FACTORS AFFECTING INTENT TO PURCHASE VIRTUAL GOODS IN ONLINE GAMES

Cheng-Hsun Ho* and Ting-Yun Wu
Graduate Institute of Information Management
National Taipei University
New Taipei City (23741), Taiwan

ABSTRACT

Online games increasingly sell virtual goods to generate real income. As a result, it is increasingly important to identify factors and theory of consumption values that affect intent to purchase virtual goods in online games. However, very little research has been devoted to the topic. This study is an empirical investigation of the factors and theory of consumption values that affect intent to purchase virtual goods in online games. The study determines the effects of game type, satisfaction with the game, identification with the character, and theory of consumption values on intent to purchase virtual goods. The study used a survey to collect information from 523 virtual game users. Study results showed that game type is a moderating variable that affects intent to purchase virtual goods. And it demonstrated that role-playing game users are affected by theory of consumption values: functional quality, playfulness, and social relationship support. Moreover, war-strategy game users are affected by satisfaction with the game, identification with the character, and theory of consumption values: price, utility, and playfulness. The study also presents conclusions, proposes applications, and describes opportunities for further research.

Keywords: Online games, virtual goods, satisfaction with the game, identification with the character, theory of consumption values

1. INTRODUCTION

The internet has become a part of life. People use the internet for communication, social interaction, business transactions, and entertainment. Due to the development of the internet, computer games have become online games. The Market Intelligence & Consulting Institute analyzed the behavior of Internet users in Taiwan. They found that 60.1% of internet users use the internet to watch online videos; 58% of internet users play online games. The results show the importance of the online game industry [19].

The market share of the online game industry is rapidly increasing. Wu [32] showed that the market share of the online game industry will be over $24.8 billion in 2013. Most online game revenue comes from selling the games. However, online games increasingly sell virtual goods for real money. As a result, it is increasingly important to identify factors that affect purchasing virtual goods in online games. However, very little research has been devoted to the topic.

Most studies related to online games are related to “online game obsession”, “the characteristics of online game users”, “motivations for playing online games”, and “desire to play online games”. The focus of this study is: “the factors that affect intent to purchase virtual goods in online games”. The study is an empirical investigation of factors and theory of consumption values that affect intent to purchase virtual goods in online games. The study identifies factors and theory of consumption values that affect intent to purchase virtual goods in online games. The study also identifies behaviors related to intent to purchase virtual goods in online games.

2. LITERATURE REVIEW

2.1. Online games

Online games are generally played by users that are located in different places. The users exchange information through mutual internet connections and shared virtual worlds [5]. Curtis [8] described online games as virtual worlds with internet connections and multiple users. In other words, online games are computer games that use internet connections to process user interactions.

There are different types of online games. Bahamut, a popular game community website in Taiwan, classifies online games into role-playing games, action games, shooting games, sports games, racing games, adventure games, puzzle games, and war-strategy games. Game industry reports show that role-playing games are the most popular modern type.
of online game. War-strategy games are the most popular classical type of online game.

Although both types of online games are popular, their features are very different. Role-playing games generally use cute or beautiful graphic design styles. They focus on social interactions between players. War-strategy games are based upon game theory. They focus on strategic interactions between users.

Modern online games sell virtual goods to generate income and increase user interest. This study uses role-playing games and war-strategy games to investigate the theory of consumption and the factors that affect intent to purchase virtual goods in online games.

2.2. Virtual goods
Virtual goods have become one of the primary sources of revenue for online game suppliers. Lin and Sun [17] described two types of virtual goods: functional props and decorative props. Functional props enhance the competency of the game user; decorative props that change the in-game appearance of the game user.

Live Gamer [18], a global supplier for online-games, described three types of virtual goods: vanity goods, functional goods, and social goods. Vanity goods are similar to decorative props. Functional goods are similar to functional props. Social goods are gifts that game users can send to other game users.

