A Study of Gender Difference in Playing Online Games: Using the IQA Approach

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Abstract

Online gaming has become a huge market in the world, and continues to grow in size, and how to establish online game loyalty has become an important issue. Since every country seeks to discover distinguishing characteristics in game development, “differential positioning” is an important market strategy for increasing players’ commitment in response to online game promotion in the future.

This research used the interactive qualitative research approach and invited one male group and one female group to be the focus groups. The question “What features in a game will make you play it over and over again?” is set as the core concept. After the process of IQA and through presentation of the mindmap, the following conclusions can be obtained from this research:

1. The 8 affinities that should be taken into account when designing a game for either males or females are: three-D, Plug-in, transaction, interesting, ease of use, make friends, achievement, and leisure time.
2. Online games should be easy to get started in as well as challenging. Therefore, the design should be “a little difficult but not too difficult” to achieve the kill time effect.
3. Plug-ins are popular among many players but could compromise the fairness of the game, lessen game companies’ revenue, and may also cause legal issues. Therefore, the plug-in issue deserves further study.
4. The three factors that should be taken into account when designing an online game for males are: variety, equipment, and reaction.
5. The four factors that should be taken into account when designing an online game for females are: free, music, role, and level in order to satisfy females’ requirements.

Keywords: MMORPGs, mindmap, online game, gender difference
1. Introduction

1.1 Motivations

Online gaming has become a huge market in the world, and continues to grow in size. According to the DFC Intelligence’s report on the online game market forecast (DFC, 2008), the total global output value of online games was 5.2 billion US dollars in 2006, 7 billion US dollars in 2007, and is forecasted to reach 19 billion US dollars in 2013. In regards to the Chinese market, online game sales revenue was 18.38 billion Renminbi in 2008 (an increase of 76.6% from the previous year), and is forecasted to reach 39.76 billion Renminbi in 2013 (IDC, 2009). As for the game industry in Taiwan, the market size of online games reached 10.4 billion NT dollars in 2008 (Hsieh, 2008), and was predicted to reach 12.2 billion NT dollars in 2010. Therefore, online gaming is a digital industry very worthy of investment from the perspectives of both international and domestic markets. The Ministry of Economic Affairs in Taiwan specifically included it as one of the major digital content industry development directions (Industrial Development Bureau Ministry of Economic Affairs, 2007). Nevertheless, there is still a lack of research into guiding principles for digital game design as used by game designers (Costikyan, 2002). In designing games, all game designers wish to have guidelines as a reference (Bjork, Lundgren, & Holopainen, 2003). Hence, the discovery of game design directions presents a major foundation for the development of the digital game industry.

Since every country (e.g., Korea, Japan, China, and the USA) seeks to discover distinguishing characteristics in game development, “differential positioning” is an important market strategy for increasing players’ commitment in response to online game promotion in the future (Hsieh, 2008).

Both the market size and number of online games users continue to increase, for which the number of female players is increasing most rapidly, accounting for more than 40% of gamers. Hence, in regards to the development of new online games, market differentiation based on gender is a direction worthy of consideration. A study conducted in 2008 (Hsieh, 2008) indicated that many users were not willing to spend much time on trying different versions (as they did the previous year), and instead continued to play the same games. Consequently, how to establish online game loyalty has become an important issue.

Based on the research motivations discussed above, this present study adopts online games as its topic, and utilizes the approach of interactive qualitative research (Northcutt & McCoy, 2004) to uncover the mindmap that influences online gamers of different genders to continue playing games. This study intends to achieve the following:

1. To discover the common factors that influence game loyalty in males and females.
2. To discover individual factors that influence game loyalty in males and females.
3. To provide online game design suggestions based on differing genders as guidelines for game design.
2. Literature Review

2.1. Online games

Online games have been defined and categorized by different researchers and organizations. Games are classified by Fattah and Paul (2002) as Stored Games where the content and way in which the game is played are pre-defined by the manufacturer, or Online Games where there may be several ways to play a game and multiple game outcomes. Massively multiplayer online role-playing games (MMORPGs) have become most popular online game (Caplan, Williams, & Yee, 2009; Ng & Wiemer-Hastings, 2005). The first MMORPGs began in Korea in 1995, the number of games and player increased significantly (Kim, Namkoong, Ku, & Kim, 2008). Online games have also been categorized as either leisure time games (47%) or MMORPGs (53%) by the Institute for Information Industry in Taiwan (Hsieh, 2008).

