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Abstract

Online games have become the focus of entertainment and multimedia industries as the developments in computer technologies are accelerated and the use of the Internet diffuses broadly. In spite of such growth of online games, academic discussions regarding online games, are relatively limited. This research examines several factors that affect player loyalty to online games. In this research, the loyalty is classified into two categories, the behavioral loyalty measured by the intensity, volume, and frequency of use, and the cognitive loyalty measured by the degree of immersion in online games. In this research, an integrated model to explain and predict player loyalty to online games is proposed. Two studies are conducted to test the research model. Throughout analyzing 334 respondents, the first study finds that the impulsive personality of individual players significantly affects both behavioral loyalty and cognitive loyalty. Additionally, it finds that, whereas the behavioral loyalty is influenced by the convenience of online game playing, the cognitive loyalty is influenced by the motive of game playing and the playfulness of games. The second study finds that the behavioral loyalty differs across demographic differences of players (age and occupation), preferred online games of players, and online game playing locations, but the cognitive loyalty differs across only age differences of players. This research has opened a forum for social awareness about the online game culture, provided information to guide online game producers to prepare customer-oriented online games, and created a foundation for academic research on online game industry.

Keywords: Online game, customer loyalty, Internet, electronic commerce

Introduction

Online games have become the focus of entertainment and multimedia industries as the developments and the deployments of computer, communication and multimedia technologies are accelerated and the use of the Internet diffuses broadly. Statistics indicate that Internet users visit game-playing sites more often and stay longer than for any other Internet sites, and 19% of them regularly play games on the Internet (Draenos, 2000). That makes online game one of the most successful Internet businesses to date. To explore advantages of first movers in a largely unformed online game market, many online game producers have developed and introduced new online games by using more advanced multimedia technologies. The problem with making money in the fiercely competitive online game market is that these producers have not clearly understood factors of making online users absorbed in the games and actually getting them to play games. By building and maintaining player loyalty to online games, the producers can obtain sustainable profitability. Many academic studies have identified factors that increase and retain customer loyalty in various domains (Bellman, et al., 1999; Lee et al., 2000). In spite of such growth of online games and interests on it, the academic discussion regarding factors inducing player loyalty to online game, is relatively limited. The purpose of this research is to identify and examine the influencing factors for player loyalty to online games.

The Effects of Online Game

By now, Internet has deeply infused into most aspects of our lives. The Internet-assisted communication transforms conventional information systems into vast human interactive networks, and offers people opportunities to experience new forms of social contacts (King, 1996). This experience is so stimulating, rewarding and reinforcing that some people find it hard to know when to stop (Young, 1996). Although traditional computer games were not interactive nor played online, many researchers could observe the obsessive use of these games from some players. As the online games allow players to enjoy conversations with other players within the virtual space, more players tend to show excessive obsession into online games and the degree of the obsessive playing is intensified. On the other hand, the nature of today's online games caters to a broader audience than the traditional interactive games in a short time. Specially, by integrating the Internet into games, online games restore some aspects of the social dimensions to the games. These social interactions make players absorbed in online games easily (Draenos, 2000). Although the high level of commitment to online games is problematic, to survive in an extremely competitive and turbulent online game market, game producers need to understand the factors to build and retain player loyalty to online games.

Customer Loyalty

In marketing research area, many researchers have focused on the customer loyalty, because they think that securing loyal customers has become one of the most critical goals for the success of companies. Customer loyalty for the Internet businesses is defined as the customers' intention to revisit the Internet stores again based on their prior experience and expectation of the future (Lee et al., 2000). The definition views consistent purchases of one brand/product or consistent visits to one store as indications of customer loyalty. By the way, Harvey (1999) states that "customers on the Internet become loyal when an Internet business finds ways to go beyond merely meeting their immediate needs to provide a truly extraordinary experience." His definition of customer loyalty emphasizes that customer loyalty should incorporate commitment rather than just repetitive behavior. If customers purchase a product repeatedly to meet their immediate and simple needs without any preferences, we cannot say that they have high customer loyalty to the product. If other products having similar functions are available, the customers simply switch to the new products. By offering a truly extraordinary experience, an Internet business can make first visitors being favorable to its products and services, resulting in consistent visits and purchases. The Harvey's (1999) definition of customer loyalty emphasizes that customer loyalty should incorporate commitment rather than just repetitive behavior. Assael (2001) defines this type of customer loyalty as the cognitive loyalty. To be truly loyal, the customer must hold a favorable attitude toward a brand/product in addition to purchasing it repeatedly. The flow experience of Hoffman and Novak (1996) and the cognitive absorption of Agarwal and Karahanna (2000) provide some insights into cognitive loyalty and its antecedents.

