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Identifying Factors Influencing Continuance Intention and Actual Behavior of Online Computer Games in Chongqing, China

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Abstract

Purpose: This research aims to identify the factors influencing students' continuance intention and actual behavior of online computer games in Chongqing, China. Seven variables were used to construct a conceptual framework of this study including attitudes, utilitarian outcome expectations, hedonic outcome expectations, subjective norms, time constraint, continuance intention and actual behavior. **Research design, data and methods:** The data were collected from 500 participants. Nonprobability sampling were accounted, including judgmental sampling, quota sampling and convenience sampling. The index of item-objective congruence (IOC) and Cronbach's Alpha were assessed to approve validity and reliability before the data collection. Structural equation model (SEM) and confirmatory factor analysis (CFA) were applied in the statistical analysis, including goodness of fit indices, reliability and validity. **Results:** Attitude, utilitarian outcome expectation, hedonic outcome expectation, subjective norms, time constraints significantly influence continuance intention. Furthermore, the continuance intention has the strongest influence on the actual behavior of online computer games among students. **Conclusions:** The results provide online computer game practitioners with a knowledge on how to improve users' intention to play and actual playing behavior. For managerial implications, game developers and marketers are recommended to design and promote the features of online computer games to enhance users' continuance intention and actual behavior.

Keywords: Utilitarian Outcome Expectations, Hedonic Outcome Expectations, Subjective Norms, Continuance Intentions, Actual Behavior.

JEL Classification Code: E44, F31, F37, G15

1. Introduction

Computer games are popular in the today's world. In social context, computer games have been the mainstream value of society. On the other hand, computer games break out of the boundary of people, and sharpen cultural charm, reflecting its unique influence in the economy, culture, social life and people's virtual world. Therefore, it is necessary to rethink the value of computer games, the rationality of their existence, and the significance. At the same time, college students are the majority group of computer game players, revealing the significant influence

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of computer games on behavior of this particular group (Zhang, 2012). The characteristics of computer games can be simply elaborated. First, the attitude of using computer games is voluntary activities of the players. Second, the relationship between computer games and daily activities are common. Computer games break people away from real life and enter a temporary realm of activity. Third, the peoples' isolation is the effect of computer games. Games are confined to be the boundary that may be either physical or imaginary. Fourth, the subjective norm has a great impact on people's trial and continuance intention to engage computer games. Fifth, the utilitarian and hedonic nature of computer games are important because players perceive pleasure and expected results from play games.

The game theory at the social and psychological levels mainly focuses on the aspects that games can release social pressure, obtain spiritual liberation and freedom, meet people's various psychological needs, and fulfill people's pursuit of novelty and stimulation. Early sociologists posted that a game is a kind of social activity that is seemingly useless, but makes people feel a psychological experience different from their daily life and helps them release the stress. A number of literatures also show that playing games is a behavioral activity to improve skills in order to overcome challenges, which is fundamentally a learning experience. They believe that games can stimulate learning, cultivate the ability to solve problems, and enhance creative and critical thinking (Ma, 2008).

Several scholars studied students in the United States and Australia found that computer games have negative correlations between socialization, activity participation, mental health, and self-awareness among teenagers as they play computer games to compete more than for socialization. The conclusion can be drawn that computer games can ensure a life skill, but can also damage physical and mental health (Wack & Tantleff-Dunn, 2009). British scholars pay attention to computer games and teenagers' satisfaction. Through quantitative research, it is found that teenagers play games for companionship, communication, challenges, and relaxation (Colwell, 2007). Therefore, this research pointed the factors influencing students' continuance intention and actual behavior of online computer games in Chongqing, China for game developers and marketers to better design and promote the features of online computer games.

2. Literature Review

2.1 Attitude

In some studies, researchers have suggested antecedent factors for the formation of attitudes toward game advertisements, but not many studies examine the determinants of attitudes among gamers. They believe that attitudes affect continuance intention to some extent (Valkenburg & Cantor, 2002). Attitudes should be categorized as cognitive awareness towards the environment and undertaking some behavior in a particular situation (Fishbein & Ajzen, 1975). Personal attitudes have been confirmed to be crucial in the prediction of continuance intention (Luo et al., 2011). An attitude represents an evaluative integration of cognitions and experience in relation to an object (Kitcharoen & Vongurai, 2021). Attitudes are the judgments that integrate and summarize these cognitive/affective reactions. These abstractions vary in strength, which in turn has implications for continuance intention (Crano & Prislin, 2006). Hence, we hypothesize:
H1: Attitude has a significant influence on continuance intention of students to play online computer games.