MMORPGs are highly interpersonal online activity for players to go online to meet people, to form relationships, also is a preference for online social interaction (Caplan et al., 2009; Ng & Wiemer-Hastings, 2005). There are many studies have focused on MMORPGs players’ motivation and behavior (Chang & Zhang, 2008; Choi & Kim, 2004; Griffiths, 2000; Wan & Chiou, 2006; Yee, 2006) but without taking the role of gender difference into account.

Both studies and market survey reports indicate that gender has an impact on online game behavior and perception. Therefore, market differentiation based on gender is necessary. Research findings include: that role playing and adventure games are generally popular in both male and female players, and that male players prefer action, first-person shooting, and real-time strategy games, whilst female players prefer games involving puzzles, development, love, and music (Hsieh, 2008).

3. Research Methodology

A more in-depth and extensive exploration of the nature of the problem may be conducted through qualitative methods, though these in turn lack quantitative analysis. Previous research results relied on researchers’ subjective judgments. The interactive qualitative research (Northcutt & McCoy, 2004) method not only collects data via a qualitative approach, but also obtains research results through a more objective algorithmic approach. This method satisfies the needs of the problem at hand and has thus been used in this study. More specifically, a focus group was utilized to gather qualitative research data, and affinities were formed through this focus group based on ground theory. In addition, the members point out the relationships between the affinities based on their personal perspectives. Pareto’s 80-20 rule is then utilized to analyze the data collected and a focus group mindmap is produced.
4. Data Collection and Analysis

4.1. Data collection

In order to study the common and individual factors which influence males’ and females’ online gaming, a male focus group and a female focus group were established. Each group consisted of 12 members. In the male focus group, 1 member was less than 15 years of age, 1 member was within the 16-18 age range, and 10 members were in the 19-25 age range; 1 member was in the public service and 11 members were students; and 3 members resided in northern Taiwan, 8 members resided in mid Taiwan, and 1 member resided on an off-shore island. The female members were all in the 19-25 age range; 1 member was a staff member and 11 were students; and 4 members resided in northern Taiwan, 7 in mid Taiwan, and 1 in southern Taiwan. In regards to usage for male users, 7 members played at least once a day, 2 members played once a day almost every day, 2 members played every two to three days, and 2 members played once a week. In the female focus group, 3 members played at least once a day, 6 members played once every two to three days, and 3 members played about once a week (or less).

4.1.1. Open coding

For data collection, all focus groups members were given 25 paper cards. The researcher had members write down why certain games are often played. That is, why a particular game is played out of so many other games: what characteristics do the games that you play most often possess to make you play them over and over again? Alternatively, what characteristics would you like a game to have such that you will play it over and over again? For every card, only one idea (or reason) was to be written. After each member was made aware of the appropriate method of communication, they wrote down their ideas on the paper cards.

4.1.2. Affinity

After all 12 members had completed filling out the paper cards, these cards were pasted on a wall. The members were then asked to review all of the paper cards once, and if there was anything on them which was unclear, the original authors of the cards were to clarify their meaning. After all the members had understood the meanings of the cards, the inductive code process was initiated. Cards that had similar meanings were grouped together, and a consensus amongst all the members was obtained. If anyone felt that any of the card locations was debatable, discussions were conducted until a consensus was reached. After all the paper cards had been categorized, the naming of paper cards of the same category began. This was conducted under the guidelines that naming should encompass all the open code meaning of a single category, and agreement amongst all people should be obtained.

After the open code was completed, Axial Coding began. Category codes of similar concepts were grouped together to form higher-level affinities, and each affinity was named. In the end, eleven male affinities (1.Plug-in, 2.Ease of use, 3.Make friends, 4.Variety, 5.Three-D, 6.Challenge, 7.Interesting, 8.Equipment, 9.Kill time, 10.Tradable, 11.Reaction)

4.1.3. Theoretical coding

After focus group members decided on the affinities, the theoretical coding process began, with every focus group member deciding on the inter-relationships among the affinities on their own. To allow focus group members to point out the interrelations among affinities, the researcher drew black affinity relation forms and had focus group members fill in arrows in the forms where arrow directions represent the cause-effect relationship between one affinity and another. The affinity at which the arrow points indicates the affinity being affected by another affinity. A lack of relation between two affinities is represented by a blank space.