Flow Experience

When customers experience the flow while navigating the Internet, they gain optimal experience, and the optimal experience results in increased participatory behaviors and positive subjective experiences from their visit (Hoffman and Novak, 1996). Customers revisit the Internet site that offers a flow experience. The flow experience, therefore, is characterized by a seamless sequence of responses facilitated by machine interactivity, is intrinsically enjoyable, is accompanied by a loss of self-consciousness, and is self-reinforcing (Hoffman and Novak, 1996). The companies who want to acquire and maintain customers' loyalty must focus on the factors lead customers' propensity to enter the flow experience. Hoffman and Novak (1996) identify two antecedent conditions for the flow state. Firstly, the flow occurs when customers perceive that software contains challenges congruent with their own skills. Secondly, the flow occurs when focused attention is presented. And they define the focused attention as a centering of attention on a limited stimulus field, and argue that it is enhanced by the content characteristics of vividness and interactivity in attracting attention.

Cognitive Absorption

Extending the notion of flow, Cognitive absorption is defined as a state of deep attention and engagement with software, and is identified as its five dimensions: temporal dissociation, focused immersion, heightened enjoyment, control, and curiosity (Agarwal and Karahanna, 2000). Cognitive absorption occurred by the flow experience is one of the important factors to the study of technology use behavior because it serves as a key antecedent to salient beliefs about an information technology. The success of online game producers depends on how well their products and services provide game players with the situations and experiences that result in a state of deep attention and engagement. And they identify two antecedents of cognitive absorption: cognitive playfulness and personal innovativeness. The individuals who perceive cognitive spontaneity during their computer interactions are likely to experience cognitive absorption. The individuals who are willing to try out new information technology to support their works are likely to experience cognitive absorption.

Although the flow experience and the cognitive absorption define cognitive loyalty with different ways, both theories emphasize that cognitive loyalty can be affected by interactions between personal factors and environmental factors (Agarwal and Karahanna, 2000; Hoffman and Novak, 1996). Since the success of the game-playing sites heavily depends on the number of loyal customers, they should be designed to provide flow experiences and cognitive absorption for game players. Table 1 compares the flow experience and the cognitive absorption models in terms of cognitive loyalty. Based on the antecedents of cognitive loyalty from two models, the research identifies an initial list of influencing factors for player loyalty. And, based on the five dimensions of cognitive loyalty from the cognitive absorption model, the research measures the degree of cognitive loyalty.

Table 1. Comparison of Flow Experience Model and Cognitive Absorption Model

	Flow Experience	Cognitive Absorption
Cognitive Loyalty	A seamless sequence of responses facilitated by machine interactivity Intrinsically enjoyable A loss of self-consciousness Self-reinforcing.	A state of deep attention and engagement with software
Dimensions of Cognitive Loyalty	Not Specified	Temporal Dissociation Focused Immersion Heightened Enjoyment Control Curiosity
Antecedents	Skills/Challenges Focused Attention Interactivity Vividness	Cognitive Playfulness Personal Innovativeness
Consequences	Learning Perceived Behavioral Control Positive Subjective Experience Distortion in Time Perception	Perceived Usefulness Perceived Ease-of-Use

Research Model for the Loyalty of Online Game Players

The purpose of the research is to examine the factors that affect the level of player loyalty to online games. Based on analyzing two theoretical models, the research extracts initial list of factors influencing player loyalty. Then, through three rounds of panel discussion with 10 members (game producers, game players, and game programmers), the list of influencing factors is refined. The research is conducted in two phases. The first phase focuses on examining the relationship between the level of player loyalty and the four influencing factors (impulsiveness of game players, motive for game playing, playfulness of games, and convenience of game playing). In the second phase, the research tries to determine whether player loyalty is significantly different across some additional factors (age groups of players, occupations of players, online game types preferred, and locations of game playing).

Study I

The research model for online game player's loyalty includes four independent variables and a dependent variable. As a dependent variable, player loyalty is divided into two types. The behavioral loyalty is measured by the intensity, volume, and frequency of use, and the cognitive loyalty is measured by the degree of immersion in online games. The factors influencing player loyalty to online games are categorized into characteristics of players and of game-playing environments. The research empirically investigates the impacts of these factors on player loyalty to online games. Figure 1 depicts the research model employed to explain online game players' loyalty.