2.2 Utilitarian Outcome Expectations

Utilitarian outcome expectations dimension of consumption includes pragmatism and economic value or convenience (Babin et al., 1994). In other words, utilitarian outcome expectations and hedonic outcome expectations decisions are related to thinking or feeling, focusing on the psychological aspect (Oliver, 1993). The former researchers described stress as "outcomes", while the some captures it as "emotions" towards a behavior. Hedonic and utilitarian consumption are two important aspects as affirmed by previous researchers (Babin et al., 1994). Consumers experience of consumption values relates to their activities of playing online games on any electronic device (Ng, 2012). In addition, hedonic and utilitarian consumption values are also influenced by gamification marketing activities, which leads to desirable consumer behaviors in the analysis (Hsu & Chen, 2018). Therefore, a hypothesis proposes the significant relationship between utilitarian outcome expectations and continuance intention of players per below:
H2: Utilitarian outcome expectations have a significant influence on continuance intention of students to play online computer games.

2.3 Hedonic Outcome Expectation

Holbrook and Hirschman (1982) put forward the concept of hedonic value deriving from customers' experiential process, namely customer satisfaction based on emotion and experience. Computer games are designed for both hedonic and utilitarian purposes. For instance, game players may be motivated by utilitarian aspects of games, such as earning money, winning prizes or levels (Lepper et al., 1973). Some research points out that online computer games ought to combine entertaining value and utilitarian value in an organic way. Such finding is in consistency with earlier

works that sub-category of games are indispensable from hedonic and utilitarian perceptions (Storgards et al., 2009). In the light of this, hedonic outcome expectations significantly influence on continuance intention to play online computer games and a following hypothesis is developed:

H3: Hedonic outcome expectations have significant influence on continuance intention of students play online computer games.

2.4 Subjective Norm

Subjective norms are associated with how an individual perceives social pressure involved in doing or not doing a particular behavior (Kim et al., 2009). In other words, subjective norms are related to an individual's perceptions about how his or her friends, neighbors, family members, colleagues think he or she should or should not perform a particular behavior (DeMaagd et al., 2013). For instance, in subjective norm, the use of social technologies and social support are factors that influence users' behavior in this context (Fan et al., 2021; Yoon & Rolland, 2015). Studies in information system usually engage the subjective norm that has been put forward as a conceptualization and measure of technology adoption (Ajzen, 1991). Despite the fact that online game players' psychological needs are classified as self-esteem, self-actualization, and subjective norms (Huang et al., 2011). Subjective norms or social influence can greatly enhance the continuance intention of players to engage with online computer games. Based on these assumptions, a hypothesis can be derived:

H4: Subjective norm has significant influence on continuance intention of students to play online computer games.

2.5 Time Constraint

Time constraint is defined as the opportunity cost when it comes to time spending with personal computer games by game players (Chen, 2011). The principle of time constraint refers to that the more constraint the administrative time plan is, the less likely the loss will be caused by future incidents (Jordan & Graves, 1995). Time constraint is the measurement for the extent to which a game user accesses to a mobile social game at any time and have control over the time allocated to the playing (Wei & Lu, 2013). Time constraint seems to have an influence on continuance intention. In China, smartphones can work as well as computers when it comes to writing e-mails, browsing websites, and accessing social networks such as QQ, WeChat and Weibo (Wagner, 2011). In this sense, time constraint associated with the game play significantly influence player's continuance intention. Thus, it suggests a hypothesis:

H5: Time constraint has a significant influence on continuance intention of students play online computer games.