Guo and Barnes [11] described three virtual good attributes that influence intent to purchase virtual goods: perceived playfulness, character competency, and requirements of the quest context. Perceived playfulness is the game user’s absorption, enjoyment, and curiosity in the game. Character competency is the competency of the game user. Requirements of the quest context are the items a game user’s character needs to execute a game mission.

Lehdonvirta [16] showed that virtual goods have functional, emotional, and social qualities. Functional qualities include performance and functionality. Emotional and social qualities include appearance, source, customization capability, and rarity.

2.3. Theory of consumption values
Sheth et al., [27] described five theory of consumption values: functional values, emotional values, social values, epistemic values, and conditional values. Customers choose products and brands based upon the five theory of consumption values. Functional values are related to product functions. Emotional values are related to product characteristics that affect customer feelings. Social values are related to product or brand characteristics that create connections between product or brand users. Epistemic values are related to product characteristics that promote customer curiosity or freshness. Conditional values are product or brand characteristics that create functional or social value under specific circumstances.

Previous studies related to marketing and e-commerce showed that theory of consumption values affect customer purchasing behavior and customer purchasing decisions. Previous studies related to sports marketing [25], organic foods [9], travel packages [31] and costumes [24] all showed that theory of consumption values affect customer purchasing behavior and customer purchasing decisions.

Previous studies related to online products also showed that theory of consumption values affect customer purchasing behavior and customer purchasing decisions. Previous studies related to MP3 music downloads [4], smart phone user interaction features [3], differences in web-surfing behavior and ringtone choices between Japanese and Korean users [29] and information systems for e-government applications [13] all showed that theory of consumption values affect customer or user behavior and customer or user decisions.

This study uses the theory of consumption to investigate user behavior and user decisions in online games. The study shows that functional, emotional, and social theory of consumption values affect intent to purchase virtual goods in online games. The study shows that perceived value affects intent to purchase virtual goods in online games.

3. METHODOLOGY
3.1. Research Model
Figure 1 shows the research model used in this study. The model was used to show that satisfaction with the game, identification with the character, and functional, emotional, and social theory of consumption values affect intent to purchase virtual goods in online games.

![Figure 1: Research model](image-url)
3.2. Research Hypotheses

Prior marketing research studies showed that customer satisfaction with products affects customer intent to purchase products. In general, customer satisfaction with products increases intent to purchase products; customer dissatisfaction with products decreases intent to purchase products. Satisfied customers purchase products; dissatisfied customers turn to other products [2,6,22,28].

This study applies the finding to virtual goods in online games. The study tests the hypothesis that overall customer satisfaction with the game affects intent to purchase virtual goods in online games. The first research hypothesis of this study is:

**H1: Satisfaction with the game increases intent to purchase virtual goods in online games.**

Prior organization and marketing studies showed that identification with companies or products affects intent to repurchase products. In general, identification with companies or products increases intent to repurchase products. Customers that identify with companies or products develop a sense of loyalty. In general, they do not turn to other companies or other products [7].

This study applies the finding to virtual goods in online games. Prior studies shows that online game users tend to identify with the characters. They use the characters to express their own feelings [12,20]. The study tests the hypothesis that identification with the character affects intent to purchase virtual goods in online games. The second research hypothesis of this study is:

**H2: Identification with the character increases intent to purchase virtual goods in online games.**

Prior studies identified functional theory of consumption values for virtual goods in online games. Park and Lee [23] showed that character competency and monetary value are functional theory of consumption values for virtual goods in online games. Kim et al., [14] showed that functional quality and price utility are functional theory of consumption values. Character competency is related to the increase in character competency received for purchasing virtual goods. Monetary value and price utility are related to how reasonable the prices of virtual goods are to game users. Functional quality is related to the function and quality of virtual goods.