4.2. Data analysis

Since every focus group member has his or her own unique life experiences, their conceptions may not be exactly the same. Consequently, theoretical coding drawn by each focus group member would certainly not be exactly the same. In order to compile a mindmap that is able to represent the ideas of the focus group as a whole, which relations are to be included in the interrelationship diagram should first be determined. The theoretical code that represents the whole focus group is determined through Pareto and power analysis and majority rule processes. Next, the interrelationship positions of affinities in the mindmap need to be determined in order to derive an interrelationship diagram.

4.2.1. Theoretical coding

The purpose of theoretical coding was to determine which relations need to be included in the interrelationship diagram. The relations between affinities and number of votes were initially determined using Pareto and power analysis. From this, a minimum vote value was obtained by examining power. Next, a majority rule was applied to determine the theoretical code agreed upon by the whole focus group.

A Pareto and power analysis was performed first. We arranged all the relations among affinities in descending order according to total vote. We then deducted the cumulative percent of relations (Cumulation of relations/total relation) from the cumulative percent of votes (Cumulation of frequencies/total vote), and the difference obtained was the power. The distribution of all the powers can be roughly represented by a parabolic curve. Before the power reaches a climax, the power appears to increase progressively, indicating that for every unit increase in percent of relations, the increased vote percentage is higher than the previous increased amount. In other words, for every unit increase in percent of relations, the resulting marginal percent of vote percentage increases progressively. On the other hand, after reaching a climax, for every unit increase in percent of relations, the resulting marginal percent of vote percentage will decrease progressively. Therefore, the corresponding number of votes when
the power reaches the maximum is considered to be the critical value. Follow-up analysis is only conducted if the number of votes is higher than the relationship of affinity critical value. This analysis procedure is constructed using the 80-20 Pareto rule, and is intended to achieve the goal of using the minimum percent of relations to obtain the maximum number of vote percentage.

The results of Pareto rule analysis is as follows. As shown in Figure 2, when the total relationship of the male focus group reaches 58, the climax is verified as 28.9. As evident in the diagram below, 58 votes can account for 81.7% of variance.

![Figure 2. Power - Total Relationships diagram of male focus group](image1)

![Figure 3. Cumulative percent - Total Relationships diagram of male focus group](image2)

From Figure 4 we can see that when the accumulation of relation in the male focus group reaches 68, the power reaches a climax of 20.2. As evident in the diagram below, 68 votes may account for 71.7% of variance.

![Figure 4. Power - Total Relationships diagram of female focus group](image3)

![Figure 5. Cumulative percent - Total Relationships diagram of female focus group](image4)

The theoretical code is determined next. After going through Pareto and power analysis and the minimum vote, only relations higher than the minimum vote are included for follow-up analysis. Hence, for the processing of same pairs of affinities, if only one of the
relations is higher than the minimum vote, the relation is kept in order to draw the interrelationship diagram. For the same pairs of affinities that have the same votes, both of which exceeding the minimum vote, the majority rule is applied to determine the cause and effect relationship of the two affinities. Only the one with a higher consensus is kept for follow-up interrelationship diagram drawing, and the other relation is discarded. For example, there are affinities A and B. There are 4 people who believe A affects B and 5 people who believe B affects A. If the important minimum value of Pareto and power analysis is 4, then only the cause and effect relationship where B affects A is maintained. In addition, if the approval votes of both pairs of affinities exceed the important minimum value and are equal, then the effects of the two affinities are cancelled out.

