A Model for Evaluating Online Game Players: A Study of Enjoyment, Interaction, Flow Experience, and Motivation towards Attitude and Intention Behavior in China

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ABSTRACT

The purpose of this research is to find the factors that affect Chinese online game players. The variables of this study are human-game interaction, utilitarian motivation, hedonic motivation, flow experience, perceived enjoyment, attitude, and intention. By studying these variables, to understand the needs of Chinese online players, and to promote the development of online games. The researchers observed these variables and developed four hypotheses to determine the influencing factors towards attitude and intention behavior. The researchers focused on Chinese online game players who play "League of Legends". The researchers collected the data from 320 respondents by using a questionnaire survey through two large-scale communication platforms in China. The first platform is the official forum of "League of Legends" in China, and the second platform “QQ” which is the most popular game social software in China. The researchers used convenience sampling and judgmental sampling to collect the data. Moreover, descriptive statistics is used to provide average and demographic percentages. Besides, the researchers use inferential statistics to test the hypotheses. All data are analyzed using statistical software, and linear regression analysis such as multiple linear regression to find the most significant factors affecting players’ attitudes and intentions. The results showed that human-game interaction has a significant positive correlation with utilitarian motivation and hedonic motivation. Utilitarian motivation, hedonic motivation, flow experience, and perceived enjoyment have a positive impact on the player’s attitude. However, flow experience, perceived enjoyment, and attitude have no influence on the intentions of online player.

Key words: enjoyment, interaction, flow experience, motivation, attitude, intention

INTRODUCTION

With the rapid development of the Internet, the game industry has become a highly profitable e-commerce in recent years. The value of the global online game market has grown from US$3 billion in 2002 to US$9 billion in 2007 (Datamonitor, 2007). It is estimated that the value of the global online game market will grow to nearly US$26 billion by 2016 (Datamonitor, 2007). At the same time, with the popularity and widespread use of the Internet, online games have become more and more common. People can play games with other people anytime and anywhere online (Gorriz & Medina, 2000).

Game is a form of entertainment, and the purpose of the game is to attract customers to play (Dickey, 2005). Enjoyment is an important goal of online players, and players are more willing to play games that provide entertainment, enjoyment, and relaxation (Sweetser & Wyeth, 2005). However, the fun of most of the games is temporary. Even if players like to play games they have already played, they still want try new online games (Sweetser & Wyeth, 2005).

Interaction is one of the best gaming experiences (Lewinski, 2000) Players can interact in the game by talking, trading, attacking and defending monsters, and interacting with other players. These interactions can be used to build a game experience (Choi & Kim, Why people continue to play online games: in search of critical design factors to increase customer loyalty to online contents, 2004).

When people have flow experience, they will indulge in their own activities. Flow experience can be defined as the overall feeling that locks emotion when they act intensively (Csikszentmihalyi & LeFevre, Optimal experience in work and leisure, 1989). Psychologically, flow experience is used to solve the best user experience of the individual (Finneran & Zhang, 2005). Also, some motivations affect online players. When individuals use something and their needs are met, they will continue to use it (Rubin, 2009). People not only play online games for entertainment, but also for utilitarian purposes (Lin, Wang, & Chou, 2012). At the same time, players will play games for benefits and rewards. These motives lead to utilitarian goals and enhance players' intention to continue playing the game (Lepper, Greene, & Nisbett, 1973). On the other hand, hedonic motivation also affects continuous play. When players play online games for pleasure, they will be more willing to play and increase their willingness to play games (Wei & Lu, 2014).

As of the early of 2020, approximately 532 million Chinese internet users had engaged in online gaming, the online gaming market generated approximately 233 billion yuan of revenue in 2019 (www.statista.com). Tencent is

one of the leading Chinese internet players, has been dominating the online gaming market in China, its online games grossed 115 billion yuan in 2019. Therefore, the researchers used one of its most popular online games "League of Legends" as the research model.

This research attempts to understand the attitudes and intentions of game players from factors such as enjoyment, interaction, flow experience, and motivation. The researchers will study and analyze the impact of human-game interaction on utilitarian motivation and hedonic motivation, and also study the impact of utilitarian motivation, hedonic motivation, flow experience, and perceived enjoyment on the attitudes of online players. Moreover, the researchers will study the impact of flow experience, perceived enjoyment and attitude on online player intentions. This information can help game developers design games or help vendors adjust marketing strategies.