This study applies the findings to intent to purchase virtual goods in online games. The study tests the hypotheses that character competency, price utility, and functional quality affect intent to purchase virtual goods in online games. The third, fourth, and fifth research hypotheses of this study are:

**H3: Character competency increases intent to purchase virtual goods in online games.**

**H4: Price utility increases intent to purchase virtual goods in online games.**

**H5: Functional quality increases intent to purchase virtual goods in online games.**

Prior studies identified emotional theory of consumption values for virtual goods in online games. Prior studies identified emotional theory of consumption values for virtual goods in online games. Park and Lee [23] showed that enjoyment is a theory of consumption value for virtual goods in online games. Playfulness and enjoyment are related to the increase in fun, attention, and imagination received for purchasing virtual goods. Aesthetics are related to the increase in visual appeal received for purchasing virtual goods.

This study applies the findings to intent to purchase virtual goods in online games. The study tests the hypotheses that playfulness and aesthetics affect intent to purchase virtual goods in online games. The sixth and seventh research hypotheses of this study are:

**H6: Playfulness increases intent to purchase virtual goods in online games.**

**H7: Aesthetics increases intent to purchase virtual goods in online games.**

Prior studies identified social theory of consumption values for virtual goods in online games. Prior studies showed that social self-image expression and social relationship support are social theory of consumption values for virtual goods. Social self-image expression and social relationship support increase social image and strengthen social relationships.

This study applies the findings to intent to purchase virtual goods in online games. The study tests the hypotheses that social self-image expression and social relationship support affect intent to purchase virtual goods in online games. The eighth and ninth research hypotheses of this study are:

**H8: Social self-image expression increases intent to purchase virtual goods in online games.**

**H9: Social relationship support increases intent to purchase virtual goods in online games.**

Prior studies show that there are many types of online games: role-playing games, action games, shooting games, sports games, racing games, adventure games, puzzle games, and war-strategy games. Prior studies show that there are also many types of virtual goods in online games. Prior studies show that different virtual goods have different functions and values.
Role-playing games focus on social interactions and role playing. Game users purchase virtual goods to enhance their emotional and social attributes. War-strategy games focus on strategic interactions. Game users purchase virtual goods to enhance their strategic capabilities.

This study applies the findings to intent to purchase virtual goods in online games. The study tests the hypothesis that game type moderates the relationships between game variables and intent to purchase virtual goods in online games. Game variables include customer satisfaction with the game, identification with the character, character competency, price utility, functional quality, playfulness, aesthetics, social self-image expression, and social relationship support. The tenth research hypothesis of this study is:

**H10:** Game type moderates the relationship between game variables and intent to purchase virtual goods in online games.

### 3.3. Procedures and measures

The study used an online survey to test the ten research hypotheses. The online survey was completed by role-playing online game users and war-strategy online game users who had purchased virtual goods. Information about the online survey was posted on the Bahamut and Gamebase game community websites in Taiwan. The two websites have over one million registered users.

The survey information included a description of the research study and a link to the survey website. Users were asked to click on the link. The online survey contained measures for all of the research constructs in the research model. The survey was posted for one month.

Survey scales were based upon survey scales from prior research studies. All of the survey scales were multi-item scales. All of the scales were seven-point Likert scales that ranged from 1 - “strongly disagree” to 7 - “strongly agree”.

Both standard translation tools and back translation tools were used to translate the survey. Differences between the two translations were reviewed. The translations were refined to ensure survey consistency [30].

A pre-test was conducted to evaluate the wording and interpretability of the survey [26]. Five graduate students from a university information management program completed the pre-test. The graduate students were asked to complete the survey and to evaluate the wording and interpretability of the survey.

### 4. RESULTS

#### 4.1. Sampling

During the one-month posting, 523 online game users completed the survey. During the one-month posting, 363 role-playing online game users completed the survey; 160 war-strategy online game users completed the survey. 84.1% of the online game users were male; 15.9% of the online game users were female. 77.2% of the online game users were 16-25 years old. 71.3% of the online game users were students. 57% of the online game users had college or university degrees. Over 50% of the online game users had played online games for at least one year.

