Virtual Goods in Social Games: An Exploratory Study of Factors that Drive Purchase of In-Game Items

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Abstract

Purchases of in-game virtual goods in digital environments have been growing rapidly. With the rise of social networks like Facebook, socially-oriented online games have become a staple activity for users in these communities. Revenue models built around the selling of these non-physical items to casual players are projected to become increasingly dominant. We present a framework to explore the factors that motivate the buying of virtual goods by reviewing the literature on purchase behaviors in the Massively Multiplayer Online Role Playing Games (MMORPGs) domains. We share preliminary results based on data collected in Pet Society, a popular social game in Facebook, and discuss findings related to users' demographic profiles, play frequency, and virtual goods purchasing patterns and motivations.

1. Introduction

The astonishing popularity of online social networks like Facebook (which has over 500 million members [10]) and Myspace has introduced many users to play third-party developer games, like Mafia Wars, Texas Hold 'Em and the hugely popular Farmville. Revenues from the sale of virtual goods used in the games have skyrocketed [31]. In 2009, revenues from sales of virtual goods in social network games in the US alone was estimated to be over $1 billion [29], while total social games revenues are expected to top $1.3 billion for 2010 [6]. Asia, the biggest market for virtual goods, recorded about $7 billion worth of these micro-transactions in 2009 [17].

These have drawn attention to the social gaming model where online games are hosted on heavily trafficked online social network sites and where the sale of virtual goods provides the main revenue model. In the past, the most popular computer games were played on personal computers, gaming consoles, or websites like massively multiplayer online role playing games (MMORPGs). In just a few years, social games have become among the most popular games online, and have been hailed as the future of gaming [1].

Since social games are an emerging phenomenon and have not been well represented in the academic literature in particular, the goal of this paper is to explore the motivating factors to purchase virtual goods in the context of casual social games in online social networks. We present a framework for investigating the factors that affect the purchasing of virtual goods in social games in social networks. We begin with an introduction to social games, followed by a review of the literature on online games and virtual goods from which a framework to explore factors that motivate users to purchase virtual goods is composed. Finally, we present some key findings from the preliminary investigation, and discuss implications on our on-going work.

2. Background

O' Neill [27] described social games as *through which users can engage with one another. Social games must be multiplayer and have one or more of the following features: turn-based, are based on social platforms for providing users with an identity and are casual."* The turn-based features and high degree of awareness of others' actions in these games places significance on the social context of the game play. In Facebook, for instance, a player's achievement in a game is announced in the news feeds. Social games are also casual, as opposed to 'serious gaming' that usually characterizes many of the hardcore MMORPG gamers. Finally, the multiplayer nature of social games places focus on the social platforms which provide the underlying social context and identity for game play, as players are able to collaborate with those on their friends list.

The high degree of socializing is echoed by others like Chen [8] and Szugat [30] who suggested that social gaming is the result of casual gaming in a social context (although traditional multiplayer games like MMORPGs also have strong social dimensions).

The online social network platform upon which social games reside is a strong distinguishing feature that has game play and business implications. These games are third party applications, and play an important role in the overall ecology of a social network. They help increase stickiness to the site by giving social network users more things to do, and thereby increase site visits and return rates. At the same time, being a part of an online social network gives these game developers access to the huge numbers of users aggregated in one location.

One of the implications of this collaborative arrangement between social networking sites and game developers can be seen in the revenue model that dominates social games. While many traditional online games have relied on user subscriptions and advertising, social game revenue models are based on sales of virtual goods. With this 'freemium' model, the games are free to play, but players will have to buy in-game items or pay for upgrades and better experiences within the games. In recent years, an increasing number of games have adopted or moved to the virtual goods model [32], including MMORPGs in Japan [25].

3. Literature Review

Virtual goods refer to objects such as characters, items, currencies and tokens that exist inside online games and hangouts [19]. The buying and selling of virtual goods first emerged at the end of the 1990s when MMORPG players traded digital swords, armor and other in-game items on eBay, to the chagrin of

"...structured activities which have contextual rules game makers [4]. Castronova [7] studied the Everquest world of Norrath and found that its GNP would have been placed between that of Russia and Bulgaria's in the real world. Other substantial research interests focused on business and marketing opportunities in socially-oriented virtual worlds like Second Life [5; 15; 22], as a number of real world companies have set up presence in the game to experiment with business models rooted around the creation and sales of virtual goods. In many of these virtual worlds, the concept of virtual goods is well entrenched as residents routinely pay real world money to obtain virtual goods. This virtual goods revenue model using micropayments is especially popular in Asian markets like China, South Korea and Japan, and has become the dominant model for online gaming [17].