RESEARCH OBJECTIVE

The main purpose of this research is to understand the impact of human-Game Interaction, utilitarian motivation, hedonic motivation, flow experience, and perceived enjoyment of online games on attitudes and intentions of online players.

The purpose of this research is:

To analyze the impact of Human-Game Interaction on utilitarian motivation.

To analyze the impact of Human-Game Interaction on hedonic motivation.

To analyze the influence of utilitarian motivation, hedonic motivation, flow experience and perceived enjoyment on the attitude of online players.

To analyze the influence of flow experience, perceived enjoyment and attitude on the intention of online players.

LITERATURE REVIEW

Human-Game Interaction

Choi & Kim (Why people continue to play online games: in search of critical design factors to increase customer loyalty to online contents, 2004) stated that human-game interaction refers to players interacting with the game through technology, creating a personal experience during the game. In addition, the researchers added that fun, enjoyable, controllable, and influential interactions with games will actively affect the personal experience. Human-Game Interaction contains three dimensions, which are image features (such as background, dynamic), communication features (such as access speed, sound), and attractive features (such as optional options, information) (Kim, Oh, Yang, & Kim, 2010). Ding, et al. (Customer experience in online financial services: a study of behavioral intentions for techno-ready market segments, 2011) believed that the personal evaluation of

system and technical characteristics will affect users' cognitive service experience. Personal communication with the system and interaction with the characteristics of the system will affect players' satisfaction and satisfaction with the system they use (Venkatesh & Bela, Technology acceptance model 3 and a research agenda on interventions, 2008).

Utilitarian Motivation

Davis, et al. (Extrinsic and intrinsic motivation to use computers in the workplace, 1992) found that utilitarian motivation is the execution of an activity, which helps to achieve valuable results different from the activity itself. In online games, players may have utilitarian motives, such as benefits, rewards and achievements (Lepper, Greene, & Nisbett, 1973; Lin, Wang, & Chou, 2012). People with utilitarian motives tend to focus on functions, tools, and practical values (Chitturi, Raghunathan, & Mahajan, 2008; Sheng & Teo, 2012).

Utilitarian motivation is comprised of effort expectancy and perceived convenience. Sheng & Teo (Product attributes and brand equity in the mobile domain: the mediating role of customer experience, 2012) used effort expectancy and perceived convenience as a measure of utilitarian motivation, and Hsiao & Chen (What drives in-app purchase intention for mobile games? An examination of perceived values and loyalty, 2016) founded that effort expectancy and perceived convenience are factors used to measure utilitarian motivation. Venkatesh et al. (Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology, 2012) defined effort expectancy as the ease of using technology and an important indicator of predicting user behavioral intentions (Wong, Tan, Loke, & Ooi, 2015). Shin & Shin (Why do people play social network games?, 2011) found that perceived convenience provides benefits to players who find that playing games can give them advantages and profits, or can improve the quality of life and work quality (Liu & Li, 2011). Liu & Li (Exploring the impact of use context on mobile hedonic services adoption: an empirical study on mobile gaming in China, 2011) stated that perceived convenience is not only used in games, but also in other information technologies, and it performs well in life, study, and work, and have an active impact on the user's perception of physical health (Cornejo, Hernandez, Tentori, & Favela, 2015). Also, perceived convenience has an active impact on mobile social network games (Park, Baek, Ohm, & Chang, Determinants of player acceptance of mobile social network games: an application of extended technology acceptance model, 2014).

Hedonic Motivation

Hirschman & Holbrook (Hedonic consumption: emerging concepts, methods and propositions, 1982) pointed out that hedonic motivation

represents the experience of products from multi-sensory, fantasy, and emotional aspects.

Hedonic motivation is related to entertainment, relaxation, fantasy, etc. (Babin, Darden, & Griffin, 1994; Hirschman & Holbrook, 1982). People will seek happiness and satisfaction in the products they need, and produce certain emotions (Koshkaki, 2014), and eventually develop a strong attachment to the brand (Sarkar, Ponnam, & Murthy, 2012). The Internet provides a pleasant communication experience and repeatedly attracts users to the Internet. Buchanan-Oliver & Seo (Play as co-created narrative in computer game consumption: the hero's journey in Warcraft III, 2012) found that the fun gained from the user experience may come from the interaction with the game or the story created by the player. Liu (Understanding player behavior in online games: the role of gender, 2016) stated that there is a good relationship between HM and online games. At the same time, hedonic motivation (HM) can increase the time users spend using social software and have an active impact on social software (Hsiao & Chen, 2016).