A confirmatory factor analysis (CFA) was used to assess reliability, convergent validity, and discriminant validity of the measurement scales. Table 1 shows CFA results. All of the item loadings were greater than .7. All of the Cronbach’s α values, composite reliability (CR) values, and average variance extracted (AVE) values exceeded the cut-off values: .7, .7, and .5 [1, 10, 21]. None of the estimated correlations between variables exceeded .85. The results showed that the constructs and measurement scales met reliability, convergent validity, and discriminant validity requirements [15]. The results showed that the constructs and measurement scales could be used to test the research hypotheses.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cronbach’s α</th>
<th>CR</th>
<th>AVE</th>
<th>SAT</th>
<th>CI</th>
<th>PU</th>
<th>FQ</th>
<th>AES</th>
<th>CCV</th>
<th>PLY</th>
<th>SSE</th>
<th>SRS</th>
<th>PI</th>
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<tr>
<td>SAT</td>
<td>.92</td>
<td>.94</td>
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<tr>
<td>CC</td>
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<td></td>
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<td>.83</td>
<td>.61</td>
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<td>.80</td>
<td>1</td>
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<tr>
<td>FQ</td>
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<td>.55</td>
<td>.21</td>
<td>.60</td>
<td>.73</td>
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<td>PLY</td>
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<td>-.05</td>
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<tr>
<td>AES</td>
<td>.91</td>
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<td>.21</td>
<td>.22</td>
<td>.26</td>
<td>.32</td>
<td>.39</td>
<td>.36</td>
<td>1</td>
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<tr>
<td>SSE</td>
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<td>.92</td>
<td>.67</td>
<td>.11</td>
<td>.21</td>
<td>.17</td>
<td>.21</td>
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<td>.42</td>
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<td>-.04</td>
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<td>.10</td>
<td>.06</td>
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<td>PI</td>
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<td>S.D.</td>
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<td>1.45</td>
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<td>1.31</td>
<td>1.67</td>
<td>1.74</td>
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</tbody>
</table>

*Note1:* ** indicates a p-value < .01; * indicates a p-value < .05.
4.2. Hypothesis Tests

Hierarchical multiple regression analysis was used to complete the hypothesis tests. Table 2 presents hypothesis test results. Three analyses were completed with intent to purchase virtual goods as the dependent variable and the nine game variables as independent variables. One analysis was completed with intent to purchase virtual goods as the dependent variable, the nine game variables as independent variables, and game type as a moderating variable.

The difference in $R^2$ for the four models was significant (p-value < .01). Model 1 and Model 4 results showed that price utility, aesthetics, and social relationship support increased intent to purchase virtual goods in role-playing games and both types of online games, as a group. Model 2 results showed that satisfaction with the game, identification with the character, character competency increased intent to purchase virtual goods in war-strategy games. Model 4 results showed that there was significant interaction between game type and character competency, price utility, and social relationship support.

