



How to Extend Life Cycle of an Online Game?

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Abstract. With the increasing popularity of online games, more and more studies have been undertaken to identify key factors impacting users' acceptance of online games. However, even game designers noticed most of these key factors long time ago, the average life cycle of a game is still very low. This study is trying to research the online game from game developers' perspectives. One of the main strategies to extend the game life cycle is to stimulate game players' impulse purchase in the game. This study evaluate the effects of temptation on game players' unplanned purchases. We propose that temptations in the online games associated with players' flow experiences, and further influence their intentions of impulse purchases.

Keywords: Online game · Life cycle · Social networks · Temptation

1 Introduction

According to the NewZoo Global Games Marketing Report [1], there will be 2.2 billion gamers in the world to generate \$108.9 billion in game revenues in 2017. Shown in Fig. 1, the revenue is expecting to reach \$128.5 billion in 2020. Online gaming in particular is one of the branches of electronic games that has evolved over the past decades. It includes social gaming, mobile gaming, as well as free-to-play and pay-to-play massively multiplayer gaming, otherwise known as MMO gaming. Online games are computer controlled 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. The commercial success of online games proves their influence on a user's behavior, in terms of confidence, enjoyment, ease of use, and loyalty [2].

According to Lo and Chen [3], 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. Game developers try to make more profit from each game. However, they are facing two serious issues: market competitiveness and high demanding quality from customers. Every year, there are more than several hundred new online games available in the

2016-2020 GLOBAL GAMES MARKET

FORECAST PER SEGMENT TOWARD 2020

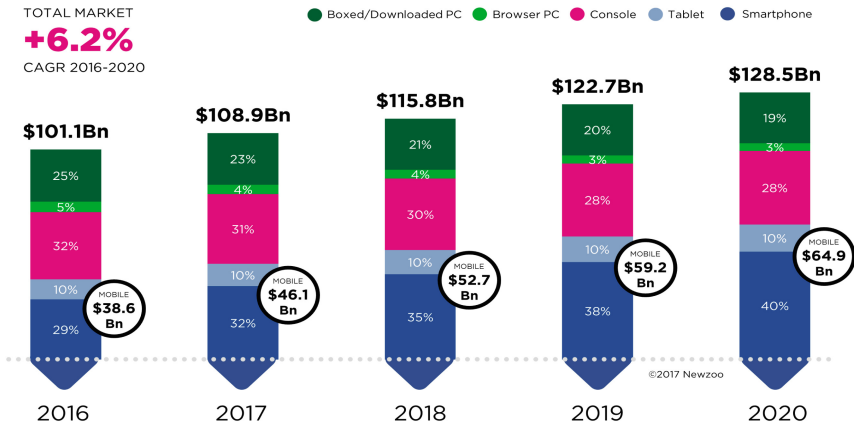


Fig. 1. Global games market from NewZoo

market from different game developers. 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 [4]. Therefore, it is increasingly important to study the key factors for retaining customers in the game. As suggested by Semeijin et al. [5], maintaining customer loyalty not only lowers the cost of acquiring new customer, but also brings in substantial revenues. A typical revenue model of an online game is to charge subscribing fee every month. However, to attract more players, who are not willing to pay fees, most of the current online game developers start to offer the online games for free to the consumers. In the free games, their revenue model changed from collecting subscribing fee to either collecting fees from their advertising merchants, or alluring customers to buy virtual goods in the games. Therefore, the longer time players play the online games, the more money they possibly will spend on the game, and this will bring more revenue to the game vendors or developers. Eventually, the profit can be used to develop and launch more expansions of the game.

Only a few empirical research studies have been conducted on how to extend the life cycle of an online game and what are the variables impacting the online game continuance play. Although the life cycle of most of the online games are short, there are special games with long life or millions of active players. World of Warcraft, one of the famous MMOG released in 2004, surpassed 100 million subscribers in 2014 and is still one of the most attractive online games in 2018. Arena of Valor, a mobile online game published by a Chinese IT giant, Tencent, attracted more than 50 million active users within a couple of months, and it became the number 1 mobile game in the world in terms of income generation, with first quarter revenue of the game reaching US \$1.76 billion in 2017. The purpose of this study is to review the current literature and establish a research model to explain what factors affect online game adoption and how to extend the life cycle of an online game.

2 Literature Review

There are many studies focused on how to persuade users to use IS or IT devices, such as research on IS acceptance models [6]. Recently, more and more researchers start to switch to post-adoption studies, such as how to attract consumers to continually use IS or IT devices, because IS/IT vendors and developer realize that retaining their customers to keep using the IS or IT devices is getting more and more important to help them expand their revenue.