With the arrival of Facebook in 2004, virtual goods like e-cards and e-gifts have become a revenue earner for the giant social network, while virtual goods-based social games return lucrative incomes for game developers like Zynga, Playfish and Playdom [23]. In this regard, understanding the rationale of people to spend real money to purchase digital items has been a central theme in studies on MMORPGs and virtual world environments like Second Life, but is absent in the context of online social games as they are relatively new.

Research in this area has focused on economic [7] and legal perspectives [18] and has borrowed considerably from established behavioral models like Theory of Reasoned Action (TRA) [11] and Technology Acceptance Model (TAM) [9]. Studies on purchase behavior of virtual goods have borrowed concepts from the general online buying behavior domains [13], although there are differences between general online shopping behavior and virtual world purchase behavior. Nevertheless, the studies that have focused on virtual goods have been within the context of motivations for purchase of virtual goods.

Several studies on motivations to purchase virtual items focused on differences in players' attributes- age, gender, gaming-playing behaviors- and their motivations to play these games. Bartle [3] introduced four types of underlying motivation for gamers, as explained by Yee [33]- Achievers, Explorers, Socializers and Killers. Yee [36] improved on the Bartle Types and generated three main components of players' motivations in playing MMORPGs - Achievement, Social and Immersion, and later added Escapism and Manipulation [37], while Hsu and Lu [16] identified three main reasons- social norms, attitude and flow experience. The rationale for playing

these games, like Achievement for instance, can be related to players' motivations to purchase virtual items [36]. Nojima [25] applied Yee's model in her study of virtual goods-based models of MMORPGs and found virtual item purchases to co-relate to immersion in the game, while Lehdonvirta's [20] study of motivations for real money trade of virtual goods found a connection between users' attitudes towards purchases of virtual goods with their motivations for involvement in virtual worlds.

Another approach to studying virtual goods purchasing behaviour focused on game-play context, that is, the roles of in-game items in fulfilling game play. Oh and Ryu [26] studied the virtual goods model in two virtual worlds and presented a dichotomous view of virtual goods as 'functional' or 'ornamental.' A 'functional' virtual item is bought to increase a digital character's ability to compete while an 'ornamental' virtual item is bought for appearance and decorative purposes. Lehdonvirta [19] approached the virtual goods revenue model by investigating the attributes of virtual items that would drive purchase decisions. He sub-divided the ornamental category to include hedonistic and social attributes, and developed a scheme composed of ten attributes- functionality, performance, visual appearance and sounds, background fiction, provenance, customizability, cultural references, licenses, price, and rarity.

Finally, psychometric approaches have also been used to identify individual determinants to explain the purchase of virtual items in online games. Guo and Barnes [12] refined a prior theoretical model that they developed [14] to explain purchase behavior in gaming environments. Using focus groups to analyze the processes underlying digital purchases of Chinese virtual game players, they formulated three themes- reasons for purchase of virtual goods, reasons for using virtual worlds for making purchases of virtual items, and the factors that affect specific purchase decisions.

Oh and Ryu [26] and to a certain extent Lehdonvirta [19] focused on the attributes of the virtual goods while Bartle [3], Yee [37], Guo and Barnes [13] and Balfour [2] considered the rewards or satisfaction that can be derived from purchasing virtual items.

4. Research Framework

Based on the literature review, we propose a framework to study factors that affect the purchasing of virtual goods in social games. We aggregate the major factors found in the literature into five major categories- in-game achievement factors, hedonistic factors, social factors, status and profit-making factors. In-game achievement factors refer to purchasing of virtual in-game items to increase character competency to accomplish tasks and enhance performance to aid the achievement of game objectives. Thus, it includes instrumental attributes [19], functional factors [26], winning [2], and perceived value, advancement and customization and factors relating to game requirements [13].

Hedonistic factors refer to the motivations to derive intrinsic pleasure from acquisition of virtual game items. This includes purchasing game items out of curiosity, for fun or personal enjoyment [13], whether the appeal is in terms of the aesthetics or decorative value of the items [19]; [26], establishing identity [21] or the inherent satisfaction gained from just being able to own something.

Social factors include social influence, or *'the degree to which an individual perceives that important others believe he or she should obtain desired virtual items through purchasing from other players in the virtual world'* [13]. Purchases can be driven by peers and other game players, or by the attributes of the virtual goods that act as purchase drivers in that they are able to create and communicate social distinctions and bonds [20]. Since social gamers often play in close proximity with people on their friends' list, the social dynamics could differ from the guilds formed with strangers in typical MMORPGs.