The results partially supported research hypotheses H1, H2, and H3. The results supported research hypotheses H4, H7, and H9. The results did not support research hypotheses H5, H6, and H8. The results partially supported research hypothesis H10. The results show that game type moderates the relationships between game variables, including character competency, price utility, and social relationship support, and intent to purchase virtual goods.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1 (role-playing)</th>
<th>Model 2 (war-strategy)</th>
<th>Model 3 (all)</th>
<th>Model 4 (all)</th>
</tr>
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<tbody>
<tr>
<td>SAT</td>
<td>.06</td>
<td>.21***</td>
<td>.09*</td>
<td>.06</td>
</tr>
<tr>
<td>CI</td>
<td>.01</td>
<td>.19***</td>
<td>.05</td>
<td>.01</td>
</tr>
<tr>
<td>CC</td>
<td>.02</td>
<td>.39***</td>
<td>.12</td>
<td>.02</td>
</tr>
<tr>
<td>PU</td>
<td>.38***</td>
<td>-.12</td>
<td>.31***</td>
<td>.42***</td>
</tr>
<tr>
<td>FQ</td>
<td>-.03</td>
<td>-.02</td>
<td>-.04</td>
<td>-.04</td>
</tr>
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<td>PLY</td>
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<td>.01</td>
<td>-.03</td>
<td>-.01</td>
</tr>
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<td>.25***</td>
<td>.26***</td>
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<td>.12</td>
<td>.03</td>
<td>.02</td>
</tr>
<tr>
<td>SRS</td>
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<td>-.13</td>
<td>.08</td>
<td>.18***</td>
</tr>
<tr>
<td>SAT × GT</td>
<td></td>
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<td>.40*</td>
<td></td>
</tr>
<tr>
<td>CI × GT</td>
<td></td>
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<td>.18*</td>
<td></td>
</tr>
<tr>
<td>CC × GT</td>
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<td></td>
<td>.55***</td>
<td></td>
</tr>
<tr>
<td>PU × GT</td>
<td></td>
<td></td>
<td>-.96***</td>
<td></td>
</tr>
<tr>
<td>FQ × GT</td>
<td></td>
<td></td>
<td>.02</td>
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</tr>
<tr>
<td>PLY × GT</td>
<td></td>
<td></td>
<td>.01</td>
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<tr>
<td>AES × GT</td>
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<td>-.05</td>
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<td>SRS × GT</td>
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<td></td>
<td>-.32**</td>
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</tr>
<tr>
<td>$R^2$</td>
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<td>.43</td>
<td>.39</td>
<td>.42</td>
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<tr>
<td>$ΔR^2$ (F value)</td>
<td></td>
<td>.03 (.01**) referees</td>
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</tr>
</tbody>
</table>

Note1: ***: p value < .001; **: p value < .01; *: p value < .05; +: p value < .1.

Note2: GT: types of online games (role-playing or war-strategy).

5. CONCLUSIONS

A significant number of internet users play online games. Virtual goods have become a major source of income for online game suppliers. Online game users purchase virtual goods to increase their character’s competence, improve their character’s appearance, or enhance their character’s relationship with other characters in the online game. This study identifies factors and theory of consumption values that affect intent to purchase virtual goods in online games.

Prior studies showed that role-playing games and war-strategy games are the most popular types of online games. This study surveyed role-playing game users and war-strategy gamer users to identify factors and theory of consumption values that affect intent to purchase virtual goods in online games.
The study used findings from prior studies to create an improved model that describes the factors and theory of consumption values that affect intent to purchase virtual goods. The model assumes that different types of online game users are affected by different factors and theory of consumption values. As a result, the model uses game type as a moderating variable.

Study results show that role-playing game users are affected by functional theory of consumption values: functional quality, playfulness, and social relationship support. Study results show that war-strategy game users are affected by satisfaction with the game, identification with the character, and functional theory of consumption values: price utility and playfulness. Study results show that game type is a moderating variable for character competency, price utility, and social relationship support.

The results are different than results from prior studies [14,23]. The differences may be due to differences in the online games that were used to complete the studies. Prior studies used specific online games. This study surveyed game users that used many different role-playing and war-strategy games.

This study identified factors and theory of consumption values that affect intent to purchase virtual goods in online games. Online game suppliers can use study results to improve online games and increase income from online games.

6. LIMITATIONS AND FUTURE RESEARCH

Due to the exploratory nature of this study, the study has a number of limitations. However, the limitations can be used to create recommendations for future research. This study only investigated the factors and theory of consumption values that affect role-playing and war-strategy game users.

There are many other types of online games. Different types of games attract different types of online game users. Different factors and different theory of consumption values may affect intent to purchase virtual goods for different online game users.

Future research can determine factors and theory of consumption values that affect intent to purchase virtual goods in online games for other types of online games.