2.6 Continuance Intention

Continuance intention refers to an individual's psychological intent to do something on a consistent basis (Ajzen, 1991). To explain this concept, the theory of planned behavior is usually drawn upon the theoretical basis of its established status as socio-psychological conceptual framework for the interpretation of human intents and behavior. Continuous usage intention is deemed as cumulative feelings developed through times of interactions (Oliver, 1980). Mobile AR games are new media that are oriented towards experience, satisfaction, particular needs and motivations of users, which will in turn trigger reuse intentions towards the specific game (Rauschnabel et al., 2017). Continuance intention in the case of game play is greatly impact the actual behavior. Thereby, online game industry practitioners can gain benefit from a clear understanding of the drivers behind players' continuance intention and actual behavior (Wu & Liu, 2007). Continuance intention is considered to be positively affected by perceived behavioral control in the theory of planned behavior (Ajzen, 1991). To elaborate this, a hypothesis is indicated:

H6: Continuance intention has a significant influence on actual behavior of students to play online computer games.

2.7 Actual Behavior

The actual behavior refers to the performance of the actual behavior being measured (Ajzen, 1991). The actual behavior has been widely explored in the technology adoption model or system use (Davis et al., 1989). In this study, the actual behavior is how students actually engage with computer games. Actual use can also be the frequency or degree of the use of the system (Wu & Liu, 2007). Actual behavior is explained whether and how frequent the students actually use a computer to play games. Cao and Jittawiriyanukoon (2022) studied on actual use of online learning system among students, during the pandemic based on the technology adoption theories. This study points out that actual behavior is predicted by continuance intention to play computer games.

3. Conceptual Framework

Seven variables were used to construct a conceptual framework of this study including attitudes, utilitarian outcome expectations, hedonic outcome expectations,

subjective norms, time constraint, continuance intention and actual behavior. Four previous studies were used to construct a model (Chang et al., 2014; Chinomona, 2013; Jose & Sia, 2022; Wang et al., 2020) The conceptual framework of this study is illustrated in Figure 1. Furthermore, six hypotheses are summarized.

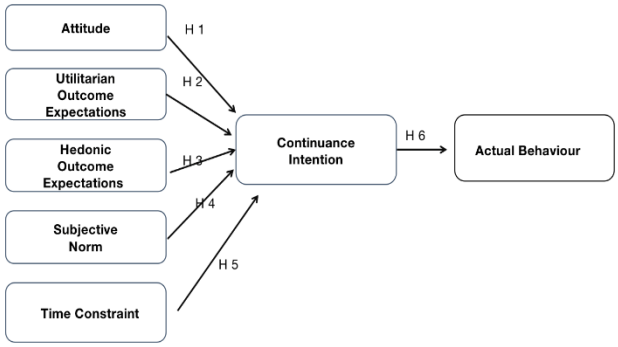

Figure 1: Conceptual Framework
Source: Created by the author.

H1: Attitude has a significant influence on continuance intention of students to play online computer games.
H2: Utilitarian outcome expectations have a significant influence on continuance intention of students to play online computer games.
H3: Hedonic outcome expectations have significant influence on continuance intention of students to play online computer games.
H4: Subjective norm has a significant influence on continuance intention of students to play online computer games.
H5: Time constraint has a significant influence on continuance intention of students to play online computer games.
H6: Continuance intention has a significant influence on actual behavior of students to play online computer games.

4. Research Methods and Materials

4.1 Research Methodology

This quantitative research aims to distribute survey to the target population which are undergraduate students in Universities in Chongqing, China. Data were collected and analyzed on key influencing factors of continuance intention toward actual behavior of students to play online computer games. The survey consists of three parts which are screening questions, 5-point Likert scale of measuring items from strongly disagree (1) to strongly agree (5), and demographic questions. Prior to the data collection, index of item-objective congruence (IOC) was employed with three experts, resulting all items were approved at a score 0.67 or above. Besides, Cronbach's Alpha was applied in a pilot test of 30 participants, resulting with all internal consistency of all constructs were approved at a score 0.70 or above (Nunnally & Bernstein, 1994). The data analysis involves Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM).

4.2 Population and Sample Size

The target population is undergraduate students in universities in Chongqing, China, who have been using three mobile game applications; PUBG, League of Legends, and Arena of Valor. According to Kline (2011), the minimum sample size was recommended to be at least 200. After a data screening process, researcher considers to use 500 questionnaires.

4.3 Sampling Techniques

The sample techniques used nonprobability sampling, including judgmental sampling, quota sampling and convenience sampling. Firstly, the judgmental sampling was accounted to select the top three online computer games in China. Next, quota sampling was to calculate each subgroup of the total population of 274,000 as shown in Table 1, derived from each company's marketing report. Lastly, convenience sampling was online survey distribution through social networks such as WeChat, Alipay and Email. The data were collected over a period of about six months between January and June 2022.