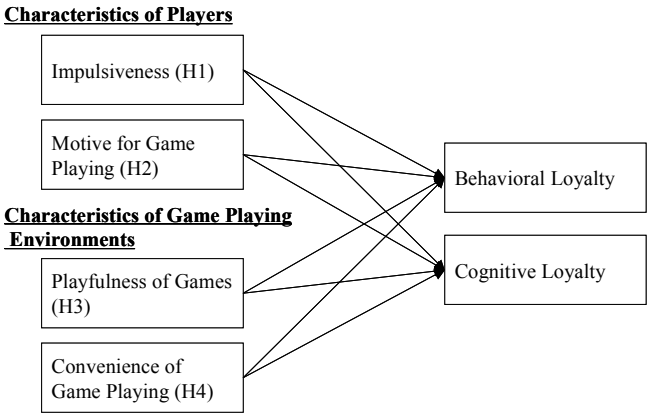

Figure 1. Research Model

Impulsiveness of Game Players
Eysenck (1985) defines impulsiveness as a type of personality that makes people to take risk carelessly. Gray (1987) states that impulsive people have hard time to stop and adjust their on-going activities. Since many games, including both online and video games, attempt to stimulate impulsiveness of players, players with higher level of impulsiveness exhibit higher level of loyalty to online games (H1).

Motive for Game Playing
Motive can be defined as the psychological state that triggers and maintains a specific activity. With regard to online game, players can have different motives ranged from passive motives to active motives: interesting motive, challenging motive, friend-seeking motive, escapism motive, and assaulting motive. Players with higher level of motive for game playing exhibit higher level of loyalty to online games (H2).

Playfulness of Games
Playfulness is a variable defined as the degree of cognitive spontaneity in microcomputer interactions (Webster and Martocchio, 1992). There is a significant body of theoretical and empirical evidence on the importance of playfulness in technology use (Agarwal and Karahanna, 2000; Davis et al., 1992; Webster and Martocchio, 1992). Thus, players who perceive higher level of playfulness from games would exhibit higher level of loyalty on the games (H3).

Convenience of Game Playing
Due to the nature of online games, the loyalty of players might be influenced by the convenience of game playing. If one can play online games in a convenient environment (powerful computer and network equipment), he/she is easily immersed in online games. Thus, players with higher level of game playing convenience will exhibit higher level of loyalty to games (H4). Table 2 summarizes hypotheses for loyalty of online game players.

Table 2. Hypotheses for Study I

	Hypotheses Statements
H1a	The higher level of impulsiveness, the higher level of behavioral loyalty to online games.
H1b	The higher level of impulsiveness, the higher level of cognitive loyalty to online games.
H2a	The higher level of motive for online game playing, the higher level of behavioral loyalty to online games.
H2b	The higher level of motive for online game playing, the higher level of cognitive loyalty to online games.
H3a	The higher level of playfulness from games, the higher level of behavioral loyalty to the online games.
H3b	The higher level of playfulness from games, the higher level of cognitive loyalty to the online games.
H4a	The higher level of game playing convenience, the higher level of behavioral loyalty to online games.
H4b	The higher level of game playing convenience, the higher level of cognitive loyalty to online games.

Study II

In the second phase, the research investigates whether or not the online game player's loyalty is different across different age groups, occupations, preference, and game playing locations. To explore the relationships between the discrete independent variables and the continuous variable (loyalty), the research employs ANOVA for analysis.

Age and Occupation of Game Players
Age and occupation variables have received large amounts of attention regarding differences in the use of computers. The young might be immersed in online games easier than the old primary because of differences in experiences across generations rather than any biological aging (Marakas, et al., 1998). Because many players tend to enjoy online games by using their spare time, players who are freelancers and can manage their time by themselves, they might be absorbed in online games easily. Depending on the occupations and the age of players, their loyalty to online games is different (H5 and H6).

Games Preferred
Various genres of online games have been introduced in the market. Online games can be categorized into the following genres: simulation games, role-playing games, sports games, action games, shooting games, puzzle games, and adventure games. Depending on the types of preferred games, players' loyalty to online games is different (H7)

Locations of Game Playing
The loyalty of players might be influenced by the locations of game playing. If players play online games in a closed environment, they are easily immersed in online games. It is very hard for players to be immersed in online games in an open environment. Depending on the locations of game playing, their loyalty to online games is different (H8).

Table 3 summarizes the eight hypotheses proposed for Study II.