Flow Experience

Csikszentmihalyi & LeFevre (Optimal experience in work and leisure, 1989) pioneered the concept of "Flow Experience", which was defined as "the overall experience that people feel when they commit themselves to action." Flow experience can be used to measure a structure that includes goals, personal skills, challenges, timely feedback, focus on the task, sense of control, changes in the sense of time, curiosity, etc. (Csikszentmihalyi & LeFevre, Optimal experience in work and leisure, 1989; Csikszentmihalyi, The Psychology of Optimal Experience, 1990). Flow experience is a kind of best experience, in this state, the individual has a clear goal, can control his own behavior, or lose self-awareness (Csikszentmihalyi, The Psychology of Optimal Experience, 1990). Ozkara, et al. (Exploring the relationship between information satisfaction and flow in the context of consumers' online search, 2016) proved that flow experience can be a factor to understand user behavior in online environments. Similarly, flow experience is a common experience of online game players during gaming (Admiraal, Huizenga, Akkerman, & Ten Dam, 2011).

Perceived Enjoyment

Van der Heijen (Factors influencing the usage of websites: the case of a generic portal in The Netherlands, 2003) believed that enjoyment can be defined as the degree to which engaging in an activity itself is considered pleasant and interesting. Wu & Liu (The effects of trust and enjoyment on intention to play online games, 2007) and Wu et al. (Falling in love with online games: the uses and gratifications perspective, 2010) stated that enjoyment is a form of having fun, pleasure, or excitement by performing an

activity. These positive emotions will pass through satisfaction, empowerment or other similar emotions to represent (Fulton, 2009; Lin, Gregor, & Ewing, 2009). Perceived enjoyment obviously has a significant impact on game players (Van der Heijen, 2003; Lee & Tsai, 2010; Han & Windsor, 2011). Chang & Chin, (Predicting the usage intention of social network games: an intrinsic-extrinsic motivation, 2011) stated that the enjoyment of perception is an intrinsic motivation, and immersing in the game to escape reality is the intrinsic motivation of players (Blinka & Mikuška, 2014).

RELATED LITERATURE REVIEW

Human-Game Interaction and Utilitarian Motivation

Sheng & Teo (Product attributes and brand equity in the mobile domain: the mediating role of customer experience, 2012) and Hsiao & Chen (What drives in-app purchase intention for mobile games? An examination of perceived values and loyalty, 2016) used effort expectancy and perceived convenience as a measure of utilitarian motivation, which means that they are sub-components of utilitarian motivation. Effort expectancy means that players think it is easy to use this system (Venkatesh & Thong, Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology, 2012). Jung, et al. (Consumer adoption of mobile tv: examining psychological flow and media content, 2009) pointed out that perceived convenience is a function of emotional expression, meaning that players will evaluate specific technologies that help them achieve their goals. With the advancement of technology, mobile payment systems (Kim, Mirusmonov, & Lee, An empirical examination of factors influencing the intention to use mobile payment, 2010) and mobile games (Choe & Schumacher, Influence of different types of vibrations on technical acceptance of a mobile game aiming for hedonic satisfaction, 2015) have greatly improved perceived convenience and effort expectancy.

Venkatesh and Bala (Technology acceptance model 3 and a research agenda on interventions, 2008) conducted a technology acceptance model 3 and a research agenda on interventions study, in which they studied the impact of human-game interaction on perceived convenience and effort expectancy. They found that statistically, the interaction between the user and the system will have a positive effect on perceived convenience and effort expectancy.

Furthermore, Sebastian et al. (The effects of human-game interaction, network externalities, and motivations on players′ use of mobile casual games, 2018) studied the effects of human-game interaction, network externalities, and motivations on players, they found that human-game interaction has a significant relationship

with utilitarian motivation, pointing out that human-game interaction has a great indirect influence on intention to play online games through the utilitarian motives, and attitudes play an important and complete intermediary role in this structure.

Human-Game Interaction and Hedonic Motivation

Hsiao & Chen (What drives in-app purchase intention for mobile games? An examination of perceived values and loyalty, 2016) stated that hedonic motivation reflects the degree of user enjoyment and experience when using the system. In the game, the visual and auditory characteristics of the game have a good influence on hedonic motivation (Ha, Yoon, & Choi, 2007). In addition, images, game speed, sound, and options are also actively correlated with hedonic motivation (Kim, Oh, Yang, & Kim, 2010).