Table 1: Sample Units and Sample Size

Application (Mobile)	Population	Proportional Sample Size
PUBG	83,000	151
League of Legends	79,000	144
Arena of Valor	112,000	205
Total	**274,000**	**500**

Source: Created by the author

5. Results and Discussion

5.1 Demographic Information

Demographic results of 500 participants are shown in Table 2. 67% of the respondents were male and 33% were female. In terms of age group, the largest age group in this study was 18-22 years old, accounting for 69%, followed by 23-25 years old of 27.2%, and 26-30 years old of 3.8%. In this study, 29.4% of the participants were freshmen, 24.8% of sophomores, 17.6% of juniors, and 28.2% of seniors. For

the time spent in online computer games, 55.4% and 28.8% were 1-2 hours and 2-3 hours per day, while 15.8% was more than 3 hours per day.

Table 2: Demophraphic Profile

Demographic and Behavior Data (N=500)		Frequency	Percentage
Gender	Male	335	67
	Female	165	33
Age	18-22 years old	345	69
	23-25 years old	136	27.20
	26-30 years old	19	3.8
Year of Study	Freshman	147	29.40
	Sophomore	124	24.80
	Junior	88	17.60
	Senior	141	28.20
Frequency of Play Per Day	An hour	277	55.40
	Two to three hours	144	28.80
	Over three hours	79	15.80

Source: Created by the author

5.2 Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) was used to test measurement model. All items in each variable are significant and represent factor loading to test discriminant validity. The significance of factor loading of each item and acceptable values indicate the goodness of fit (Hair et al., 2006). In Table 3, Cronbach's Alpha results were acceptable at a score 0.70 or above (Nunnally & Bernstein, 1994). Furthermore, factor loadings show the greater value than 0.30 and p-value is lower than 0.05. The construct reliability is greater than the cut-off points of 0.7 and the average variance extracted was greater than the cut-off point of 0.5 (Fornell & Larcker, 1981). Consequently, all estimates are significant

Table 3: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire (Measurement Indicator)	No. of Item	Cronbach's Alpha	Factors Loading	CR	AVE
Attitude	Lee and Choi (2009)	3	0.819	0.728-0.825	0.821	0.605
Utilitarian Outcome Expectations	Chang et al. (2014)	5	0.828	0.639-0.766	0.838	0.509
Hedonic Outcome Expectations	Chang et al. (2014)	3	0.761	0.699-0.753	0.763	0.518
Subjective Norm	Chang et al. (2014)	3	0.762	0.691-0.772	0.770	0.528
Time Constraint	Wei and Lu (2013)	3	0.752	0.628-0.778	0.775	0.508
Continuance Intention	Lee and Choi (2009)	3	0.893	0.834-0.900	0.892	0.734
Actual Behavior	Lee and Choi (2009)	3	0.863	0.734-0.878	0.869	0.691

Source: Created by the author

Goodness of fit for measurement model shows that all statistical values were acceptable per the criteria used, CMIN/DF, GFI, AGFI, NFI, CFI, TLI and RMSEA indicate measurement model fit, which can guarantee the convergent validity and discriminant validity as shown in Table 4

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	≤ 5.0 (Wheaton et al., 1977)	551.251/209 or 2.638
GFI	≥ 0.80 (Doll et al., 1994)	0.908
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.878
NFI	≥ 0.80 (Wu & Wang, 2006)	0.909
CFI	≥ 0.80 (Bentler, 1990)	0.941
TLI	≥ 0.80 (Sharma et al., 2005)	0.929
RMSEA	≤ 0.10 (Hopwood & Donnellan, 2010)	0.057
Model Summary		**In harmony with empirical data**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

Source: Created by the author.

According to Fornell and Larcker (1981), the square root of average variance extracted determines that all the correlations are greater than the corresponding correlation values of observed variables as of Table 5. Therefore, the convergent validity and discriminant validity were adequate.

