

# Factors Affecting Online Game Players' Loyalty

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**Abstract.** In the past decade, online games have become an important electronic commerce application. A good understanding of customer online game behaviors is critical for both researchers and practitioners, such as game vendors and game developers. Many researchers focus their studies on the consumers' intention to play online games. However, the industry becomes more and more interested in the key factors to retain customers. To tackle the retention problem, this paper proposes a research framework of online game play loyalty. Based on this framework, thirteen hypotheses were developed and tested through a survey in U.S. universities. Overall, the results indicate the following: 1) Online game technology factors, such as the game story, game graphics, game length, game control and online game services, have significant impact on players' game enjoyment; 2) Game enjoyment and social norms have positive effects on intention to play; 3) Social norms, quality of online game community and intention to play are important predictors of online game loyalty.

**Keywords:** online games, loyalty, intention, enjoyment.

## 1 Introduction

In recent years, online games have gained popularity around the world. According to the new Online Game Market Forecasts report by DFC Intelligence [10], PC online game revenue alone passed \$7 billion in 2007 (not including video online games). Online games are computer controlled games, including both PC games and video games, played by consumers over network technology, especially through the Internet. Online games can be categorized into multiplayer and single-player games. At present, multiplayer games, especially massively multiplayer online games (MMOG) are most successful among all online games. World of Warcraft, one of the famous MMOG, surpasses 11 million monthly subscribers this year.

The rapid growth of online games has caught the attention of the gaming industry. Investigation of consumers' online behavior becomes critical. According to Lo and Chen [18], the profitable life cycle of an online game goes down to 8 months to a year from 18 months to 3 years in average in the past. This means majority online game players switch their games every 8-18 months. Typical customers only focus on one or two online games at a certain time and customers are demanding on all aspects of the online games, including game stories, game graphics, game services, and so on [26]. Therefore, it is increasingly important to study the key factors for retaining

customers in the game. As suggested by Semeijin et al. [22], maintaining customer loyalty not only lowers the cost of acquiring new customer, but also brings in substantial revenues. Typically, the longer time players play the online games, the more money they will spend on the game, and this will bring more revenue to the game vendors or developers. Few empirical research has been conducted on how to extend current customers' playing time or how to increase online game players' loyalty. The purpose of this study is to exam what factors affect online game adoption and how to extend online game playing time.

## 2 Theoretical Background and Research Framework

Based on the technology acceptance model (TAM) [9] and previous studies, we propose a conceptual online game loyalty model as depicted in Figure 1. This model integrates the motivational perspective into the original TAM. Discussions of this model are presented in the following sections.

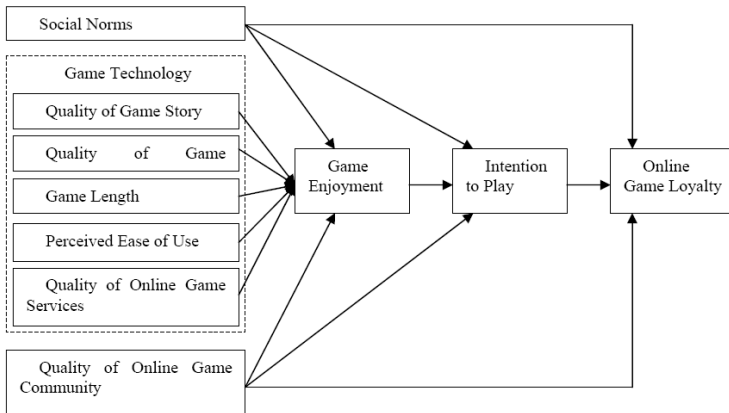


Fig. 1. Conceptual Online Game Loyalty Model

### 2.1 Social Norms

Social factors profoundly impact on user behavior. The theory of reasoned action (TRA) [1] suggests that a person's behavioral intentions are influenced by subjective norms as well as attitude. Hsu and Lu [15] indicate that social influences, including perceived critical mass and social norms, significantly and directly, but separately, affect player attitude and intention of playing online games. Choi and Kim [8] also note the importance of social interactions on continuing to play online games. Additionally, Chang, Lee, & Kim [5] emphasize the impact of perceived popularity on online game adoption and continuance among South Korea college students. Thus, we propose that social norms impact on game enjoyment, intention to play and online game loyalty:

**H1.** There is a positive relationship between social norms and online game enjoyment.

**H2.** There is a positive relationship between social norms and intention to play.

**H3.** There is a positive relationship between social norms and online game loyalty.

## 2.2 Game Technology

Product quality is one of the crucial factors influencing customers' consumption [6]. For online products, since most purchasing and service activities are completed over the Internet, both product quality and service quality are important determinants of customers' behavioral intentions [3]. As online products, online games' quality is important. It includes but not limited to game story, game graphics, game length, and game operations.

