



Full Length Article

An exploratory study of factors influencing repurchase behaviors toward game items: A field study

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ABSTRACT

This study provides an exploratory analysis of the effects of the various characteristics of users, games, and repurchase behavior of users in an online game context. Many previous studies considered intentions to purchase and repurchase game items; however, few examined repurchase behavior. Our analysis included a sample of 2,060,685 observations (out of a total of 84,434,287) in one year based on the field data of purchase behavior from a game company. Analysis results show that users' purchase behavior is the most significant factor, and time-related characteristics such as the recency of purchase, purchase frequency, and purchase cycle are important factors that influence repurchase decisions. In contrast, it is found that purchase amount, game characteristics, and user characteristics are not significant. Our findings imply that any analysis of repurchase behavior should address "unconscious" purchase behavior, such as habits, immersion, and impulse buying, in addition to conscious purchase behavior.

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1. Introduction

Understanding the factors that influence purchasing game items is important because the online game industry is rapidly growing and game items play a key role in generating income for companies. This market increased from \$11.1 billion in 2008 to \$18.1 billion in 2011 and is expected to increase to \$31.2 billion by 2017. In addition, the share of online gaming in the entire game market increased from 21% in 2008 to 29% in 2011, and is expected to increase to 35% by 2017 (PwC, 2013). Furthermore, game items from free-to-play games have recently played an important role in increasing the online game industry's profits. The business models for generating income in this market include subscription-based and free-to-play games. A subscription-based game allows users to pay a fixed upfront amount to the game provider. A free-to-play game allows users to play games without any payment, and users purchase digital items such as clothing, guns, and swords to advance or decorate their game characters. Profits from online games are primarily based on free-to-play games (Park & Lee, 2011b).

For game firms, users' repurchase behavior is more important. Dawkins and Reichheld (1990) demonstrated that every 5% increase in sales from existing customers produces a 25–95% increase in the net present customer value. Gupta, Lehmann, and Stuart (2004) argued that an increase in firm value from a 1% increase in the number of customers retained is five times the increase from a 1% decrease in capital costs. In particular, prior studies on service marketing noted that managing existing customers is more efficient than acquiring new ones (DeSouza, 1992). Accordingly, understanding existing customers' repurchase behavior toward game items provides important implications for increasing game providers' profitability.

Our research is different from others from two perspectives: the focus on repurchase behavior and field data. First, this study focuses on repurchase behavior. Few studies examined repurchase behavior related to game items. Past studies focused on purchase intentions toward game items and attempted to understand why gamers purchase digital items by evaluating user characteristics (e.g., Yee, 2006) and perceived value (e.g., Rezaei & Ghodsi, 2014). Second, this study uses field data based on 2,060,685 real observations from a game company. Past studies used a questionnaire or data obtained from interviews with game users (e.g., Kim, 2012; Tseng & Wang, 2013). Some researchers argue that surveys are not suitable for measuring consumer behavior. For example, survey data commonly have errors and reliability issues resulting from the attitudes of the respondents (Fowler & Mangione,

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1990). Furthermore, many consumers tend to unconsciously purchase a product or a service (Graves, 2010).

Our research employs the field data and explores the factors that affect the repurchase behavior. We categorize these factors into consumer-related factors, product-related factors, and purchasing behavior-related factors. This categorization is based on brand loyalty theory (Sheth & Park, 1974), which insists that consumer attributes and product attributes affect the emotions, attitudes, and purchase behavior.

The results show that the factors related to purchase behavior strongly affect repurchase behavior, particularly frequency-related factors such as recency, the total number of buying events within a month, and the purchase cycle. The results also verify that any analysis of repurchase behavior should address “unconscious” purchase behavior, such as habits, immersion, and impulse buying, in addition to conscious purchase behaviors. Therefore, future research should consider the psychological factor of game users to understand the behavior of purchasing game items.

2. Theoretical background

2.1. Online game research

Online games are defined as “games that are played over the Internet using PCs and game consoles” (Papagiannidis, Bourlakis, & Li, 2008) p. 611). Online game providers generate profits using either a subscribed-based or a free-to-play model. Subscription-based games require players to pay for software or sign up for hourly or monthly accounts to play the game. However, the appearance of the free-to-play model has constituted a significant threat to the subscribed-based model since 2004 and has led an increased number of users as users obtain more free-to-play opportunities to try various games (Wu, Wang, & Tsai, 2010). Although users play games freely, companies earn high profits from advertising and user-purchased items, such as digital real estate and value-added services in virtual worlds. As a result, in free-to-play models, users spent more money complementing their avatars (Tseng & Wang, 2013).