These factors- in-game achievement factors, hedonistic factors and social factors are aggregations of factors that are somewhat well discussed in the literature. We note, however, that some social attributes like rarity [19] are symbols of prestige and bestow status to the owner, and have profit-making potential as well. As such, we accord status as another factor, which is in agreement with Balfour [2] who presents status as separate from social factors. Status refers to the buying of virtual goods for the purpose of enabling the owner to stand out from the crowd [2]. We also add profit-making opportunities as a factor, which refers to the explicit intention of acquiring virtual goods for re-sale at a higher price. A summary of these factors used for the preliminary study is shown in Figure 1.

In this study, a self-reporting survey instrument was used to collect three types of data- general information about respondents' demographics, their game-playing frequency and their motivations to purchase virtual goods were collected. Respondents who had purchased virtual goods in a social game were asked to indicate on a 5-point Likert scale, the extent of their agreement (from strongly agree to strongly disagree) with a number of statements pertaining to our framework of in-game achievement, hedonistic, social, status and profit-making factors discussed above. The survey

questionnaire was electronically linked to a number of sites where players of these games are known to congregate, including in-game forums, official and user-created game communities.
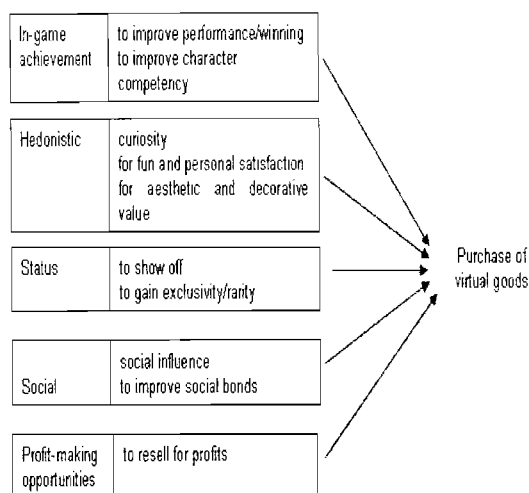

Figure 1. Framework of factors that affect the purchase of virtual goods in Pet Society

5. Preliminary Findings

Since full results are not available yet, we present some preliminary findings from one of these Facebook games, Pet Society. We share selected descriptive statistics obtained from SPSS analysis of an initial group of 203 respondents in the game.

Table 1 shows the demographic profile of the sample, which indicates the appeal of this game to females. The largest group is the 18-22 year old group which makes up about 40 percent of all who responded. Younger players (22 years old and under) outnumber older ones (over 22 years old).

Table 1. Respondents' Demographics

		Frequency	Percentage
Gender	Male	55	27.1
	Female	148	72.9
	Under 17	60	29.5
	18-22	82	40.4
	23-28	34	16.7
	29-35	15	7.4
	36 and over	12	5.9

Table 2 shows respondents' play and purchase behaviors. The majority of Pet Society players who responded to this survey play the game everyday (77.3

percent), but most (68 percent) only play up to two hours each time they log in. In comparison, 60 percent of MMORPG players have reported playing an MMORPG for at least 10 hours continuously [34]. Although stickiness in terms of hours spent per play session is low, casual games are designed to garner quite an amount of attention, thus demanding daily log-ins and high visit rates.

Table 2. Play and Purchase Behavior

		Frequency	Percentage
Frequency of play	Everyday	157	77.3
	A few times a week	20	9.9
	A few times a month	26	12.8
Hours per play session	Less than 1 hour	68	33.5
	1-2 hours	70	34.5
	2-3 hours	23	11.3
	3-4 hours	15	7.4
	Over 4 hrs	27	13.3
Virtual goods purchase	Has purchased	88	43.3
	Has never purchased	115	56.7

The number of players who has never made a purchase of virtual goods items (56.7 percent) in Pet Society exceeds those who had purchased before (43.3 percent). As a comparison, only 22 percent of MMORPG players purchase virtual currency [35]. It is usually not necessary for social gamers to pay real money to enjoy the games as players can earn in-game coins (called Yellow Coins in Pet Society) to purchase items, or to engage in constant game play to level up. Pet Society players can also purchase in-game coins called Playfish Cash to obtain premium items or to upgrade their levels faster.

A correlation analysis indicated a negative correlation between purchasing of virtual goods with age (Pearson correlation coefficient of -0.212 significant at $p<0.01$) and positive correlationn with frequency of game play (Pearson coefficient of 0.217, significant at $p<0.01$). Almost half of those who play the game daily claimed to have purchased virtual items compared to 20 percent of those who play a few times a month. As expected, most purchasers of virtual goods are full-time employed (65 percent) while most full-time students in this sample are non-purchasers (69 percent).