Choe & Schumacher, (Influence of different types of vibrations on technical acceptance of a mobile game aiming for hedonic satisfaction, 2015) discussed the impact of different types of vibration on the acceptance of mobile game technology, and concluded that the human-game interaction has statistically significant relationship with hedonic motivation.

Utilitarian Motivation and Attitude

Storgårds (The influence of the hedonic and utilitarian value of digital games on product recommendation, 2011) indicated that games should be regarded as both hedonic and utilitarian products, and the experience of games is related to the perception of hedonism and utilitarianism. Lin et al. (Hedonic and utilitarian motivations for physical game systems use behavior, 2012) found that individuals play sport games not only for hedonic but also for utilitarian efforts.

Effort expectancy is positively related to the behavioral intention of the individual to play the game (Merikivi, Tuunainen, & Nguyen, 2017; Malaquias, Malaquias, & Hwang, 2018). If the process is too complicated or difficult, the individual may give up trying to play some or all online competitive games. Perceived convenient, hedonic motivation, and effort expectancy have an active influence on intension to use, and perceived convenient and effort expectancy will affect users' attitudes and intensity of use (Davis & Venkatesh, A critical assessment of potential measurement biases in the technology acceptance model: three experiments, 1996).

Wang & Sun (Investigating game play intention of the elderly using an extended technology acceptance model (ETAM), 2016) researched the elderly's willingness to play based on the Extended Technology Acceptance Model (ETAM), they pointed out that effort expectancy has an active impact on gaming attitudes, and perceived convenient has an active impact on the online gaming community. Furthermore, Wooyoung & Kevin (Antecedents and

consequence associated with esports gameplay, 2019) studied the causes and consequences related to e-sports games, point out that effort expectancy is one of the key factors that influence the intention of e-sports consumers in e-sports games.

Hedonic Motivation and Attitude

Hedonic motivation is an important reason that leads to personal intention and use (Venkatesh & Thong, Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology, 2012). At the same time, game intentions will change due to hedonic motivation (Merikivi, Tuunainen, & Nguyen, 2017), and hedonic motivation has a positive influence on the intention of individuals to play multiplayer online role-playing games (Shin & Shin , 2011). Lee (Understanding the behavioural intention to play online games: an extension of the theory of planned behaviour, 2009) stated that hedonic motivation has a very good influence on players' attitudes towards games, and has a direct and indirect influence on online games and mobile games.

Park, et al. (Determinants of player acceptance of mobile social network games: an application of extended technology acceptance model, 2014) studied the determinants of mobile social network game player acceptance. The study found that hedonic motivation has a positive impact on mobile games, and hedonic motivation has a positive relationship with users' attitudes.

Flow Experience with Attitude and Intention

In games, the influence of flow experience is actively correlated (Ha, Yoon, & Choi, 2007), and it also has a good influence on the willingness to use online games (Hsu & Lu, 2004). Zhou (The effect of network externality on mobile social network site continuance, 2015) stated that during the game, the player's level of enjoyment will increase with the flow experience, and at the same time it will have a sense of immersion in the game and further enhance the player's gaming experience. So, players may be more inclined to get the flow experience and stick to it in the future, thus achieving higher satisfaction.

Ming-Chi, Lee. (Understanding the behavioural intention to play online games, 2009) conducted research to understand the behavioral intention of playing online games, he found that flow experience has a significant relationship with customers' attitudes and intentions.

Furthermore, Chen, et al. (Exploring Web users′ optimal flow experiences, 2000) explored the best process experience for network users, and they found that flow experience may improve or correct the negative effects of Internet use, such

as increasing users' intentions and improving mental health, thereby improving personal experience.

Perceived Enjoyment with Attitude and Intention

Perceived enjoyment and flow experience significantly affect behavioral intentions, among which perceptual enjoyment plays a decisive role in people's behavioral intentions (Hsu & Lu, 2004; Shin & Shin , 2011; Shin & Kin, 2008). Li, et al. (Understanding individual adoption of instant messaging: an empirical investigation, 2005) found that the attitude and intention of users will be affected by enjoyment. At the same time, enjoyment will also have an active impact on the willingness to play online games (Merikivi, Tuunainen, & Nguyen, 2017). The user's acceptance of the hedonic system is extremely high (Davis, Bagozzi, & Warshaw, Extrinsic and intrinsic motivation to use computers in the workplace, 1992; Van der Heijen, 2003). When something is interesting and pleasing, users will adopt it. Boyle et al. (Engagement in digital entertainment games: a systematic review, 2012) found that a pleasant experience will make players have a good attitude and intention towards the game, and they will be more willing to play for a long time.