The constructs, found by previous studies influencing continuance use IS, can be categorized into three groups. The constructs impacting IS continuance usage directly, such as satisfaction and enjoyment comes from the direct group. The in-direct group are those factors indirectly impact the continuance usage of IS, such as game characteristics, social norm, perceived critical mass, facilitating condition, and online game community. The last group includes the factors mediating the continuance usage of IS, such as habit.

2.1 Satisfaction

Satisfaction refers to a post-purchase or post-usage of evaluation of product quality given pre-purchase or pre-usage expectations [7]. According to expectation-confirmation theory (ECT), Bhattacharjee [8] developed an initial IS continuance research model to explain customer behaviors of their intentions to continually use IS or IT devices. Bhattacharjee [8] argues that users' extent of Confirmation, which represents the level of a customer's evaluative response regarding his/her expectations of the IS [9], is positively associated with their satisfaction of using the IS and is positively related to perceived usefulness, users' perceived usefulness of IS, which is one of the key variables in technology acceptance model (TAM) [10], is positively associated with their satisfaction with IS use and associated with there is continuance intention, and users' level of satisfaction with initial IS use is positively associated with there is continuance intention.

2.2 Enjoyment

With the development of web 2.0, social networks become a popular are to study. Extended from ECM, subjective norm and enjoyment were added to the research model in context of social network [11]. Different from most of the IS, social network focus on communications among users, therefore, subjective norm, which refers to a person's behavioral intentions influenced by people who are important to him/her, is positively related to social network use. Enjoyment is another special factor associated with social network because one of the purposes people use social networks is to have fun. Therefore, authors demonstrate that enjoyment is positively related to satisfaction, continuance intention, and continuance usage of social network.

2.3 Game Characteristics

Product quality is one of the crucial factors influencing customers' consumption [26]. 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 [12]. 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 [13]. 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 [14].

Game Graphics. 3D graphics has been receiving great attention recently due to its use in various applications such as movie making, 3D games, virtual reality modeling and 3D Graphical User Interface (GUI) development. Graphic attractiveness is a key element in creating an enjoyable user experience in online games [14]. 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.

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 [15]. 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. An appropriate game length will lead to an enjoyable experience.

Quality of Online Game Services. Service quality is one of the key factors in e-commerce success [16]. 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 [17].

2.4 Social Norm

Social Influence is the degree to which important others believed s/he should perform the behavior in question [18]. Social influence is one of the driving forces of behavior intention to use any new technology [19]. Hsu and Lu [20] demonstrated social norms and critical mass as two types of social influence. Social norms refer to accepted societal rules for behavior. Following these rules leads individuals to be accepted in the societal group. Okun and colleagues [21] suggested that social norms can be divided into injunctive (what people feel others think they ought to do) and descriptive (what other people actually do) norms. It was found that social norms play a significant role in the intention to use any new technology [20, 22]. Hsu and Lu [23] indicated that social norms play a very important role in online game community and are positively related to customer loyalty to the online game community.

2.5 Perceived Critical Mass

Perceived critical mass is an individual's perception of whether a behavior has attracted a sufficient number of individuals to indicate that critical mass has been reached [24]. In IT adoption, it can be defined that the perception of a technology value increases along with the number of its adopters. Lou et al. [24] argued that communication and interaction with others may increase perceived critical mass. Hsu and Lu [20] found that perceived critical mass significantly and directly affected attitudes and intentions and dominated online game players' behaviors.

2.6 Facilitating Conditions

Facilitating conditions refer to the availability level of external resources required by IT usage, such as the speed of the Internet when users are playing online games. In the extended model of IT continuance, Bhattacharjee et al. [25] conclude that users' perception of facilitating conditions is positively associated with their IT continuance behavior.

2.7 Online Game Community

There are two categories of social media channels in the online game playing. The first social media channel in the game is named synchronous communication mediator. When players are playing the game, they can adopt different channels to communicate with other players instantly, such as online chatting or texting function provided by the game or chatting/texting with cell phones or other devices if the players know each other in person. These channels are efficient especially when players need corporations in the game. Besides the channels provided by the game, players most likely communicate to each other based on self-organized communications. For example, players

that are enrolled to game guild will have a special guild channel dedicated to them to communicate while anyone else outside the guild will not be able to see or hear the communications. The second category is named asynchronous communication mediator. Players often share playing experiences, communicate, develop a social network, and search additional useful information of the game playing through the use of a special virtual place called virtual community. These virtual communities usually are built by the game developers. They use a number of artifacts and tools, such as online forums, discussion boards, chat rooms, video channels, and so on. These tools can help game players to gain more information about the game and share their game knowledge.

Through the online game community, players share their game information, seek help from the community for game activities, and even build their social network beyond the game. The improved quality of the online gaming community motivates more players to gather and share information in the community, and in return stimulates even higher community involvement. Players tend to enjoy the playing experience with the involvement of a social network in the game, which they build through the online gaming community. This community network also encourages their intentions to play the game and eventually increase their loyalty to the game [20].

