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Exploring Customers' Preferences for Online Games

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ABSTRACT

Online content providers who use the Internet to distribute content experience an extremely competitive business environment. To survive in this environment, they have started charging a fee for the content that they provide. However, there have been very few success stories in commercializing online content. Although one of few success stories is the online game, it still has customers' psychological resistance against paying a high fee for playing games. To pay back their high R&D or development costs quickly, many online game producers have a tendency to assign high prices to their online games. Without examining customers' perceived prices for online games, many online game producers have tended to decide prices from their perspectives. Although many online game-related research works have focused on psychological and technical aspects, very few works have examined online gamers' preferences carefully. This study aims at exploring online gamers' preference by measuring their WTP (Willingness To Pay) for online games.

Keywords

Online games, willingness to pay, content provider, content price, preference, conjoint analysis

INTRODUCTION

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 the online game one of the most successful Internet businesses to date. Furthermore, the spread of mobile Internet devices, including cell phones with game-playing capabilities, may expand the on-line game market dramatically. To explore advantages of first movers in a largely unformed online games, by using advanced multimedia technologies, such as 3-D, virtual reality or animation, many online game producers have developed and introduced new online games. The problem with making money in the fiercely competitive online game market is that these producers have not understood factors that absorb online users in the

games and actually get online users to play games repeatedly.

Many content providers have started charging a fee for the content that they provide. However, there have been very few success stories in commercializing online content. Among various types of online content, online games are relatively easy to be commercialized. However, there still has been customers' psychological resistance against paying a high fee for playing games. To pay back high R&D or development costs quickly, many online game producers have a tendency to assign high prices to their online games. Like other online content providers, online game producers have tended to focus on technologies, rather than customers' needs or preferences.

This study aims at examining customers' WTP (Willingness to Pay) for online games. In spite of such growth of online games and interests on it, the academic discussion regarding factors that affect online game player's WTP, is relatively limited. By examining customers' WTP on online games carefully, online game producers may have a deeper understanding about their customers. More specifically, we empirically investigate the effects of unique characteristics of online games, such as human-and-computer interaction types (2-D, 2.5-D, and 3-D), human-and-human interaction types (stand alone, text chatting, and picture chatting), mobility (wire and wireless), and degree of freedom in creating game characters (low, medium, and high), on customers' WTP. To analyze the WTP data that we acquire by interviewing subjects, we use conjoint analysis.

ONLINE GAMES

An online game refers to a game carried out within a computer network (Whang, 2004). An online game is generally considered to be a MUD (multi-user dimension, or multi-user dungeon) game. MUD games are role-playing games set in a virtual world of 2-D or 3-D. When MUD games take place through an Internet network, this is referred to as a massive multi-player online role-playing game (MMORPG). Within MMORPG, by controlling diverse activities ranging from hunting,

fighting, and combat, the game participants become game characters themselves. Since they can play games together without seeing or knowing each other in the online game world, they have a tendency to satisfy various human desires that they cannot pursue in the real world.

By now, the Internet has deeply infused into most aspects of our lives. Among them, social impact has been the focus of the Interest. By using the Internet, geographically distributed people can easily form a virtual community and dwell on it overcoming time and space barriers. Internet-assisted communication transforms conventional information systems into vast human interactive networks, and offers people opportunities to experience new forms of social contacts, without any real social presence (King, 1996). The significant difference between cyberspace relationships and ones maintained by other existing technologies, such as telephone, mail, and fax, is that the on-line interactivity enables people to express them in an unrestrained manner. This experience is so stimulating, rewarding and reinforcing that some people find it hard to know when to stop (Young, 1996). Many researchers have focused on the negative aspects of the obsession. If the obsession of Internet usage interferes with the regular life of people, Young (1996) calls it Internet Addiction. The exotic characteristics of Internet communications that people hardly experience in the physical social environment are attractive enough to catch the eye of game players. Although computer games such as Solitaire and Minesweeper in the 1980s were not interactive nor played on-line, 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 with on-line games to the degree that 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. Therefore, online game world is not simply considered as a temporary medium for playing games, but as a social place where new types of human relations are formed. By focusing on psychological and technical aspects of online games, many online game-related research works have considered online games as public goods, not as commercial products.

WTP (Willingness to Pay)

WTP (Willingness to Pay) is defined as the maximum monetary amount that an individual would pay to obtain goods or service (Brown & Gregory, 1999). It is widely used to provide information to policy makers, regarding the economic value of non-market or non-pecuniary environmental assets. For example, it can be used to determine the value of a proposed habitat improvement program or the level of compensation for coastal fishers after an oil spill. It is conceptually appropriate to an environmental improvement or gain. In addition, in the areas of marketing or psychology, it is widely used to

understand cognitive processes of humans. In this study, by measuring WTP for various online games, we try to investigate what features of online games affect customers' WTP.

