Can Online Games Survive Longer?

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Abstract. The area of Online gaming has been widely researched with one glaring omission, the role of national culture in explaining online game playing differences across countries. The purpose of this study is to exam how and why national culture affects online game playing and how to extend online game playing time from a culture perspective. The findings would be beneficial in the theoretical understanding of the online game playing behavior.

Keywords: Gaming · Online games · National culture · Acceptance

1 Introduction

Along with the development of the Internet, the consumption of online games has become a significant economic, social, entertainment, and cultural phenomenon worldwide [1]. In recent years, online games have gained popularity around the world. According to the Entertainment Software Association [2], computer and video game industry has made at least $15 billion every year. Online games are computer controlled games, including both PC games and video games, played by consumers over network technology, especially through the Internet. Online games can be categorized into multiplayer and single-player games. At present, multiplayer games, especially massively multiplayer online games (MMOGs) are most successful among all online games. According to trade estimates, only massively multiplayer online role playing games (MMORPGs), one type of MMOGs, encompass a subscription of more than 50 million players with annual expenses of $12 billion in 2012 [3]. Since MMOGs are the most acceptable and popular online games, the term "online games" in this paper refers to MMOGs.

The rapid growth of online games has caught the attention of the gaming industry especially with respect to revenue potential. The growth of digital streaming capability of games has provided a faster and more robust vehicle to get gaming to the masses quicker than ever before. That is why understanding the individual player dynamics has become important in this industry before designing any game for a vendor or developer. One wrong move and it could spell disaster on future earnings or the credibility of the company if a new game fails. That is why the it is critical to completely investigate consumers' online behavior.

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Per Lo and Chen [4], the profitable life cycle of an online game goes down to 8 months to a year from 18 months to 3 years in average in the past. This means much of online game players switch their games every 8–18 months. Game developers try to prolong the life span of a game to increase the overall profit. However, they are facing two serious issues: market competitiveness and customers expecting higher quality. Every year, there are more than several hundred new online games available in the market from various game developers. Typical customers only focus on one or two online games at a certain time whereas some are demanding with all aspects, including game stories, game graphics, game services, and so on [5]. The quality of the game construction goes a long way in player buy in and retention. Therefore, it is increasingly important to study the reasons for retaining customers in the game.

As suggested by Semeijin et al. [6], maintaining customer loyalty not only lowers the cost of acquiring new customers, but also brings in substantial revenues in the long run. Typically, the longer time players play the online games, the more money they will spend on the game, and this will bring more revenue to the game vendors or developers through added content after purchase to further the longevity of the game. Many studies have been working on critical factors influencing customers' acceptances of online games and customers' intensions of continually playing online games. However, only a few studies focus on the national culture impact in respect to players' attitudes toward on online game playing. According to NewZoo analysis [7], in 2016, the top two countries with the highest total revenues in gaming industry are China and USA (see Fig. 1).

TOP 20 COUNTRIES

BY GAME REVENUES | 2016

CHANGE	RANK	COUNTRY	POPULATION (M)	ONLINE POPULATION (M)	TOTAL REVENUES (M$)
▲ 1	1	CHINA	1,382.3	788.8	24,368.8
▼ 1	2	USA	324.1	293.6	23,598.4

Fig. 1. Game revenues in 2016

Every year in China, there are over 100 new online games developed by different vendors. However, less than 5% of games last more than two years as a MMOG before a significant decline in user base. By contrast, in United States, less than 30 new online games are available each year and over half of them last more than three years. A quick comparison of the discrepancy in the amount of new games created each year between the two countries indicates an issue with the amount of time players invest in their current game before moving onto a brand-new game. Therefore, we believe there may be some culture impact involved in online game playing. Empirical research conducted to date focused on how to extend current customers' playing time and how to increase online game players' loyalty from a national culture perspective. The purpose of this study is to examine how and why national culture affects online game playing and how to extend online game playing time from culture perspectives. The literature review considers previous research to date and expands on it with the culture perspective to offer better insight on the impact culture has on paying habits across countries.

2 Literature Review

For years, researchers focus online game acceptance and continuous game playing [8–10]. However, limited studies paid attention to the role of national culture in explaining online game playing differences across countries. Per Waarts and Van Evaerdingen [11], national culture is one of the key factors influencing Information Systems innovation adoptions. Therefore, this paper tries to explain the relationship between online game playing and national culture. United States and China are two countries that rank in the top two with highest revenue in 2016. Therefore, in this study, we are focusing the online game players in these two countries.