**Game Story.** Most online games create virtual environments in the game. Game stories are often used to immerse game players in the virtual world. A good story attracts players' attention and increases players' curiosity to explore the virtual world. The story makes the game more enjoyable and fulfilling. These attractive tasks, like projects in real life, keep players continuously returning to the game whenever they have time to play [23]. A good story offers a wonderful growing space for the actors created in the game. From the beginning of the story, game players "watch" and "feel" the growth of their actors along the story phases. The good story environment let the players create the history using their actors in the virtual world. The players will cherish the stories they created in the game and this will bring them enormous enjoyment in the game and let them forget all the unpleasant things in their real lives [26]. Thus, we proposed that quality of game story impacts on game enjoyment:

**H4.** There is a positive relationship between quality of game story and online game enjoyment.

**Game Graphics.** Graphic attractiveness is a key element in creating an enjoyable user experience in online games [26]. Graphic designs for online games consist of static graphics, movement graphics and special graphics. Static graphics refer to the non-movement items in the game environment. A better design of static graphics makes players feel more real in the virtual world. Movement graphics includes all the movement design in the game, such as running, fighting, etc. A better movement graphics construct more precise and nuanced characters and creatures in the game. Special graphics are animations and special actions or poses for the characters in the game. Animations will increase enjoyment in the game and special actions or poses will represent reality. Graphics play a central role in how people perceive and enjoy the game experience [12]. It gives the player a whole new level of feel, excitement and atmosphere. Therefore, the better the graphics, the more enjoyment [7]. We propose that quality of game graphics impacts on game enjoyment:

**H5.** There is a positive relationship between quality of game graphics and online game enjoyment.

**Game Length.** The game length refers to the average time game players complete the online games by reaching the highest level of the actors, winning the final game items, or completing all the core game tasks. There is no best number to target regarding online game length because each online game is unique with special story and special game settings. However, there could be an ideal length uniquely for each game [28]. For a certain game, players will not have enough time to enjoy the story and all the graphic designs in the game if the game is too short. On the other hand, if the length of the online game is extended too long, players may be exhausted and eventually quit if they can hardly see the end of the road. Additionally, since game players enter the same online games in different times, some players may find ‘unfair’ situations if they enter the game very late. An appropriate game length will lead to an enjoyable experience. Thus, we propose that game length impacts on game enjoyment:

**H6.** There is a positive relationship between appropriate game length and online game enjoyment.

**Perceived Ease of Use.** The technology acceptance model (TAM) [9] is one of the most widely used models for IT adoption. According to TAM, an individual’s IT adoption is influenced by perceived usefulness and perceived ease of use. Perceived ease of use (PEOU) refers to the degree to which a person believes that using a particular system would be free of effort. In a gaming context, perceived usefulness is no longer applicable and therefore not an appropriate measure of extrinsic motivation [24]. Perceived ease of use focuses on the use of the interface of the online games. We propose that perceived ease of use impacts on game enjoyment:

**H7.** There is a positive relationship between perceived ease of use and online game enjoyment.

**Quality of Online Game Services.** Service quality is one of the key factors in e-commerce success [25]. The quality of online game services are evaluated directly by game players according to the response promptness, problem solving ability, problem solving time, information richness of the game, attention to particular player needs, promise-keeping, game master (instant helper in the game) service behavior, and so on. Online players will perceive the services and make their judgments to determine the service quality. Their judgments significantly impact on their enjoyment of the game playing [14]. Thus, we propose that quality of online game services impacts on game enjoyment:

**H8.** There is a positive relationship between quality of online game services and online game enjoyment.

### 2.3 Online Game Community

An online community is defined as social groups of people who communicate with each other via network technology, such as Internet. Through the online game community,

players share their game information, seek helps from the community for game activities, and even build their social network beyond the game. This community network encourages player intention to play the game and eventually increase their loyalty to the game [15]. Thus, we propose that quality of online game services impacts on game enjoyment, intention to play and online game loyalty:

**H9.** There is a positive relationship between quality of online game community and online game enjoyment.

**H10.** There is a positive relationship between quality of online game community and intention to play.

**H11.** There is a positive relationship between quality of online game community and online game loyalty.

## 2.4 Game Enjoyment

Strong empirical evidence indicates that the motivational basis of human activity relies on two rather independent systems: a so-called approach system and an avoidance system [11]. Activation of the approach system results in pleasure, whereas activation of the avoidance system leads to pain [2]. Research in psychology and neuroscience most often uses the term pleasure to describe agreeable reactions to experiences in general. Most communication researchers have used the term enjoyment to describe and explain such positive reactions toward the media and its contents. Our framework uses enjoyment to describe and explain positive reactions derived from game play. According to previous studies [14, 17, 24], perceived enjoyment significantly impacts on customers' intention to use online services or systems. Thus, we propose that game enjoyment impacts on intention to play:

**H12.** There is a positive relationship between game enjoyment and intention to play.

## 2.5 Intention to Play and Online Game Loyalty

Intention to play is the positive attitude or preference to play online games. Most studies adopting the theory of reasoned action (TRA) focus on intention to use certain information systems [17, 24]... However, intention to play only means that the customers have positive attitude or preference to play the game [19]. They may not continue to play the games in the future if there are new games available. However, customer loyalty has become one of the important issues in e-commerce. Loyal customers will keep a longer relationship with the business and use the services for a longer time [21]. Loyalty is the intention to keep using certain services or systems. In this article, we define online game loyalty as the degree to which game players believe that they will continue to play the game. Thus, we propose that intention to play has an impact on online game loyalty:

**H13.** There is a positive relationship between intention to play and online game loyalty.

### 3 Methodology

#### 3.1 Data Collection

A survey was conducted in two U.S. universities. A total of 315 usable questionnaires were collected. Among the respondents, 173 were male and 142 were female. All of the accepted participants have experience of playing online games (average playing time is 7.2 hours/week).

#### 3.2 Measures

The measures of this study were adapted from previous studies with modifications to fit the specific context of the online game playing. All the measurements were phrased on a seven-point Likert scale, from 1=strongly disagree to 7=strongly agree. Table 1 shows the instrument references for the survey questionnaires.

**Table 1.** Instrument References

Construct	References
Social Norms	[27]
Quality of Game Story	[26]
Quality of Game Graphics	[26]
Game Length	[26]
Perceived Ease of use	[15]
Quality of Online game services	[14]
Quality of Online game community	[14]
Game enjoyment	[27]
Intention to play	[5]
Online game loyalty	[19]

### 4 Results

In the data analysis, we first validated the reliability and validity of the measurements and then conducted a structural modeling analysis.

#### 4.1 The Measurement Model

**Reliability.** As Fornell [13] and Nunnally [20] suggest, a composite reliability of 0.70 or above and an average variance extracted of more than 0.50 are deemed acceptable. Table 2 shows the composite reliabilities range from 0.76 to 0.91 and the average variance extracted ranges from 0.53 to 0.76 for all the measures.

**Validity.** Table 3 shows that the square root of average variance extracted for each construct is greater than the correlations between the constructs and all other constructs. This implies that constructs are empirically distinct. The results suggest an adequate discriminate validity of the measurements.

**Table 2.** Reliability Measures

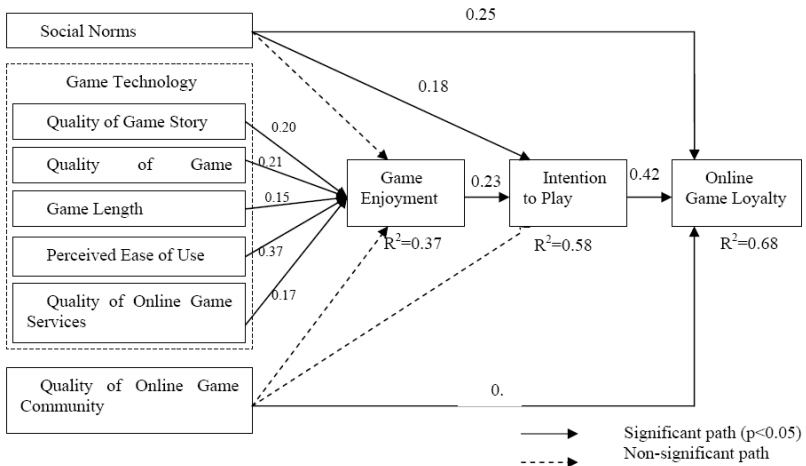
Construct	Item	Loading	Composite reliability	Average variance extracted
Social Norms	SN1	0.65	0.77	0.58
	SN2	0.78		
	SN3	0.85		
Quality of Game Story	GS1	0.82	0.85	0.65
	GS2	0.74		
	GS3	0.88		
Quality of Game Graphics	GG1	0.85	0.83	0.62
	GG2	0.81		
	GG3	0.79		
Game Length	GL1	0.77	0.79	0.56
	GL2	0.85		
	GL3	0.74		
Perceived Ease of use	PE1	0.88	0.86	0.69
	PE2	0.84		
	PE3	0.79		
Quality of Online game services	QS1	0.81	0.87	0.68
	QS2	0.90		
	QS3	0.84		
Quality of Online game community	QC1	0.77	0.86	0.67
	QC2	0.89		
	QC3	0.85		
Game enjoyment	GE1	0.82	0.88	0.67
	GE2	0.81		
	GE3	0.91		
Intention to play	I1	0.90	0.89	0.68
	I2	0.86		
	I3	0.88		
Online game loyalty	L1	0.93	0.90	0.75
	L2	0.85		
	L3	0.87		
	L4	0.91		