To measure WTP, there are two methods: contingent method and conjoint method. In the contingent method, arbitrary goods or service are presented with specific prices, and then respondents take or reject the offers. While the contingent method asks respondents to evaluate real products, the conjoint method asks them to evaluate hypothetical products. The conjoint method allows researchers to presents respondents with a choice set that contains several alternatives that vary along several attributes, including price. Respondents decide the rankings among the alternatives. Based on the rankings, researchers can analyze the preferences and utilities of respondents for specific goods/service. Since the major objective of this study is to explore various features of online games that affect customers' WTP, we use the conjoint method to measure and analyze WTP.

RESEARCH METHODOLOGY

The main purpose of this study is to explore the effects of attributes of online games on WTP. In order to analyze relative impacts of online game attributes on customers' (online gamers') preferences, this study employs conjoint analysis. Conjoint analysis originates from mathematical psychology. Conjoint analysis is used to understand how consumers develop preferences for products or services, which encompass, as usual, multi-attributes and multi-attribute levels. Utility is a consumer's subjective measurement of preference that is evaluated for each level of attributes. The utility values associated with each level of attributes are summed as the overall utility. Then, products or services with higher utility are assumed to be of a better choice for consumers. The strength of conjoint analysis arises from its flexibility of accommodating metric or non-metric dependent variables and general assumptions about the relationships of independent and dependent variables (Hair et al., 1998). After its introduction to marketing and decision-making problems by Green and Rao (1971), conjoint analysis has been one of the popular tools for measuring product preference of purchasers and consumers over 30 years (Green & Srinivasan, 1978; 1990). It has also been used to market segmentation and optimal product positioning (Green & Krieger, 1993). In spite of its popularity (Wittink & Cattin, 1989), a major weakness of conjoint analysis is that respondents participating in conjoint experiment have to evaluate a number of hypothetical product profiles. The number of hypothetical product profiles increases exponentially as the number of attributes and attribute levels increases. Note that it is usual to have more than 10 attributes when we design commercial products using conjoint analysis. If each attribute has four attribute levels, respondents must evaluate 4^{10} hypothetical products. To reduce the number of hypothetical products, a fractional factorial design can be used. Table 1 shows

different levels of online game attributes. In this study, we examine how the online game attributes affect customer's WTP.

Attribute	Levels
Human-and-Machine Interactivity	2-D 2.5-D (Background: 3-D and Game Characters:2-D) 3-D
Human-and-Human Interactivity	Stand Alone Multi-User Play with Text Chatting Multi-User Play with Picture Chatting
Degree of Freedom in Creating Game Characters	Low: Cannot change anything of game characters Medium: Can change clothing, accessories, and Weapons of game characters with a limited way. High: Can create own game characters
Mobility	Wired, Fixed Wireless, Movable

Table 1. Online Game Attributes

Since this study has three attributes with three levels each and one attribute with two levels, all possible hypothetical products are 54 (3*3*3*2). If we use a full-profile method, respondents would have difficulty in answering all 54 questions. For this reason, the number of questions is needed to be diminished to a proper level. As an alternative to a factorial design, we use a fractional factorial design. This approach is a way to reduce the number of questions. The number of initial questions (54 questions) is reduced to 9 questions (refer to Table 2). Based on the fractional factorial design, 9 hypothetical products are generated (refer to Figure 1).

Prod.	HM ¹⁾	HH ²⁾	Mobility	Degree of Freedom in Creating Game Characters
P1	2-D	Stand Alone	Wire	Low
P2	2.5-D	Text Chatting	Wire	High
P3	3-D	Picture Chatting	Wire	Medium
P4	2-D	Text Chatting	Wireless	Medium
P5	2.5-D	Picture Chatting	Wireless	Low
P6	3-D	Stand Alone	Wireless	High
P7	2-D	Picture Chatting	Wire	High
P8	2.5-D	Stand Alone	Wire	Medium
P9	3-D	Text Chatting	Wire	Low

¹⁾Human-and-Machine Interactivity ²⁾Human-and-Human Interactivity

Table 2. Hypothetical Products

Respondents are asked to provide the maximum monetary amounts that they would pay to get these products. Based on the amounts, we investigate how much each online game attribute affects customer's WTP.

DATA ANALYSIS

We interviewed 179 respondents, consisting of 115 males and 64 females. Since most of online game users are younger, most of respondents consist of 15-30 year olds in this study.

(1) Exploring Preferences of Hypothetical Products

Table 3 shows the rankings of customers' preferences to 9 hypothetical products (refer to Table 2). While many customers have preferences for P5 (1st ranking) and P2 (2nd ranking), they choose P7 (9th ranking) and P1 (7th ranking) as the least preferable products. The common attribute between P5 and P2 is 2.5-D. The common attribute between P7 and P1 is 2-D. This result implies that customers' preferences to online games seem to be influenced by the man-and-machine interactivity,

Prod.	P1	P2	P3	P4	P5	P6	P7	P8	P9
Ranking	8	2	4	6	1	7	9	3	5

Table 3. Preferences of Hypothetical Products

(2) Exploring Relative Importance of Key Attributes

In addition to portraying the impact of each level (stand-alone, text chatting, picture chatting et. al) with the part-worth estimates, conjoint analysis can assess the relative importance of each factor (human-and-machine interactivity, human-and-human interactivity, degree of freedom in creating game characters, and mobility). Since the part-worth estimates are on a common scale, the greatest contribution to overall utility of preference, and hence the most important factor, is the factor with the highest range of part-worths.