Table 3. Hypotheses for Study II

	Hypotheses Statements
H5a	The behavioral loyalty differs across the age groups of game players.
H5b	The cognitive loyalty differs across the age groups of game players.
H6a	The behavioral loyalty differs across the occupations of game players.
H6b	The cognitive loyalty differs across the occupations of game players.
H7a	The behavioral loyalty differs across the preferred games of game players.
H7b	The cognitive loyalty differs across the preferred game of game players.
H8a	The behavioral loyalty differs across the locations of game playing.
H8b	The cognitive loyalty differs across the locations of game playing.

Research Methodology

Based on the identified factors, a questionnaire is designed. The questionnaires are administrated via both online and off-line to the members of several online game communities. Totally, 334 questionnaires are used for the statistical analysis. Table 4 summarizes the characteristics of participants in the study. To examine the relationships between the player loyalty to online games and its influencing factors, both the regression analysis and ANOVA analysis are used.

Table 4. Characteristics of Participants

Occupation	Male	Female	Total	%
Students	85	122	207	61.97
Engineers / Researchers	59	9	68	20.36
Sales / Marketing	20	1	21	6.29
Office Clerks	14	18	32	9.58
Others	6	0	6	1.80
Total	184	150	334	100.00

Analysis of Results

Regression Analysis (Study I)

Regression analysis is used to examine the relationship between the behavioral loyalty and its five influencing factors. A reliability test for the influencing factors is performed to examine the extent to which the factors are free from random error. Table 5 shows the Cronbach's Alpha values of the influencing factors. The reliability is within acceptable level.

Table 6 shows results of the regression analysis. The impulsiveness of individual players and the convenience of game playing are significantly, positively related to the behavioral loyalty. The results suggest that online game producers can increase the behavioral loyalty by designing games that stimulate players' impulsiveness or by targeting selected players who can easily access online games.

Table 5. Reliability Test Results

Factors	Number of Question Items	Cronbach's Alpha
Impulsiveness	7	0.7456
Motive of Game Playing	6	0.8379
Playfulness of Game	2	0.7728
Convenience of Game Playing	3	0.7128
Behavioral Loyalty	2	0.6671
Cognitive Loyalty	10	0.8384

Table 6. Regression Results for Behavioral Loyalty

Construct	B	Std. Error	Beta	T	R^2	Modified R^2	F
Constant	-0.001	0.051		-0.079 (0.937)	0.134	0.124	12.609 (0.000)***
Impulsiveness	0.221	0.052	0.221	4.220 (0.000)***			
Motive of Playing	0.0818	0.056	0.082	1.459 (0.145)			
Playfulness of Game	0.0580	0.055	0.058	1.055 (0.292)			
Convenience of Playing	0.250	0.052	0.250	4.780 (0.000)***			

*p<0.10; **p<0.05; ***p<0.01

To examine the relationship between the cognitive loyalty and the five influencing factors, a regression model is also used. Table 7 shows the results of the regression analysis for the cognitive loyalty. The impulsiveness of individual players, the motive of game playing, and the playfulness of game have significant, positive relationship with the cognitive loyalty. The cognitive loyalty, unlike the behavioral loyalty, is significantly affected by individual player‘s motive of game playing, as well as individual players impulsiveness. This result implies that, because the cognitive loyalty is affected by characteristics of individual players, online game producers can acquire high level of cognitive loyalty by personalizing online games based on individual player’s personality types and motives. In addition, it finds that, by making online games playful, they cannot acquire the behavioral loyalty, but the cognitive loyalty. The cognitive loyalty is influenced by the factors that are closely related to player's internal situations.

Table 7. Regression Result for Cognitive Loyalty

	B	Std. Error	Beta	T	R^2	Modified R^2	F
Constant	0.0023	0.039		0.058 (0.954)	0.509	0.503	83.930 (0.000)***
Impulsiveness	0.107	0.039	0.107	2.714 (0.007)***			
Motive of Playing	0.457	0.042	0.459	10.834 (0.000) ***			
Playfulness of Game	0.376	0.041	0.377	9.094 (0.000) ***			
Convenience of Playing	0.0305	0.039	0.031	0.775 (0.439)			

*p<0.10; **p<0.05; ***p<0.01

ANOVA Analysis (Study II)

ANOVA analysis is used to assess the statistical significance of differences between groups. In the second phase, the research focuses on investigating differences in player loyalty across age groups of players, occupations of players, preferred games of players, and locations of game playing. The results of ANOVA are shown in the following tables.

