

# The Effect of Consumption Values on Purchase Behavior for Virtual Goods in Mobile Game

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**Abstract.** The purpose of this study was to investigate the impact of the users' perceived consumption values on their purchase behavior for virtual goods in mobile game. Through the summary of the previous research results, the consumption values, consumer attitude, purchase intention and purchase behavior were selected to form the model. In this study, a total of 1097 game users took part in the survey through online. Data was analyzed and measured by Spss25 and Amos 23 software. Finally, this paper proved some specific marketing suggestions for game developers and game operators according to the results of analysis.

**Keywords:** Mobile game; Virtual goods; Consumption values; Purchase behavior.

## 1. Introduction

It can be seen that mobile games have developed rapidly and become the core of the game industry with the popularity of smart phones and the continuous improvement of communication technology. According to the statistics of mobile game development report in 2018, the game players of China reached 6.26 billion in 2017 with an increase of 2.7% over the same period last year and a per capital consumption of 900 yuan. In view of it, mobile games accounted for a large proportion of sales revenue, which reached 214.4 billion yuan with an increase of 5.3% over the same period last year, accounting for 23.6% of the global game market. As a result, China has a huge mobile game market from the aspect of scale. However, the growth rate had declined significantly compared with the previous 2010-2017 though the mobile game market continued to grow in 2018 from the aspect of growth rate.

As for the phenomenon of the growth rate of China mobile game market has slowed down, it is firstly the impact of demographic dividend, since it has begun to decrease and the competition in the game market has intensified. Secondly, it exists serious phenomenon of homogenization in the game on the market in terms of game quality, in which most mobile games have a short life cycle, and many game users can easily change from one game to another. Thirdly, it does not find stable profit model in the aspect of game payment. At present, the two relatively large game operators in the Chinese game market are Tencent and NetEase, in which their *Glory of Kings* and *Fantasy Westward Journey* are very popular among the young people. These games have adopted the way of playing free of charge at the beginning in addition to the excellent production and quality assurance. While the virtual goods in the game adopt the mode of purchase, which allows the player to obtain the game experience that is different from the free player through the payment, so as to promote the consumption of the game users and achieve a great success.

What mobile games in the future need to do is to grasp the needs of users more accurately as well as understand the consumer psychology and behavior habits of users as the competition becomes more and more fierce. In this study, it divides the perception of consumption values of virtual goods into three aspects, such as functional value, social value and emotional value, and analyzes their impact on the final purchase behavior of mobile game users to virtual goods, which is carried out through the collation of previous research results, such as mobile game business model and consumer behavior theory. Finally, it provides some suggestions of game design for relevant game developers and operators from the perspective of user player experience in this paper according to the results of empirical analysis.

## 2. Literature Review

### 2.1 Virtual Goods

In terms of mobile game, it is defined as the participation of game application services through connecting mobile internet, which is developed on the basis of mobile devices such as mobile phones, tablets, etc. Compared with traditional PC games, mobile game has a larger user base due to the convenience, inclusiveness and interaction of its terminals. As for the most common mode of consumption in the mobile game market, it is the download by payment, the payment of props, and the placement of advertisements. Since free games occupy the current mainstream, game operators can only obtain the benefits from players if they want to make a profit. As a result, they develop a variety of virtual goods in the game, which can let players get a better game experience while increasing profits. In this paper, what virtual goods mainly refer to is props, currencies and some game content being not provided for free that can be obtained through payment in mobile games. At the same time, the props can be divided into functional ones and non-functional ones, in which the functional props mainly include virtual equipment and items in the game. While non-functional props can bring players the psychological superiority, such as fashion, pet, mount and so on that do not affect the game balance. When it comes to virtual currency, it itself is not currency, but an intermediary for players to buy virtual goods in the game, in which players obtain virtual currency in the game by paying RMB, and then buy the virtual goods needed by virtual currency in the game mall.

### 2.2 Theory of Consumption Values

As for the theory of consumption values, it was first put forward by Sheth et al. [1]. In this theory, it believes the reason why consumers buy goods or services is that they think they can get the corresponding value by buying goods or paying for them, which is widely used to analyze consumers' consumption behavior and consumption habits. It can be seen that TCV has been successfully applied to various consumption fields in the past research, especially in the field of electronic consumption, which has been used to study the purchase of digital products, information payment system and mobile payment system. For example, Lee et al.[2] used TCV to analyze the consumption attitude of mobile phone payment in Japan and South Korea.