In this study, we examine the relative impacts of online game attributes on customer's WTP. Table 4 reports the means of the part-worths and relative importance for 179 subjects. The most influential attribute is human-and-human interactivity (46.87%), the second is human-and-computer interactivity (22.33%), the third is degree of freedom in creating game characters (18.48%), and the last is mobility (12.32%). The results show that, in perceiving the values of online games, many online game players are mostly influenced by the ways of human interactions in the virtual space. By creating virtual interactions that they have not experienced in a real-world, online game producers can increase WTP of customers to their online games. Due to the degree of interactivity of communication media, many online game customers are expected to prefer picture chatting to text chatting. However, it is found that they prefer text chatting to picture chatting. This finding shows that online game customers consider anonymity as an important matter in playing online games. In terms of human-and-machine interactivity, they prefer 2.5-D

(Background is 3-D and characters are 2-D) to 2-D or 3-D. This finding implies that many online game customers get tired of 2-D and do not get used to 3-D yet. This says that advanced technologies cannot always guarantee high WTP. From the perspective of flexibility (degree of freedom) of online games, they prefer changing characters with restricted manners. This type of flexibility is widely used in online games. In terms of online game flexibility, like human-and-machine interactivity, customers prefer familiar game environments, rather than unfamiliar game environments. Finally, many customers prefer playing games with mobile internet devices.

Attribute	Part-Worth			Relative Importance (%)
	1	2	3	
Human-and-Human	Stand Alone	Text Chatting	Picture Chatting	46.87
	0.64	5.18	3.73	
Human-and-Machine	2-D	2.5-D	3-D	22.33
	2.62	3.14	0.98	
Degree of Freedom	Low	Medium	High	18.48
	2.09	3.17	1.97	
Mobility	Wire		Wireless	12.32
	1.29		3.08	

Table 4. Part-Worths and Relative Importance

(3) Applying Conjoint Analysis Results: Segmentation

One of the most common uses of conjoint analysis is to group respondents with similar part-worths or importance values to identify segments. Because of the following reasons, conjoint analysis can be used as a useful method for implementing market segmentation and product positioning (Green & Krieger, 1991). First, the focus of conjoint analysis is to explore buyer preferences for product attribute levels and the buyer benefits that may flow from the product attributes. Second, conjoint analysis allows us to measure part-worth functions at the individual level. Hence, if preference heterogeneity is present, by using cluster analysis, we can identify groups that have distinct preferences. Third, conjoint studies typically entail the collection of respondent background information (e.g., demographic data, psychological data).

Based on 179 respondents, the study identifies three online game customer groups. Three clusters consist of 35, 54, 90 respondents, respectively. Table 5 summarizes their unique preference structures. Respondents in cluster A prefer the online games that have the following features: multi-user play with text chatting, 2.5-D screen interface, and changing game characters with limited ways. They have a preference for existing online games, rather than the online games that have new features. This result indicates that they have very conservative preferences to online games. Respondents in cluster B have similar preference structures with respondents in cluster A. One of main differences between cluster A and cluster B is that respondents in cluster A give a significant preference to online game features, multi-user play with

text/picture chatting. Unlike cluster A and B, respondents in cluster C do not show their specific preference structure. They equally assess the relative importance of each attribute. The study finds that many respondents that belong to cluster C are beginners.

	Cluster A	Cluster B	Cluster C
Stand-Alone	1	0	1
Text Chatting	5.57	7.96	3.31
Picture Chatting	2.14	7.56	2.06
2-D	3.62	2.84	2.13
2.5-D	7	3	2
3-D	1	1	1
Degree of Freedom: Low	2.81	2.72	1.45
Degree of Freedom: Medium	8	2	2
Degree of Freedom: High	4	2	1
Wire	1.43	1.56	1.08
Wireless	4	4	2

Table 5. Cluster Profiles

CONCLUSIONS

In spite of growth of online games and interests on it, the academic discussion regarding online games is relatively limited. The main purpose of the study is to explore attributes that influence customers' preferences to online games. To explore the relative importance of the attributes, the study uses conjoint analysis. It finds that the most influential attribute is human-and-human interactivity. This finding supports the current phenomenon that, as the online games allow players to enjoy conversations with other players within the virtual space, more players tends to show excessive obsession into online games and the degree of the obsessive playing is intensified. To express themselves in an unrestricted manner that they cannot use in real world, many players are absorbed by online games. Although this study tries to understand them empirically, it has very limited contributions to theoretical development. In order to identify attributes of online games, it heavily relies on five online game designers. In addition, regarding to the relationships between attributes of online games and customers' preferences, it does not propose a theoretical explanation. In future, by redefining online game attributes based on the related theories, it is trying to develop a comprehensive model for game players' preferences.

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