Table 8. Result of ANOVA

Dependent Variable	Age		Occupations		Game Preference		Game Playing Locations	
	F	Prob.	F	Prob.	F	Prob.	F	Prob.
Behavioral Loyalty	5.309	0.001***	5.324	0.000***	3.386	0.005***	7,658	0.000***
Cognitive Loyalty	2.379	0.070*	0.728	0.627	1.562	0.170	1.936	0.104

*p<0.10; **p<0.05; ***p<0.01

The research results shows that whereas the behavioral loyalty of online game players differs across all the four influencing factors, the level of cognitive loyalty is not different across all independent variables except the age groups.

Discussion and Conclusion

The research explores factors that influence the loyalty of online game players. To explore the relationships between player loyalty and its influencing factors, the research uses regression analysis and ANOVA analysis. The results of the regression analysis show that individual players with higher impulsiveness have a tendency to show higher loyalty to online games. Additionally, whereas the motive of online game playing and the playfulness of online games affect only the cognitive loyalty, the convenience of online game playing affects only the behavioral level loyalty. The results of the ANOVA analysis shows that, whereas the behavioral loyalty of online game players differs across age, occupations, preferred games, and game playing locations, the cognitive loyalty differs by only age. Based the results from the two studies, we can state that the internal variables of players such as the personality/age of players and the perceived playfulness of games are of critical importance in acquiring a high level of cognitive loyalty. For the behavioral loyalty, the environmental variables for game playing such as playing locations and occupations of players emerge critical factors.

This research has the potential to make contributions to both theory and practice. From a theoretical perspective, this research suggests an integrated model to explain and predict player loyalty to online games. Specifically, as the importance of players' loyalty becomes widely recognized for the success of online game companies, it is an impending task for the MIS scholars to understand the factors that create and maintain player loyalty to online games. By synthesizing and extending two streams of research, Flow Experience and Cognitive Absorption, this research identifies the factors influencing player loyalty, and evaluates impacts of the factors on player loyalty through a survey. For practice, this research provides guidance to online game producers to acquire and maintain game players' loyalty. By providing a comprehensive model for online game players' loyalty, the research provides practitioners with better grounds for understanding online game players' loyalty and guidance to design customer-oriented online game products and services.

References

Agarwal, R. and Karahanna, E., "Time Files When You're Having Fun: Cognitive Absorption and Beliefs about Information Technology Usage," *MIS Quarterly* (24:4), 2000, pp. 665-694.

Assael, H., *Consumer Behavior and Marketing Action*, 6th Edition, Thomson Learning, 2001.

Bellman, B., Lohse, G. L., and Johnson, E. J., "Predictors of Online Buying Behavior," *Communications of the ACM* (42:12), 1999, pp. 32-38.

Davis, F. D., Bagozzi, R. P. and Warshaw, P. R., "Extrinsic and intrinsic motivation to use computers in the workplace," *Journal of Application Society Psychology* (22:14), 1992, pp. 1111-1132.

Draenos, S., "Gamers Log On," *Upside*, October 2000, pp. 181-190.

Eysenck, H. J., *Personality and Individual Differences: A Natural Science Approach*, NY: Plenum Press, 1985.

Gary, J.A., "Perspectives on Anxiety and Impulsivity: A Commentary," *Journal of Research in Personality*, 21, 1987, pp. 493-509.

Harvey, L., "Enabling Customer Loyalty for E-Businesses," *White Paper of Patricia Seybold Group, Inc.*, 1999.

Hoffman, D. L. and Novak, T. P., "Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations," *Journal of Marketing* (60), 1996, pp. 50-68.

King, S. A., "Is the Internet Addictive, or Are Addicts Using the Internet?," *http://www.concentric.net/~Astorm/iad.html*, 1996.

Lee, J., Kim, J. and Moon, J. Y., "What Makes Internet Users Visit Cyber Stores Again?: Key Design Factors for Customer Loyalty," *Proceedings of CHI*, 2000, pp. 305-312.

Marakas G., Yi, M., and Johnson, R., "The Multilevel and Multifaceted Character of Computer Self-Efficacy: Toward Clarification of the Construct and an Integrative Framework for Research," *Information Systems Research* (9:2), 1998, pp. 126-162.

Young, K. S., "Internet Addiction: The Emergence of A New Clinical Disorder," *Cyber Psychology and Behavior* (1:3), 1996, pp. 237-244.

Webster, J. and Martocchio, J. J., "Microcomputer Playfulness: Development of a Measure with Workplace Implications," *MIS Quarterly* (16:2), 1992, pp. 201-226.