Per Davis [12], culture is a set of values, ideas, meanings and symbols that help individuals communicate, interpret, and build relationships among members of a society and gives a sense of identity and understanding of acceptable beliefs and behaviors in the society. There are three well-known theories on national culture studies. Hall [13] classified national cultures based on the level of context and monochromic and polychromic perspectives. The level of context distinction of culture is determined between rule-based and relationship-based cultures. In low context cultures (e.g., Germany and North Americans), people most likely use explicit words to communicate and store information while, in high context cultures (e.g., China and Japan), interpretation is adopted to pass the information across the country. The second distinction in Hall's theory is measured by a culture's attitude toward time [13]. People in monochromic cultures more likely work on one thing at a time while people in polychromic cultures tend to work on multiple things at a time.

Trompenaars [14] identifies seven national culture dimensions based on people's attitude toward problem solving. To increase the efficiency of problem solving, people in different countries tend to have different set of implicit logical assumptions in their solutions. Trompenaars [14] argues that these solutions differentiate each culture from others regarding to the problems. Table 1 shows the summary of the dimensions.

Table 1. Dimensions in Trompenaars' national culture model

Dimensions	Characteristics
Universalism versus particularism	People follow the rules or rely more on relationships
Individualism versus communitarianism	People emphasize group benefits or individual freedom
Specific versus diffuse	People believe in overlap of work and personal life or not
Neutral versus emotional	People express emotions explicitly or not
Achievement versus ascription	People value a person as what you do or who you are
Sequential time versus synchronous time	People prefer work in sequence or complete them simultaneously
Internal direction versus outer direction	People control the nature or be controlled by nature

Hofstede [15] introduced a five-dimension classification of cultures based on a survey of employees in IBM subsidiaries located in fifty countries: power distance, individualism/collectivism, masculine/feminine, uncertainty/avoidance, and long versus short-term orientation. He argues that national cultures can be differentiated in values. Therefore, we can identify and describe national cultures quantitively in different categories. Since Trompenaars' model is similar to those of Hofstede [16], and Hofstede's model is more quantitative oriented, in this study, we adopted Hofstede's model to study the national culture issues of online game playing.

There are five dimensions in Hofstede's model. **Power distance index (PDI)** is more about social structure rather than personalities. It identifies how societies under different cultures regulate the behavior of their members. In large power distance countries, the less powerful members expect and accept the inequality of power distribution. Lower power members are required to be obedient and respectful to higher power members. For example, employees are rarely encouraged to challenge their superiors. In countries with lower distance power, children are allowed to contradict their parents or challenge their teachers. In online game playing, game players must face different virtual scenarios and solve the problems in the game to gain more experiences and higher level for the role in the game. According to Hofstede [15], people in countries with high power distance often try to find rules and follow the rules whereas people in countries with low power distance more like explore and be flexible. Therefore, when playing online games, players with high power distance tend to find more rules to obey. However, most of the current online games are designed to offer more of a flexible virtual world to encourage unpredictably. Thereby, encouraging players to explore more in their games. Therefore, people in high power distance countries are more likely to drop their current online games even though formatted with various events and agile virtual environments. Hence, we suggest the following hypothesis:

H1: The higher the country's PDI score, the more likely online game players in that country are to drop the online games quickly.

According to Hofstede [15], uncertainty creates anxiety and people feel threatened by uncertain or unknown situations, for example, knowledge of a life after death. Uncertainty Avoidance Index (UAI) describes how people adapt or cope with these uncertain or unknown situations. In high UAI cultures, people tend to adopt technology, law, rules, and religion to decrease the ambiguity of situations by making events clearly interpretable and predictable. People in high UAI cultures will not take unnecessary risks and only plan and complete those actions with enough value that they can explicitly approve based their past experiences.

Since online game players are quite familiar with the current game they are playing, from UAI perspective, they have enough knowledge about this game without too much ambiguity. However, switching to another game may cause more uncertainty because of the player's inexperience with playing the new game before. Therefore, to avoid uncertain issues of game playing, players in high UAI cultures are inclined to stay in the same game they are playing now. Hence, we suggest the following hypothesis:

H2: The higher the country's UAI score, the more likely online game players in that country are NOT to drop the online games quickly.