4.2.2. Interrelationship Diagram

In order to determine the relative positions among affinities, the theoretical code obtained in the previous step is drawn onto the tabular interrelationship diagram (IRD). By using this diagram, the number of times an affinity is a cause or effect in the whole system diagram can be calculated. If the number of times a certain affinity affects another affinity is termed as “out”, while the number of times it is being affected by another affinity is termed as “in”, then delta (Δ), the difference between “out” and “in”, may be used to determine whether to position the affinity as a cause or as an effect. The rules for determining relative positions are as follows:

1. Primary driver: if the affinity has only out and no in, it is considered a primary driver and is positioned on the leftmost side of the system influence diagram (SID).
2. Secondary driver: if the out value of an affinity is higher than the in value, then it is considered a secondary driver and is positioned on the left side of the SID but to the right of the primary driver.
3. Circulator: if the out value of an affinity equals the in value, then it is considered a circulator and is positioned in the middle of the SID.
4. Secondary outcome: if the in value of an affinity is higher than the out value, then it is considered a secondary outcome and is positioned on the right side of the SID but to the left of the primary outcome.
5. Primary outcome: if the affinity has only in and no out, then it is considered a primary outcome and is positioned on the rightmost side of the SID.

### Table 3 Focus Group Tabular IRD of Male focus group

<table>
<thead>
<tr>
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<th>P-i</th>
<th>EU</th>
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<th>Var</th>
<th>3-D</th>
<th>Ch</th>
<th>Int</th>
<th>Eqt</th>
<th>KT</th>
<th>Tr</th>
<th>Re</th>
<th>out</th>
<th>in</th>
<th>Δ = out-in</th>
<th>Determinant</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-i</td>
<td>↑↑</td>
<td>↑↑</td>
<td>↑↑</td>
<td>↑↑</td>
<td>↑↑</td>
<td>↑↑</td>
<td>7</td>
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<td>Primary driver</td>
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<td></td>
<td>Secondary outcome</td>
</tr>
</tbody>
</table>

The cause and effect relationship table for males is ordered according to $\Delta$ to become the Focus Group Tabular IRD as shown in Table 3. The Determinant can be determined by $\Delta$. Likewise, the cause and effect relationship table for females is ordered according to $\Delta$ to become the Focus Group Tabular IRD as shown in Table 4.

### Table 4. Focus Group Tabular IRD of Female

<table>
<thead>
<tr>
<th></th>
<th>LT</th>
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<th>Le</th>
<th>3-D</th>
<th>EU</th>
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<th>Tt</th>
<th>P-in</th>
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<th>in</th>
<th>$\Delta$= out-in</th>
<th>Determinant</th>
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<tbody>
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<td>3-D</td>
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<td>Primary driver</td>
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<td>1</td>
<td>8</td>
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<td>Secondary outcome</td>
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</tbody>
</table>

#### 4.2.3. Mindmap

Relative positions are obtained after positioning each affinity in the system influence diagram. Next, each theoretical code is drawn to become a cluttered SID. Redundant relationship lines in the system influence diagram are then removed to become the uncluttered SID which is the mindmap that represents the ideas of the whole focus group. (Figure 6, Figure 7)

![Figure 6. Male focus group uncluttered SID](image-url)
Eleven affinities were identified in the male focus group and 12 affinities in the female focus group. These affinities were generated in response to the question “what features are required in a game in order to make you play it over and over again?” Hence, these affinities are factors that influence someone to play a game over and over again as well as factors that affect loyalty towards playing a particular game. These factors also have cause and effect relationships amongst one another. On the left side of the mindmap are primary drivers (causes) and on the right side are outcomes (effects).

5.1. Analysis of affinities shared by males and females

From the male and female mindmaps in Figure 6 and 7, we find that there are 8 similar affinities. Therefore, these 8 affinities should be taken into consideration when designing a game for either males or females. These affinities are: three-D, plug-in, feel tradable (transaction), interesting, ease of use, make friends, challenge (achievement), and kill time (leisure time).

However, the affinities of: make friends, challenge (achievement), and kill time have different allocated positions in the male and female mindmaps. Therefore, differing implications can be drawn from interpreting these mindmaps. When males are playing games, make friends and challenge are regarded as drivers. In other words, making friends and seeking challenges are initial motivations for playing a game, and they believe kill time is the result of playing a game. Consequently, community design becomes especially important for males playing games. The community design must allow them to find like-minded comrades. For female players, they believe leisure time is the main motivational cause that influences them to play a game. Consequently, when designing a female online game, how to achieve a leisure time effect is the main consideration.