Yu et al. (Extending the TAM for a t - commerce, 2005) studied TAM in e-commerce, and they found that perceived enjoyment has a statistically significant relationship with users' attitudes, and perceived enjoyment has an impact on the attitudes of experienced users, and attitudes will continue to affect users' intention.

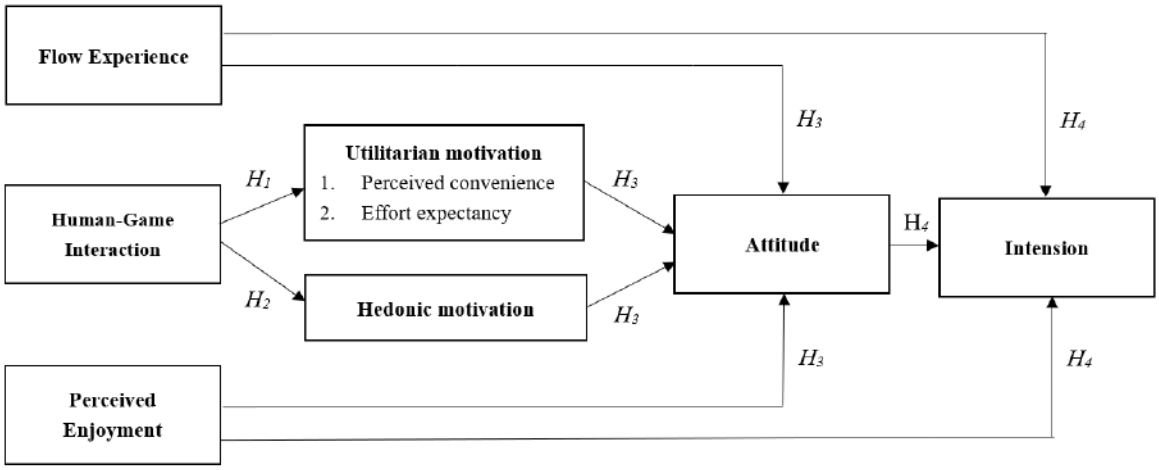
Attitude and Intention

Davis (Perceived usefulness, perceived ease of use, and user acceptance of information technology, 1989) believed that attitude will affect usage intention. At the same time, Park & Kim (Social network analysis of high-level players in multiplayer online battle arena game, 2015) also found that users' attitudes are affected by intentions. Attitude is an individual's assessment of the whole and affects one's own behavioral intentions (Ajzen, 1991). In online games, the player's attitude has a strong influence on the intention to play ((Hsu & Lu, 2004; Liu C. C., 2016). In social software and mobile games, there also showed the same result (Jiang, Peng, & Liu, 2015).

Wang & Sun (Investigating game play intention of the elderly using an extended technology acceptance model (ETAM), 2016) researched the elderly's willingness to play based on the Extended Technology Acceptance Model (ETAM), and found that in the context of online games, the user's attitude has a considerable impact on the user's intension.

Figure 1: Conceptual Framework

The conceptual framework used in this study is shown below



Research Hypotheses

H1o: Human-game Interaction does not have a statistically significant influence on the utilitarian motivation of online games.

H1a: Human-game Interaction has a statistically significant influence on the utilitarian motivation of online games.

H2o: Human-game Interaction has a statistically insignificant on the hedonic motivation of online games.

H2a: Human-game Interaction has a statistically significant influence on the hedonic motivation of online games.

H3o: Utilitarian motivation, hedonic motivation, flow experience, and perceived enjoyment have a statistically insignificant on attitude toward online games.

H3a: Utilitarian motivation, hedonic motivation, flow experience, and perceived enjoyment have a statistically significant influence on attitude toward online games.

H4o: Flow experience, perceived enjoyment and attitude have a statistically insignificant on intention toward playing online games.

H4a: Flow experience, perceived enjoyment and attitude have a statistically significant influence on intention toward playing online games.