Regarding online gamer behavior research related to this study, previous literature analyzed play, continuous play, and user loyalty of online games. Choi and Kim (2004) suggested a theoretical model on the basis of the concepts of customer loyalty, flow, personal interaction, and social interaction to explain the reasons for the continuous play of online network games. Yee (2006) explored 10 motivations classified into three components and determined

the demographic variables that affect playing online games. Teng (2010) proposed that online game providers that satisfy gamer needs through customization regarding immersion are able to foster improved gamer loyalty. Tseng and Wang (2013) revealed the moderating effects of customer involvement and corporate activities for the relationship between satisfaction and reuse behavior in online games. Rezaei and Ghodsi (2014) employed the PERVAL framework and empirically showed its effect on repurchase intention, willingness to pay, and word-of-mouth. Moreover, Wu et al. (2010) explored the important factors related to proactive “stickiness” of online game users on the basis of use and gratification theory. They showed that gratification and service mechanisms have a significant effect on the continued motivation of users, which was critical to the proactive stickiness of users of an online game. In this study, we found that scholars focused on conscious factors, such as usefulness and consumer value (e.g., Hsu & Lu, 2004), to understand the behavior of online game users and migrated their focus to unconscious factors, such as immersion (e.g., Yee, 2006). However, studies that focused on repurchase behavior with respect to online games are still lacking. Table 1 shows such studies.

2.2. Repurchase behaviors

Many studies on defensive marketing considered ways to retain existing customers and encourage them to repurchase (Fornell, 1992). In particular, given increasing competition, retaining existing customers can be more effective in increasing sales and profits at a lower cost than that needed to acquire new ones (Ming-liang, 2003). Peppers and Rogers (1993) found that the cost of acquiring new customers is six to nine times that of retaining existing ones, and Hennig-Thurau and Thurau (2003) and Reichheld and Teal (1996) used data on existing customers to determine that this phenomenon is attributable to reductions in service and education costs from an increase in customers' understanding. In addition, Reichheld and Teal (1996) verified that an increase in existing customers' satisfaction fosters positive word-of-mouth (WOM) behavior, resulting in a corresponding increase in sales. Reichheld and Sasser (1990) empirically showed that a 5% increase in the customer retention rate doubles the firm's rate of return. These findings suggest that customer retention and repurchase behavior play important roles in increasing firm value.

Many studies examined customers' repurchase intentions using Fishbein (1979), the theory of reasoned action (Patterson & Spreng, 1997), customer satisfaction (Bolton, 1998; Mittal & Kamakura, 2001), Thibaut and Kelley (1959), and the theory of social

Table 1
Studies on online game industries.

Research	Purpose of research	Application of theories	Research methodology	Major content
Choi and Kim (2004)	Study of factors influencing continuous play	Theoretical model with personal and social interaction	Survey of users	Users continue to play if they attain optimal experience from effective personal and social interaction
Yee (2006)	Study of motivations for playing online games	Player types of Bartle (1996)	Survey of users	The effect of 10 motivations grouped into three components (achievement, social, and immersion) and demographic variables on playing online games are explored
Wu et al. (2010)	Study of factors influencing players' proactive stickiness	Use and gratification theory and service mechanisms	Survey of users	Both gratification and service mechanisms have a significant effect on players' proactive stickiness mediated by continuance motivation
Teng (2010)	Study of factors influencing online gamer loyalty	N/A	Survey of users	Customization is a critical factor of online gamer loyalty both directly and indirectly through increased immersion satisfaction
Tseng and Wang (2013)	Study of moderating factors between satisfaction and reuse behavior	Expectation-confirmation model	Observation, focus group interviews, survey of users	Relationship between satisfaction and reuse behavior is moderated by the effects of customer involvement and perceived specific/upgrading activities
Rezaei and Ghodsi (2014)	Empirical study of the impact of value on behavioral intention	PERVAL framework	Survey of users	Perceived value (emotional, social, price, performance) affects repurchase intention, willingness to pay, and word of mouth among online games

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