Table 3 shows the mean values of the factors (mean values 1-5, with 1 being the strongest) that affect

purchase of virtual goods. Most of the 88 respondents who had paid real money for virtual goods indicated strong agreement or agreement with one or more of the statements associated with hedonistic, in-game achievement and status factors.

Table 3. Mean values of factors affecting virtual goods purchase

Reasons for buying virtual goods	N	Mean	Std. Deviation
Out of curiosity	85	2.73	1.10
For aesthetic and decorative value	83	2.18	1.03
For fun and personal satisfaction	86	2.12	1.00
To attain character competency	83	2.42	1.11
To improve performance/winning	83	2.91	1.29
To improve social bonds	84	3.21	1.31
Due to social influence	82	4.11	1.03
To show off	82	2.51	1.11
To resell for profits	83	3.51	1.30
To gain exclusivity	83	2.71	1.33

Hedonistic factors- 'for fun and personal satisfaction' (mean = 2.12) and 'for aesthetic and decorative value' (2.18) appear to be the most dominant factors. Many respondents also acquire virtual items instrumental to playing the game, for instance obtaining the best equipment to increase character competency (2.42). However, buying virtual items out of a competitive desire to progress in the game or to win is not as strong (2.91). This seems to concur with Guo and Barnes [13] who found that Second Life players were hesitant to purchase virtual items for reasons of achieving advancement. There is also relatively high agreement that purchases are made for status reasons- to show they can afford the purchase (2.51) and to own items that are exclusive (2.71).

Respondents who have bought virtual goods generally did not think that social influence was a factor, as indicated by the overwhelming disagreement with 'due to social influence' (4.11) and 'to improve social bonds' (3.21). Again, this finding aligns with Guo and Barnes [13] who concluded that social influence has little effect on forming players' general purchase intention. Finally, Pet Society players who

have bought virtual goods do not seem to have acquired them for profiteering reasons (3.51).

6. Discussions and Conclusions

Pet Society players exhibit a relatively high willingness to spend real money for virtual goods, which is shown to correlate to the frequency of play. This should cast attention on the broader social network within which social games like Pet Society are embedded, since a vast amount of time on social networks is spent on these games [28]. Coupled with studies like Nielsen's [24] which show that Internet users are spending increasingly more time on social networks and online games, there is significant implications about the role and ability of social networks to not only drive traffic to the game sites, but to effect purchase of virtual goods as well.

Three of the factors or motivations to purchase virtual goods presented here- hedonistic, in-game achievement and status factors- seem to be in line with findings from previous empirical studies involving larger virtual world environments. The strong hedonistic motivators suggest that virtual items are bought for intrinsic reasons- for fun, personal satisfaction, and their aesthetic qualities. While the results indicate that social gamers may buy these items to improve character competency, they are not necessarily competitive or bent on winning. This is probably a reflection of the casualness of social games like Pet Society, and calls for caution when making conclusions about in-game performance as a purchase motivation factor.

The strong social context does not seem to translate into influence on most players' purchasing behavior. Neither is there compelling evidence that virtual items are acquired as a means to connect with friends and fellow players. This is an interesting contrast to acquiring game items for status reasons- to establish identity by owning exclusive items and to show off what they can afford to buy. Unlike MMORPG games where virtual items are bought for the purpose of resale, and where large and thriving secondary markets have developed, this practice does not appear to be popular with the Pet Society respondents in this particular study at this point.

As a conclusion, this paper has contributed to the domain of online gaming by providing a framework that can be used to study the motivations of social gamers to purchase virtual goods. It has drawn some preliminary findings pertaining to game-playing behavior and provided indications of factors that drive

purchase of virtual goods that can be applied in further studies.

7. Limitations and Future Work

The limited findings selected for this preliminary report constraint the extent to which conclusions can be drawn with certainty. It is hoped that the on-going project involving five of the most widely played games in Facebook - Farmville, Mafia Wars, Restaurant City, Texas HoldEm Poker, and Pet Society [23] - will provide a more adequate sample. These sites are selected to ensure balanced representation from male-oriented (like Mafia Wars) and female-oriented (like Pet Society) games in the overall sample.

The findings here represent a good starting point for future studies of social games. In addition to empirically verifying and examining the strengths of each of the virtual goods purchasing factors identified here, future work on this rapidly emerging phenomenon could consider the addictive appeal of these games and the supportive broader community in which they reside.

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