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>make friends (driver)</td>
<td>make friends (outcome)</td>
</tr>
<tr>
<td>Challenge (driver)</td>
<td>Achievement (outcome)</td>
</tr>
<tr>
<td>kill time (outcome)</td>
<td>leisure time (driver)</td>
</tr>
</tbody>
</table>
5.2. Analysis of affinities unique to males

The affinities of: variety (driver), equipment (outcome), and reaction (outcome), are unique to the male focus group. Thus, we know that male players like variety in terms of the ways to play a game, that when players have better weapons or armor they can defeat high-level monsters and level up easily, and that they can also show off among comrades and be the object of envy. They also like to train their brains’ reactions and hand agility. Therefore, these three factors should be taken into account when designing a game for males.

5.3. Analysis of affinities unique to females

The affinities of: free (driver), level (circulator), music (circulator), and role (outcome), are unique to the female focus group. Because free is a major driver in the female mindmap, it is a condition that must receive priority when catering to the female game market. As such, alternative methods of income generation for game companies have to be explored. For example, the treasure transaction affinity in the mindmap may present another source of income derived from online games.

There has been much discussion about the importance of level in the past literature. Since players may apply tools and skills in the environment to proficiently accomplish missions and obtain a feeling of satisfaction (Karat, Karat, & Ukelson, 2000), the design of goals and levels in online games is crucial in inspiring players to achieve goals, thus increasing their willingness to play games (Malone & Lepper, 1987).

The affinity music is unique to the female focus group. Thus, when first designing or even when revising a game, game color and sound effects must be improved in order to provide richer game content. This will enhance user satisfaction and make players more willing to stay in the game in order to enjoy the pleasures associated with it. This notion is particularly important for the design of female-oriented games.

Role is another crucial concept in online games and is particularly important to female players. The role in a game allows people to rid themselves of the constraints of real life and to try out a totally different, reconstructed self. People do not have to depict role characters truthfully as in the real life and may freely play in multiple roles. As a result, they may achieve accomplishments which cannot be obtained in real life. These special experiences lead players to immerse themselves in the virtual world of an online game (Young, 2004). Playing roles in a game will affect the ‘immersion experience’ in the process of playing the game. This immersion experience brings feelings of satisfaction and accomplishment to players. Therefore, more effort should be invested into the design of roles in online games, especially for games designed for females.

6. Suggestions

This research used the interactive qualitative research approach and invited one male group and one female group to be the focus groups. The question “What features in a game
will make you play it over and over again?” is set as the core concept. After 25 open codes were produced by each person, they were asked to perform axial coding based on grounded theory. The result was that the male focus group generated 11 affinities and the female focus group, 12 affinities. These affinities are factors that influence a player to play a game over and over again, and are factors that influence game-playing loyalty. Next, members of the focus groups were asked to point out relationships among the affinities themselves. The focus group affinities were integrated by utilizing the Pareto principle to generate mindmaps which represented the focus groups. The relation allocation shown on the mindmaps indicate the cause and effect relationships among these factors.

Through presentation of the mindmap, the following conclusions can be obtained from this research:

1. The 8 affinities that should be taken into account when designing a game for either males or females are: three-D, Plug-in, transaction, interesting, ease of use, make friends, achievement, and leisure time.
2. Plug-ins are popular among many players but could compromise the fairness of the game, lessen game companies’ revenue, and may also cause legal issues. Therefore, the plug-in issue deserves further study.
3. Goods in online games and monetary transaction may allow players to earn some additional income or to save time in going to the next level. As a result, game companies’ approach of selling virtual treasures to increase revenue in recent years may influence loyalty in gamers. Therefore, methods of virtual treasure transaction need further careful evaluation in the future.
4. For male players, making friends and seeking challenges are initial motives for playing games. Consequently, community design is especially important for game playing in males. However, female players believe leisure time is their initial motive for playing games. Thus, achieving a leisure time effect is the main consideration for female-oriented games.
5. Online games should be easy to get started in as well as challenging. Therefore, the design should be “a little difficult but not too difficult” to achieve the kill time effect.
6. The three factors that should be taken into account when designing an online game for males are: variety, equipment, and reaction.
7. The four factors that should be taken into account when designing an online game for females are: free, music, role, and level in order to satisfy females’ requirements.

References