2.8 Habit

In a proposed research model, Limayem and Cheung [26] argue that habit of using a technology could cause the continuance use because habit strengthens the continuance activities or decisions without thinking about it or performing further decision making process [27, 28]. Habit is added as a moderator variable impacting on the relationship between continuance intention and continuance usage.

3 Proposed Research Model

Traditional perspectives on game playing decision-making explain that consumers generally undergo several steps: 1. Recognition of purpose to play games; 2. Looking for the games; 3. Judging and evaluation of alternative games based on game characteristics and price; 4. Making purchase decisions and playing the game at home. This traditional approach views game players' decision-making as a logical and stable process. However, as more and more online games are free, potential game players no longer need to make logical decisions. They just try the game and then make decisions whether to stay in the game or leave. At this stage, the quality of the game is very critical to retain the players [20]. Once the players start to enjoy the game, the ultimate goal of an online game, from developers' and game service provider's perspectives, is to stimulate game players to make a purchase decision in the game.

A previous survey conducted indicates that 90% of shoppers make unplanned purchases [29]. Stern [30] categorized four types of unplanned purchases: 1. Pure impulse buying, which is characterized by a total lack of preplanning; 2. Reminder impulse buying, where a stimulus reminds consumers of their need for a product; 3. Suggestion impulse buying, where a promotion induces a customer to purchase;

4. Planned impulse buying, which is the intention to purchase something but without any specific product in mind. Obviously, category 2 and 3 are the main pulse to invoke players' purchase intention in the game. Rowley [31] argues that, when customers browsing through online shops, they may come across a special deal or a special need that triggers an immediate intention of purchasing. Similarly, when the players enjoy the game, marketing stimuli, designed by game developers, may cause their impulse service or item buying in the game.

In a study of Facebook browsing, Leong et al. [32] propose that the frequency of browsing Facebook pages, which is defined as intensity of usage, increases the possibility of the consumers being allured by certain items. This higher intensity may cause more chances of impulse buying. Therefore, they argue that usage intensity has influence on urge to purchase. In online game playing, the more time players spend in the game, the higher intensity of their game playing, and, therefore, the higher chance to invoke their impulse purchasing in the game. Park and Lee [33] summarize four types of game item values for players: 1. Enjoyment value, referring to players' feeling of fun and enjoyment; 2. Character competency value, which are the game items make the character more offensive in the game; 3. Visual authority value, the virtual items offering emotional or social attributes; 4. Monetary value, referring to the game items with investment value or required for certain quest completion, which both can be exchanged with currency or other valuable items in the game. Other than game items, players can also purchase services in the game. Services include membership of a team, group, or special organization, explanation of detailed quest guide, and so on.

From online game developers' perspectives, increasing the intensity of showing the value of game items or services in the game is to design repeating temptations to attract more impulse purchasing from the players. To yield more impulsive purchases, Puri [34] suggests offering a more nuanced perspective on temptation design. According to Ducoffe's web advertising model [35] and Flow theory [36], Martins et al. [37] propose that five antecedents of advertising value, such as informativeness, credibility, entertainment, irritation, and incentives, positively associated with flow experience.

Flow is a term first introduced by Csikszentmihalyi [36], who defined it as the "holistic sensation that people feel when they act with total involvement" (p. 36). It denotes an optimal experience so engrossing and enjoyable that the activity becomes worth doing for its own sake without the impetus of extrinsic motivation [38]. Hsu and Lu [20] narrowed definition of flow as an extremely enjoyable experience in online game playing and identified positive relationship between flow and intention to play an online game. Voiskounsky et al. [39] proposed that flow is one of the sources long-time attracting online game players. Moreover, several other studies [22, 40, 41] identified that flow experience is significantly stronger than other factors influencing the intention to play online games.

Hence, we propose:

- H1: Better designed temptations in an online game positively associated with flow experience.
- H2: Flow experience in an online game is positively associated with impulse purchase intention.

4 Conclusions

The purpose of this study is to propose a theoretical research model regarding the key factors affecting customers' online game continuance usage behavior based on a literature review. There are studies that have developed an IS continuance research model and models for applications in mobile technology usage, social network adoption, and e-learning technology. Our research highlighted the implications of the flow experience within the gaming life cycle. The better the flow experience directly correlated with the life expectancy of the game. Creating a better holistic view for the gamer thereby increased the impulse purchasing. Another extremely important driving force of the flow experience came directly from the gaming community itself. The inclusion of social networks over the years extended the life cycle of the games even further than predicted. Some games took on cult like status such as World of Warcraft outliving their competition. Even though social networks have extended the life of games it has always been detriment to others. Social media can destroy a company's credibility with a game even quicker than ever before. Game developers have had to pay very close attention to social media to ensure they develop a game users really want and not something to just make a profit.

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