Table 5: Discriminant Validity

	ATT	UOE	HOE	SN	TC	CI	AB
ATT	**0.777**						
UOE	0.422	**0.713**					
HOE	0.496	0.482	**0.719**				
SN	0.332	0.255	0.272	**0.726**			
TC	0.388	0.339	0.439	0.337	**0.712**		
CI	0.584	0.504	0.567	0.346	0.578	**0.856**	
AB	0.520	0.539	0.517	0.364	0.518	0.746	**0.831**

Source: Created by the author.

5.3 Structural Equation Model (SEM)

After the CFA testing, SEM was applied to assess structural model fit and hypotheses testing. According to Hair et al. (2010), SEM verifies the casual relationship among variables in a proposed model and encompasses

measurement inaccuracy in the structure coefficient. In Table 6, CMIN/DF, GFI, AGFI, NFI, CFI, TLI and RMSEA were in harmony with empirical data and acceptable fit.

Table 6: Goodness of Fit for Structural Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	≤ 5.0 (Wheaton et al., 1977)	777.421/201or 3.868
GFI	≥ 0.80 (Doll et al., 1994)	0.860
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.807
NFI	≥ 0.80 (Wu & Wang, 2006)	0.872
CFI	≥ 0.80 (Bentler, 1990)	0.901
TLI	≥ 0.80 (Sharma et al., 2005)	0.875
RMSEA	≤ 0.10 (Hopwood & Donnellan, 2010)	0.076
Model Summary		**In harmony with empirical data**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation
Source: Created by the author.

5.4 Research Hypothesis Testing Result

The research hypothesis testing results were measured as significance of each variable from its regression weights and R^2 variances. From Table 7, the results showed that all six hypotheses were supported with a significance at $p<0.05$.

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-value	Result
H1: ATT→CI	0.393	8.238*	Supported
H2: UOE→CI	0.302	6.079*	Supported
H3: HOE→CI	0.277	5.859*	Supported
H4: SN→CI	0.198	4.227*	Supported
H5: TC→CI	0.528	8.903*	Supported
H6: CI→AB	0.868	14.231*	Supported

Note: * p<0.05
Source: Created by the author.

In Table 7, the results can be further elaborated per followings:

H1: confirms the relationship between attitude and continuance intention of students to play online computer games with the standardized coefficient value of 0.393. Many scholars believe that attitudes affect continuance intention to some extent (Fishbein & Ajzen, 1975; Valkenburg & Cantor, 2002).

H2: supports the hypothesis of utilitarian outcome expectations and continuance intention with standardized coefficient value of 0.302. The former researchers described that player experience of game values relates to their continuance intention to play (Babin et al., 1994; Hsu & Chen, 2018; Ng, 2012).

H3: reveals that hedonic outcome expectations significantly influence continuance intention of students to play online computer games with standardized coefficient value of 0.277. Computer games are designed for game players who are motivated by expectations from the play, such as earning money, winning prizes or levels (Lepper et al., 1973; Storgards et al., 2009).

H4: approves that subjective norm has a significant influence on continuance intention of students to play online computer games with standardized coefficient value of 0.198. Subjective norms relate to an individual's perceptions about how his or her friends, neighbors, family members, colleagues think he or she should or should not perform a particular behavior (DeMaagd et al., 2013; Yoon & Rolland, 2015).

In **H5:** the relationship between time constraint and continuance intention is supported with standardized coefficient value of 0.528. Time constraint is the measurement for the extent to which a game user has access to a online game at any time and have control over the time allocated to the playing (Wei & Lu, 2013).

H6: validates that significant influence of continuance intention on the actual behavior of students to play online computer games with standardized coefficient value of 0.868. Continuance intention in the case of game play is greatly impact the actual behavior as aligned with previous studies (Oliver, 1980; Rauschnabel et al., 2017; Wu & Liu, 2007).

6. Conclusions and Recommendation

6.1 Conclusion

The objectives of this study are to explore what motivational factors determine users' continuance intentions and actual playing behaviors of gamers. The data results achieve these objectives by inferring the key factors, and by developing a conceptual framework. The analyses indicate that all constructs exceeded the established criteria for instrument reliability, convergent validity, and discriminant validity. The measurement and structural models demonstrated the goodness of fit and confirm causal relationships among factors in the model. The results supported all six hypotheses in this study.