RESEARCH METHODOLOGY

In this study, the researchers used descriptive research to complete the research goals and studied the attitudes and intentions of Chinese "League of Legends" players. Descriptive research is a type of research that describes the population, situation, or phenomenon being studied (Zikmund W. G., Babin, Carr, & Griffin, Business Research Methods, 2010). It focuses on the way, content, time, and place of the research question, rather than the cause.

The main purpose of this research is to understand the impact of human-game interaction, utilitarian motivation, hedonic motivation, flow experience, perceived enjoyment, attitude, and intention on the attitude and intention of League of Legends players in China. The researchers intend to study the influence of Human-Game Interaction on utilitarian motivation and hedonic motivation. As well as the influence of utilitarian motives and hedonic motives on attitudes of online players. Moreover, this research will study the influence of flow experience on the attitude and intention of online players. And also investigate the impact of perceived enjoyment on online players' attitudes and intentions. Study the influence of online players' own attitude on their intentions.

In addition, the researchers use the survey method to collect research data from the respondents by issuing questionnaires. Zikmund, et al. (Business Research Methods, 2010) stated that the target population of the study refers to an individual or group that is experiencing problems or has needs.

The researchers choose two target locations: first is the official Chinese forum of "League of Legends" (bbs.lol.qq.com) which has the most active player population in "League of Legends", second is the China's largest social game software "QQ", with the monthly active number of 647 million users (www.statista.com). A total of 320 questionnaires were distributed through two online platforms, in which 160 questionnaires distributed in the forum of the official Chinese website of "LOL" (bbs.lol.qq.com), and 160 questionnaires in China's largest social game software " QQ".

COLLECTING DATA

The period of data collection is from September 17, 2020, to September 27, 2020 on the official Chinese website of "LOL" (bbs.lol.qq.com) and China's largest social game software "QQ". The target sample of the study is players who are currently playing League of Legends in China. All the Players who have experience in playing LOL are included in the survey. A total of 320 questionnaires were issued and 303 valid questionnaires were finally collected. The researchers use convenience sampling and judgmental sampling to collect the main data. First, the researchers will use judgmental sampling to select players who are currently playing games, players who have played before, and interested players in China. Secondly, the

researchers will use convenience sampling, distribute the questionnaire on the forum of the official Chinese website of "LOL" (bbs.lol.qq.com) and China's largest social game software "QQ" to collect the data. Moreover, the researchers collected secondary information from the internet and online resources, and these resources can be used to support theories and investigations. Churchill & Gilbert Jr (Basic Marketing Research, 1996) believed that secondary data is used to collect existing information for other purposes, it can save time and cost.

FINDINGS

In this survey, the number of male players is the largest, with 228 players, accounting for 75.25% of the total, and the number of female players is 75, accounting for 24.75% of the total. Among them, online players aged between 19-23 are dominant with 133 players, accounting for 43.89% of the total, followed by players aged between 24-30 with 105 players accounting for 34.65% of the total. The education level of 220 respondents is a college or university degree holders. The student population is 50.5%, and the working population is 49.5%. 142 online players have played League of Legends for more than 4-8 years, accounting for 46.86% of the total. 207 online players like both relaxed and pleasant gameplay and challenging and competitive gameplay. 263 online players have consumed "League of Legends," accounting for 86.8% of the total. Among them, 84 people spent ¥5,000 - ¥10,000, accounting for 31.94% of the total; 59 people spending ¥1,000-¥5,000, accounting for 22.3% of the total; 58 people spending ¥10,000 - ¥30,000, accounting for 22.05% of total; 27 people spend more than ¥30,000, accounting for 10.27% of the total.

Table 1: Summary the result of Hypothesis testing

Hypothesis	Statistical Treatment	Correlation	Level of significance	Result
H1o: Human-game Interaction has a statistically insignificant on the utilitarian motivation of online games.	**Simple linear regression**	**.528**	**.000**	**Rejected H1o**
H2o: Human-game Interaction has a statistically insignificant on the hedonic motivation of online games.	**Simple linear regression**	**.881**	**.000**	**Rejected H2o**

Hypothesis	Statistical Treatment	Correlation	Level of significance	Result
H3o: Utilitarian motivation, hedonic motivation, flow experience, and perceived enjoyment have a statistically insignificant on attitude toward online games.	**Multiple Linear regression**			
-Utilitarian Motivation		**.338**	**.000**	**Rejected H3o**
-Hedonistic Motivation		**.127**	**.024**	**Rejected H3o**
-Flow Experience		**.180**	**.001**	**Rejected H3o**
-Perceived Enjoyment		**.231**	**.000**	**Rejected H3o**