In this paper, it analyzes the consumer value perception of virtual goods in mobile games from the three dimensions, such as functional value, emotional value and social value. In the mobile game, what the functional value refers to is the value that the virtual goods meet the basic function demand of the player in the game, such as strengthening the character, conquering the opponent, achieving good performance, passing through the game, etc. What social value refers to is to reflect social status, and improve self-satisfaction of players, as well as obtain value in a certain social group through the virtual goods. And what emotional value refers to is the value brought by pleasure and satisfaction felt by the player in the process of using the virtual goods.

### 2.3 Purchase Behavior

Since the introduction of TAM model by Davis [3], the attitude of technology users is considered an important determinant of the adoption of information systems. Besides, Kroenung & Eckhardt [4] transplanted the viewpoint of the situational factors of social psychology on the influence of attitude and behavior to the field of information system. After the analysis, it is found that there exists a strong causality between attitude and behavior. According to the study, it also finds that the relationship between attitude and behavior depends on the situational factors related to attitude. However, the attitude of consumers towards the purchase of virtual goods depends on their perception of the situational factors in the course of the game in this paper.

In terms of purchase intention, it is a kind of behavior intention, and it is a measure of the possibility that consumers are going to buy a product, in which the stronger the consumer's intention to buy, the greater the likelihood of buying. According to many previous studies of Schiffman, the purchase intention has been proved to be an important indicator to predict consumption behavior.

Scholars from home and abroad have started to study the network purchase behavior of consumers in the context of the Internet with the rapid development and widespread use of the Internet. According to the research of Salisbury et al. [5], they believed that the intention of the network purchases the intensity of consumers' willingness to perform a particular purchase behavior on the Internet. The purchase intention in this study refers to the intensity of willingness to buy virtual goods in mobile games.

### 3. Methodology

#### 3.1 Research Model

Based on previous findings in this domain, a model (Fig. 1) was designed to investigate the effect of consumption values on purchase behavior of virtual goods in mobile game. Consumption values include three variables: functional value, social value and emotional value. In this study, consumer attitude and purchase intention were introduced as the intermediary variables. Purchase behavior was the dependent variable. The model is confirmed by the reliability analysis, validity analysis, correlation analysis, confirmatory factor analysis based on a questionnaire.