Our results provide evidence that attitude, utilitarian outcome expectation, hedonic outcome expectation, subjective norms, time constraints significantly influence continuance intention. Furthermore, the continuance intention has the strongest influence on the actual behavior

of online computer games among students. First, the relationship between attitude and continuance intention of students to play online computer games. The results indicate that an attitude is innate motivation that makes students' continuance intention (Luo et al., 2011). Second, utilitarian and outcome expectations significantly influence continuance intention of gamers as they are attracted by the optimal experience with computer games (Babin et al., 1994; Hsu & Chen, 2018; Ng, 2012).

Third, continuance intention is impacted by hedonic outcome expectations. Online games are used to relax, escape from stress, and avoid responsibilities. Prior research has demonstrated that the hedonic outcome expectations are asserted in the design of social games providing enjoyment to users (Lepper et al., 1973; Storgards et al., 2009). Fourth, social interaction is an essential motivation factor as players want to interact with friends and to keep up social connections through social games. Therefore, subjective norms relate to an individual's continuance intention and explains how his or her friends, neighbors, family members, colleagues would encourage him or her to join the game (DeMaagd et al., 2013; Yoon & Rolland, 2015).

Next, the validation of a significant relationship between time constraint and continuance intention can lead to the discussion that time measurement is the extent to which a game users access a computer game at any time and have continuance intention to allocate their time for a game play (Wei & Lu, 2013). Last, the results also confirm the strong relationship between continuance intention and actual playing behavior of students. It can be described that continuance intention is considered to be positively affected by perceived behavioral control in the theory of planned behavior (Ajzen, 1991).

6.2 Recommendation

The results of this study provide online computer game practitioners with a knowledge on how to improve users' intention to play and actual playing behavior. Users' attitudes, utilitarian outcome expectations, hedonic outcome expectations, subjective norms, time constraint, continuance intentions are predictors of actual behavior per proven in this study. Users have to enhance their positive attitude towards the games. In order to attract a large number of players to support the revenue models of game enterprises, they need to consider psychological factors which are utilitarian outcome expectations and hedonic outcome expectations. Residing on subjective norms, online computer game may have the capability to serve socialization among players such as peers, family or other players. Time constraint could be for both game designers and players. Game designers could provide the time flexibility for players to manage their behavioral control. Players would also play game whenever and wherever they need.

Several strategies for game developers and marketers can be executed to improve gamers' continuance intention and actual behavior. First, it would be a good strategy to facilitate social interactions in games. While the underlying structure of the game design encourages positive attitude to enhance continuance intention. In this context, users do not passively accept what the technology affords but actively exploit technology to accomplish their own goals. The game could serve their outcome expectations in many ways. Each users play games for different reasons such as enjoyment, relaxation, competition and socialization. Subsequently, game developers can design more channels to fulfill users' need of helping as many friends as they can in the game, or design more specific rewards or incentives. Marketers should strengthen to promote the good use and enjoyment of the play. Alongside with this, game developers should design games to be cheerful and easy to play to ensure continuance intention and actual behavior.

To extent, the influence of subject norm on continuance intention to play and actual playing behavior is particularly important for managers when they decide how to allocate resources to operate a game. In the light of this, marketers should provoke individuals' intention through opinion leaders who can provide good recommendations and arouse more potential users' desire for a specific game. Online game streamers are very popular in the game booming era. The popularity of PUBG, League of Legends, and Arena of Valor have been raised by the group of online streamers to promote directly to the existing and new gamers. This is perceived as word-of-mouth communication or mass advertisements which marketer can accelerate network effects to achieve a mass continuance intention and actual behavior.

6.3 Limitation and Further Study

This study is subject to several limitations. First, this empirical study was conducted in only top three game platforms in China, where internet policy and online environment differ from other regions in the world. Thus, the findings to other national and cultural settings would be different. Accordingly, future research can investigate users' continuance and playing behavior in other games and in other regions. Second, this study represents only a group of game users who are undergraduate students which can be extended to other group such as high school students, postgraduates or first jobbers. The sample size is small, although it is sufficient for SEM analyses. Hence, future research can test the research model using larger sample size. Third, qualitative study should be extended for comprehensive analysis and results. The follow-up or in-depth investigation will broaden the implications and the

direction of hypothesis, as well as can further provide better interpretation of actual behavioral factors of mobile game players.

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