H4o: Flow experience, perceived enjoyment and attitude have a statistically insignificant on intention toward playing online games.	Multiple Linear regression			
-Flow Experience		-.040	.301	Fail to Rejected H4o
-Perceived Enjoyment		.059	.131	Fail to Rejected H4o
-Attitude		.820	.000	Fail to Rejected H4o

Conclusions

The purpose of this research is to find out the factors that affect online players. These variables are human-game interaction, utilitarian motivation, hedonic motivation, flow experience, perceived enjoyment, attitude, and intention. This study uses questionnaires as a research tool, and Likert five-point scale to measure variables.

The target population of this study is the players of Tencent's "League of Legends" in China. The researchers collected the data through the official Chinese website of "LOL" (bbs.lol.qq.com) and China's largest social game software "QQ", the total number of 30 respondents are collected as sample size, and most of them are male students aged between 19-23 years.

For hypothesis testing, statistical software is used to analyze the collected data. The results of the study rejected three null hypotheses, and one null hypothesis failed to reject. The results showed that human-game interaction has a significant positive influence on utilitarian motivation and hedonic motivation. Utilitarian motivation, hedonic motivation, flow experience, and perceived enjoyment have a positive impact on player's attitude. However, flow experience, perceived enjoyment, and attitude have no influence on the intentions of online players.

Discussion and Recommendation

As shown by the analysis results based on the standardized coefficient of beta, the beta of hypothesis 1 is equal to .528, the beta of hypothesis 2 is equal to .881. This means that there is significant impact of human-game interaction on utilitarian motivation and hedonic motivation. Moreover, human-game interaction has a high impact on hedonic motivation when the beta is .881. Therefore, the results support and confirm previous theoretical research. Human-game interaction has an impact on perceived convenience and effect expectancy (Venkatesh & Bela, Technology acceptance model 3 and a research agenda on interventions, 2008), and an impact on hedonic motivation (Ha, Yoon, & Choi, 2007; Kim, Mirusmonov, & Lee, An empirical examination of factors influencing the intention to use mobile payment, 2010). The researchers would take to concern that this discovery can help people further optimize and develop games, improving human-game interaction which can effectively improve the

utilitarian motivation and hedonic motivation of online players. Developers should improve the use of human-game interaction in mobile devices because human-game interaction can be a good help for mobile devices which was supported by Wei, et al. (What drives Malaysian m-commerce adoption? An empirical analysis, 2009).

In Hypothesis 3, utilitarian motivation, hedonic motivation, flow experience, and perceived enjoyment have significant effect on attitude of online players. Among them, the beta value of utilitarian motivation is equal to .338, followed by the beta value of perceived enjoyment which is equal to .231, which means that among the four factors that affect player attitudes, these two factors have the strongest influence. However, the beta value of hedonic motivation is equal to .127, and the beta value of flow experience is .180, which means that the influence of these two factors is average. These results confirm that perceived convenient and effort expectancy will affect users' attitudes (Davis & Venkatesh, A critical assessment of potential measurement biases in the technology acceptance model: three experiments, 1996), also perceived enjoyment has an impact on the attitudes of experienced users (Yu, Ha, Choi, & Rho, 2005) The researchers would take to concern that this research can help game developers or game manufacturers to adjust their games. If there are utilitarian motivation and perceived enjoyment factors in online games, it will improve players' attitudes towards online games and players can be more willing and inclined to play, or playing games for a long time.

Further Study

In this study, the researchers defined the impact of human-game interaction, utilitarian motivation, hedonic motivation, flow experience, perceived enjoyment, attitude, and intention on the attitude and intention of League of Legends players in China.

In order to conduct further research, the researchers may consider more different independent factors that may have effect on attitudes and intentions of online players to improve the predictive ability of the model. The researchers will also apply human game interaction, utilitarian motivation, hedonic motivation, flow experience, perceived enjoyment, and attitude separately to obtain more accurate information.

Finally, the target sample of this study is the Chinese "League of Legends" players, who have rich gaming experience and experience. Note that the background of this research is China's "League of Legends". As an e-sports game, the answers given by players may be different from those of other different types of online games, so if all the values obtained are used for Similar e-sports games will be of greater help.

Therefore, for further research, researchers can study the attitudes and intentions of "League of

Legends" players who have no experience and experience in "League of Legends".

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