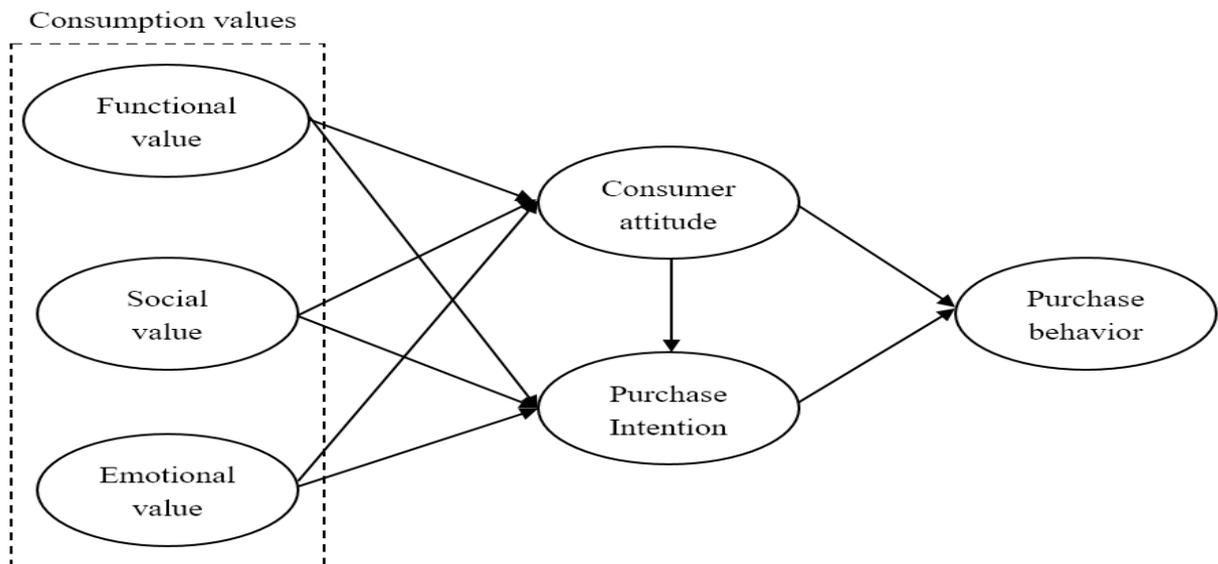


Fig. 1 Research Model

#### 3.2 Research Hypothesis

- H1a Functional value has a positive effect to consumer attitude for virtual goods in Mobile game.
- H1b Social value has a positive effect to consumer attitude for virtual goods in Mobile game.
- H1c Emotional value has a positive effect to consumer attitude for virtual goods in Mobile game.
- H2a Functional value has a positive effect to purchase intention for virtual goods in Mobile game.
- H2b Social value has a positive effect to purchase intention for virtual goods in Mobile game.
- H2c Emotional value has a positive effect to purchase intention for virtual goods in Mobile game.
- H3 Consumer attitude has a positive effect to purchase intention for virtual goods in Mobile game.
- H4 Consumer attitude has a positive effect to purchase behavior for virtual goods in Mobile game.
- H5 Purchase intention has a positive effect to purchase behavior for virtual goods in Mobile game.
- H6 Consumer attitude has a mediation effect between consumption values and purchase behavior in mobile game.
- H7 Purchase intention has a mediation effect between consumption values and purchase behavior in mobile game.

## 4. Data Analysis

### 4.1 Sample Analysis

During the two-month posting, 1097 mobile game users completed the survey. In the process of data collection, 113 surveys were eliminated because some participant response was not complete or ture, so 984 complete surveys were obtained with an efficient rate of 89.7%. 57.3% of the mobile game users were male; 42.7% of the mobile game users were female. 59.7% of the respondents were between ages 18 and 27. 67.2% of the respondents were undergraduates. The monthly expenses of 60.8% respindents was between 1500-2000 yuan. 35.7% of the respondents mainly palyed mobile game at home; 26.8% of the respondents played mobile game in school or in company.

A confirmatory factor analysis(CFA) was used to asses reliability, convergent validity and discriminant validity of the measurement scales[6]. The results were shown in Table 1. All of the fator loadings were greater than 0.85. Cronbach's  $\alpha$  of all the variables in this study are more than 0.7. CR and AVE values of all the variables were more than 0.8 and 0.7 respectively. The results proved that the constructs and measurement scales met reliability, convergent validity, and discriminant validity requirements. The results proved that the constructs and measurement scales could be used to test research hypotheses.

Table 1. Confirmatory Factor Analysis Results

Variables	Items	Factor loading	S.E.	Std. loading	t-value	CR	AVE	Cronbach's $\alpha$
Functional value (5)	FV1	1	-	0.839	-	0.927	0.716	0.927
	FV2	1.004	0.030	0.843	33.449***			
	FV3	1.018	0.030	0.857	34.340***			
	FV4	1.043	0.031	0.850	33.896***			
	FV5	1.009	0.030	0.843	33.449***			
Social value (4)	SV1	1	-	0.862	-	0.911	0.720	0.911
	SV2	0.977	0.027	0.853	35.633***			
	SV3	0.988	0.028	0.854	35.708***			
	SV4	0.900	0.027	0.825	33.587***			
Emotional value (4)	EV1	1	-	0.849	-	0.914	0.727	0.914
	EV2	1.025	0.029	0.854	34.819***			
	EV3	0.977	0.029	0.844	34.103***			
	EV4	1.022	0.029	0.863	35.472***			
Consumer attitude (4)	CA1	1	-	0.823	-	0.905	0.703	0.906
	CA2	1.025	0.032	0.840	32.099***			
	CA3	1.008	0.031	0.841	32.171***			
	CA4	1.030	0.031	0.850	32.710***			
Purchase intention (4)	PI1	1	-	0.844	-	0.907	0.710	0.909
	PI2	1.006	0.030	0.845	33.945***			
	PI3	0.943	0.029	0.828	32.832***			
	PI4	1.049	0.030	0.854	34.604***			
Purchase behavior (2)	PB1	1	-	0.855	-	0.837	0.719	0.836
	PB2	0.941	0.029	0.841	32.644***			

\*\*\* $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ .

## 4.2 Hypothesis Test

The Hypothesis test results are shown in Table 2.

Table 2. Results of Hypothesis Test

Hypothesis	Path	Std. Coefficient	t-value	Result
H1a	CA <--- FV	0.282	4.214***	Supported
H1b	CA <--- SV	0.355	5.188***	Supported
H1c	CA <--- EV	0.309	4.303***	Supported
H2a	PI <--- FV	0.269	4.025***	Supported
H2b	PI <--- SV	0.214	2.968*	Supported
H2c	PI <--- EV	0.263	3.595***	Supported
H3	PI <--- CA	0.243	2.993*	Supported
H4	PB <--- CA	0.387	3.894***	Supported
H5	PB <--- PI	0.559	5.737***	Supported

\*\*\* $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ .

Functional value, social value and emotional value all have a positive(+) effect on consumer attitude for virtual goods in mobile game. In hypothesis 2, Functional value, social value and emotional value all have a positive(+) effect on purchase intention for virtual goods in mobile game. Hypothesis 3, consumer attitude has a positive(+) effect on purchase intention for virtual goods in Mobile game. At last, consumer attitude and purchase intention both have a positive(+) effect on purchase behavior for virtual goods in mobile game.

Intermediate effect test results are shown in Table 3.

Table 3. Analysis of Mediating Effects

Path	Lower Bounds (BC)	Upper Bounds (BC)
PB <--- CA <--- FV	0.336	0.643
PB <--- CA <--- SV	0.267	0.587
PB <--- CA <--- EV	0.219	0.544
PB <--- PI <--- FV	0.395	0.736
PB <--- PI <--- SV	0.332	0.634
PB <--- PI <--- EV	0.269	0.616

In hypothesis 6, the relationship between variables of consumption value and purchase behavior was mediated by consumer attitude. Hypothesis 7, purchase intention has a mediation effect between consumption values and purchase behavior in mobile game.

## 5. Conclusion

It can obtain the following suggestions on the operation and marketing of the virtual goods of mobile game according to the results of this study, which can provide some references for relevant mobile game operators and developers.

Firstly, the games themselves with high quality are helpful for the better sale of virtual goods of mobile games. On the basis of the analysis of the results of the questionnaire, it is found that the function value in the perceived value generates the largest influence on the consumer's attitude and the purchase intention, and the mobile game has a good performance, a fine picture and a stable game

experience in the quality of the game itself and the virtual goods. It has the playing ways of PVE and PVP, in which the good game experience of the two is based on the quality of the game itself. As a result, the consumer pays more attention to the quality of the virtual goods of the mobile game when it is compared with the other two perceived values. It is because that mobile game has portability and is easier to use when it is compared with traditional PC games. The performance of mobile phone hardware can control higher quality games with the rapid development of mobile phone hardware over the years, so game developers should pay more attention to the improvement of the function and quality of virtual goods in the game.

Secondly, the emotional value can do much favor in stimulating the consumer's purchase of the virtual goods in mobile game. The virtual goods sold in the mobile phone game will be updated every time when the game itself is updated and launched. The new pets, skin and head frames can make most consumers feel beautiful, which thus can meet the emotional needs of consumers. Besides, it is found that emotional value has the greatest impact on purchase behavior according to the empirical analysis results, which can meet the aesthetic, novelty, achievement and other emotional value needs of consumers, thus increasing the number of consumers' impulse consumption and sustainable consumption. In view of it, operators need to accurately grasp the emotional value of players and launch virtual goods that meet the emotional needs of players in the course of game operation.

Thirdly, it should strengthen the development of social system that can promote players' communication in mobile games. For most mobile games, it exists social systems. Many studies have found that the player and the player can maintain close contact through the community system in the game, so as to find a stronger sense of belonging. The discussion and communication between the players after buying the virtual goods can improve the player's satisfaction in the game. Thus, mobile game developers need to design a community system with more abundant communication contents and more convenient communication way.

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