willingness to continue consumption.

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3. Satisfaction plays a partial mediating role among achievement expectations, social expectations, personality expectations, perceived usefulness, and continued consumption intention.

Consumer satisfaction will directly and positively influence consumers' continued purchase intention on the platform, according to a review of relevant literature. Among them, the mediating variable satisfaction has an almost decisive impact on consumers' continued purchase intention. Players are usually satisfied when the virtual goods they purchase help them succeed in the game, improve their gaming experience, or achieve their game goals. This satisfaction makes players more willing to continue participating in the game and generates a continued willingness to purchase virtual goods. Therefore, satisfaction plays a partial mediating role between perceived usefulness and continued consumption intention. Similarly, through games or virtual products, players can achieve the expected degree of social need confirmation, achievement need confirmation, and personality need confirmation, which in turn increases their satisfaction and encourages continued purchase intention. Therefore, satisfaction plays a partial mediating role among achievement expectations, social expectations, personality expectations, and continued consumption intentions.

4. Players' willingness to continue consuming virtual products differs by gender and age.

In terms of player gender and age, according to the results of the t-test and variance test, the results are consistent with previous studies showing differences in consumption intentions between male and female players. With social progress and economic development, women are becoming the main consumers in many industries. According to the official data released by "Honor of Kings", the number of female players in "Honor of Kings" is greater than that of male players. On the same basis, the general female players' game understanding and operation level will be slightly lower than that of male players, so they may need to purchase more. To win the game, virtual products improve combat effectiveness, resulting in a better gaming experience. In addition, women, as representatives of sensibility, prefer good-looking decorations to male players. This is partially consistent with the design concept of virtual products such as skins and customized products in "Honor of Kings", thus leading to continued consumption of virtual products by female players. Willingness is stronger than male players. Mobile games, like portable games, are open to people of all ages, but consumption within the game requires a certain economic foundation. Therefore, the continued consumption willingness of young players under the age of 18 cannot be well satisfied, and 18 Players over 10 years old have relatively no financial worries. As the main force of the mobile game "Honor of Kings", young players aged 18-28 have relatively sufficient time and energy and do not have family burdens, so they have the highest willingness to continue consumption.

Recommendations: First, make and meet the player's expectations for confirmation. Therefore, through marketing, game companies can let players understand the appearance, sense of use, and other characteristics of virtual products, form an expectation confirmation of one or more aspects of virtual products, and finally meet players ' expectations with high-quality virtual products, guiding players to form a virtuous circle of expectations and satisfaction expectations. It can also be classified by user portraits to grasp the target consumption. Therefore, user portraits can be used to guide different types of players. For example, by classifying the number of consumption amounts or gender, a more effective player retention strategy can be formulated for different behaviors and psychology, and a more robust game ecosystem can be established. In addition, it is necessary to improve quality, continue to innovate, and maintain the long-term investment of players. While improving the quality of the game, the company can constantly enrich and expand the game worldview, develop new gameplay, introduce new characters and new accessories, increase playability and fun, and maintain the long-term investment of players to achieve continued consumption.

Shortcomings: First of all, this study has the limitations of the sample. Sichuan and Guangdong are the primary sources of respondents, with the majority being young gamers under 28 years old. In the future, it may be necessary to increase the survey area and age range to ensure representativeness. The second issue concerns the limitations of the model. The factors that affect the player's continued consumption intention are

very rich. Therefore, there are deficiencies in the selection of core variables, such as loyalty, risk perception, perceived value, etc. Conducting research on other core factors can improve the comprehensiveness and depth of the research. In addition, there are limitations to the research object. Although 'Honor of Kings' is a popular game for many players, there is a specific situation limited to a single game. In other scenarios, it is necessary to conduct subsequent game research.

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