This study used online surveys and convenience sampling to test the research hypotheses. Future research can use structured experiments and statistical sampling to test the research hypotheses. Future research can focus on verifying and improving accuracy of the results.

REFERENCES


Appendix A: Measurement instrument

<table>
<thead>
<tr>
<th>Variables</th>
<th>Survey items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction about the game</td>
<td>1. I am satisfied with this game.</td>
</tr>
<tr>
<td></td>
<td>2. I think that this game is very good.</td>
</tr>
<tr>
<td></td>
<td>3. I am satisfied with my decision to play this game.</td>
</tr>
<tr>
<td></td>
<td>4. My choice to play this game is a wise one.</td>
</tr>
<tr>
<td>Character identification</td>
<td>1. I consider game character as my other-self.</td>
</tr>
<tr>
<td></td>
<td>2. When I play an online game, I feel almost like the game character.</td>
</tr>
<tr>
<td></td>
<td>3. When I play an online game, the goals of the character became my own goals.</td>
</tr>
<tr>
<td></td>
<td>4. I take game character as my equivalent-being.</td>
</tr>
<tr>
<td>Character competency value</td>
<td>1. When I use the virtual goods sold here, I can increase my game level quickly.</td>
</tr>
<tr>
<td></td>
<td>2. When I use the virtual goods sold here, I can get more game points than before.</td>
</tr>
<tr>
<td></td>
<td>3. When I use the virtual goods sold here, I increase my powers.</td>
</tr>
<tr>
<td>Price utility</td>
<td>1. A virtual good is a good product given the price.</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Variables</th>
<th>Survey items</th>
</tr>
</thead>
</table>
| Functional quality           | 1. The virtual goods sold here have an acceptable standard of quality.  
2. The virtual goods sold here are reliable in their performance.  
3. The virtual goods sold here are good in terms of their overall excellence.  
4. The virtual goods sold here possess a degree of quality which is satisfactory. |
| Playfulness                   | 1. When I use the virtual goods sold here, I enjoy the game more.  
2. When I use the virtual goods sold here, I find the game more exciting.  
3. Using the virtual goods sold here is interesting to me.  
4. Using the virtual goods sold here stimulates my curiosity.  
5. Using the virtual goods sold here arouses my imagination.  
6. Using the virtual goods sold here keeps me absorbed. |
| Aesthetics                    | 1. The virtual goods sold here are lovely.  
2. The virtual goods sold here reflect beauty.  
3. The virtual goods sold here are aesthetically appealing.  
4. The virtual goods sold here have attractive aesthetic feature. |
| Social self-image expression  | 1. When I use the virtual goods sold here, I can adorn my game characters to be more fashionable or stylish.  
2. When I use the virtual goods sold here, I can make my game characters look better.  
3. When I use the virtual goods sold here, I am more noticed by others.  
4. Using the virtual goods sold here enhances my self-image to others.  
5. Using the virtual goods sold here improves my self-expression to others.  
6. Using the virtual goods sold here makes a good impression on other people. |
| Social relationship support   | 1. Using the virtual goods sold here better enables me to form interpersonal bonds with others.  
2. Using the virtual goods sold here helps me maintain my social relationships with others.  
3. Using the virtual goods sold here helps me make new friends.  
4. Using the virtual goods sold here enhances my social relationships with others. |
| Purchase intention            | 1. The probability that I will consider buying virtual goods from this game in the future is high.  
2. My willingness to buy a virtual good from this game in the future is high.  
3. The likelihood of my purchasing a virtual good from this game in the future is high. |

**ABOUT THE AUTHORS**

**Cheng-Hsun Ho** is an assistant professor in the Graduate Institute of Information Management, National Taipei University. His current research interests are internet marketing, electronic commerce, online behavior, and information management. He has published papers in several international journals.

**Ting-Yun Wu** is a MBA student in the Graduate Institute of Information Management, National Taipei University.

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