**4.2 The Structural Model**

We adopted maximum likelihood method to estimate the framework. According to Browne & Cudeck [4] and Joreskog & Sorbom [16], an acceptable fit exists where AFGI>0.80 and RMSEA<0.10. The fit statistics indicate that the research model provides a good fit to the data (AGFI=0.89; RMSEA=0.07). Figure 2 shows the results of structural modeling analysis. The findings indicated that game technology, including quality of game story, quality of game graphics, game length, perceived ease of use, and quality of online game services) posited a significant effect on game enjoyment. Social Norms did not have any significant impact on game enjoyment. However, it had significant direct effects on both intention to play and online game loyalty. Quality of online game community exhibited significant impact on online game loyalty, but the data did not support quality of online game community as a predictor to both game enjoyment and intention to play. In summary, the results supported hypothesis 2, 3, 4, 5, 6, 7, 8, 11, 12 and 13, respectively.

**Table 3.** Correlation Matrix of the Constructs

	SN	GS	GG	GL	PE	QS	QC	GE	I	L
Social Norms (SN)	0.67									
Quality of Game Story (GS)	0.18	0.75								
Quality of Game Graphics (GG)	0.11	0.15	0.65							
Game Length (GL)	0.21	0.12	0.16	0.70						
Perceived Ease of use (PE)	0.17	0.24	0.19	0.21	0.62					
Quality of Online game services (QS)	0.13	0.19	0.23	0.16	0.22	0.78				
Quality of Online game community (QC)	0.22	0.12	0.11	0.10	0.18	0.27	0.82			
Game enjoyment (GE)	0.27	0.20	0.19	0.23	0.26	0.17	0.21	0.70		
Intention to play (I)	0.18	0.17	0.20	0.15	0.18	0.25	0.27	0.42	0.76	
Online game loyalty (L)	0.10	0.14	0.16	0.17	0.11	0.22	0.36	0.38	0.52	0.79



**Fig. 2.** Results of Structural Modeling Analysis



## 5 Conclusions

The purpose of this study was to exam the key factors affecting customers' online game loyalty. The measurement model was confirmed with adequate convergent and discriminant validity. The structural model provided a good fit to the data. Seven of the ten paths were found statistically significant and the remaining three paths (from Social Norms to game enjoyment, from quality of online game community to both game enjoyment and intention to play) were not significant. The results showed that technology factors of an online game, such as the game story, game graphics, game length, ease of use of the game and online game services, played an important role in players' game enjoyment. Social norms were found an important predictor to both intention to play and online game loyalty, but not to game enjoyment. Interestingly, quality of online game community influenced online game loyalty, but it did not posit a significant impact on both game enjoyment and intention to play. Online game community provides game related information for players. It may not directly impact players' perspectives about playing the game. In other words, players can gather useful information about online games from the community, but they may not feel enjoyable by collecting the information from the website. Similarly, visiting community may not directly stimulate customers' intention to play the game. We therefore believe that quality of online game community is not a crucial factor in explaining both game enjoyment and intention to play. Furthermore, the data revealed that game enjoyment played a critical role in determining intention to play and the latter has significant impact on online game loyalty. This research makes several contributions to our larger understanding of online game adoptions and customer loyalty. First, we identify attributes that may contribute to customer online game loyalty. In addition, as one of the few attempts to investigate online game loyalty, our study provides a conceptual model that will help researchers clarify critical issues of online game playing, such as how and why customers may be a loyal online game player. These constructs are extremely important to online game research and they will contribute significantly to the study of customer behaviors in online game playing. Our findings also provide practitioners (game vendors, game developer, and so on) important guidelines on the design and implementation of the online game innovations. According to our study, to increase game players' loyalty, practitioners should try to focus on their game technologies, such as a good game story, great graphic design, appropriate length of the game, easy game control, and good game services. They also should pay attention to their online game community to ensure customers have positive perspectives to the community.

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