Individualism and collectivism index (IDV) represents the relationship between the individual and collectivity or the group in a certain society. Individualism and collectivism impact the decision making of a person in the society. Individualism culture is more toward personal decision making with less influence from the surrounding collectivity or group. For example, converting oneself from believing one religion to another is a highly individual activity in the countries with high individualism score while, in high collectivism countries, it is more reasonable that people tend to change their views together with their surrounding groups. Even playing online games is an individual decision. Players tend to play the game with friends or someone they know in real life. Therefore, the decision of playing the game or switching to a new game can easily be impacted by anyone around with similar interests, who most of the time are other players in the same game. Hence, we suggest the following hypothesis:

H3: The higher the country's IDV score, the more likely online game players in that country are NOT to drop the online games quickly.

The fourth dimension in Hofstede's model is Masculinity (MAS) and Femininity. Basically, Hofstede [15] argues that gender differences come from the natural differences between men and women. Culture could be more Masculinity or more Femininity according to how the societies define and follow norms in different ways. From his survey, Hofstede found two basic facts. First, historically, masculine cultures tend to be more militaristic; second, masculine cultures tend to be more competitive while feminine cultures try more to encourage cooperation. Masculine cultures focus more on ambition, competition, and material values. Most all current online games are based on adventure or violent games. Therefore, players with high masculinity culture tend to play the online games. However, to gain more competency, this type of player may try to play newer games with more different and various militaristic experiences. Hence, we hypothesize the following:

H4: The higher the country's MAS score, the more likely online game players in that country are to drop the online games quickly.

In his second edition of Culture's Consequences, Hofstede [15] defines a new dimension of national cultures: Long- Versus Short-Term Orientation. This Long-Term Orientation Index (LTO) score is based on a Chinese Value Survey (CVS) conducted in 1985 from students in 23 different countries. Cultures with high LTO scores tend to persist for a longer time with higher perseverance. The key words in LTO connotations summary are persistence, perseverance, personal adaptability to different circumstances, and believe of the happening of the most important events in life in future. On the contrary, people in Low LTO cultures expect quick results, prefer personal steadiness and stability, and believe that the most important events in life occurred in past or occur in present instead of future. Therefore, we expect that people in high LTO cultures are more likely to focus on future results with long strategy and operations planning, and more receptive to changes which may offer better results in the future, while as people in low LTO cultures tend to emphasize short term benefits and are

resistant to change. Obviously, players, after they played same game long enough, i.e. over a year or two, will have a formative understanding of the role they played in the game and a clear vision of future in the game. Players in High LTO cultures will expect better entertainment in the future new games and do not care too much for current game playing. Therefore, player in high LTO cultures will prefer player more new games rather than staying in the same game long enough.

H5: The higher the country's LTO score, the more likely online game players in that country are to drop the online games quickly.

3 Research Method

To exam the research model, a preliminary survey was conducted. The survey was sent to two classes in a Chinese University with 154 students and two classes in a US University with 84 students. All students are sophomore from college of Business. A total of 187 surveys were completed and 86 (36 from US and 50 from China) were used in the analysis. Students who do not play online games or played less than 3 h per week were dropped. Tables 2 and 3 show the demographics of the players in both countries.

Table 2. Demographics of online game players in both countries

Demographics	US	China
Average age	21.7	21.1
Average years playing online games	9.5	10.3
Hours/week playing online games	8.1	14.4
How many online games playing now	1.2	2.5

Table 3. Demographics with gender

	US		China	
Gender	Male	Female	Male	Female
Number of participants	30	6	39	11
Average age	21.67	21.9	21.1	21.2
Average years playing online games	10.12	6.4	10.9	8.1
Hours/week playing online games	8.58	5.7	15	12.2
How many online games playing now	1.2	1	2.6	2

The items used in this survey were adapted from Hofstede's IBM and China survey questionnaires [15]. The reliability of the items was evaluated using Cronbach's alpha [17]. The coefficient alphas for the PDI, UAI, IDV, MAS, and LTO were 0.78, 0.80, 0.85, 0.81, and 0.77, respectively. Pearson's correlation coefficients were also determined to assess the convergence validity. Since all the attribute coefficients were

somewhere from high to moderate ranges, they were all retained for future analysis. Additionally, there were no concerns about multi-collinearity because none of the coefficients was extremely high.

4 Discussion

The data were analyzed using multiple linear regression analysis. The purpose of a regression analysis is to relate a dependent variable to a set of independent variables. Regression analysis, therefore, was the most appropriate analytical technique in this study to determine the relationship between customer commitment and innovation characteristics, between customer attitude and innovation characteristics, and between customer commitment and customer attitude. Table 4 shows the hypothesis testing results along with the conclusions whether the hypothesis is supported by the statistical analysis at a < .05.

Table 4. Summary of regression analysis results

Hypothesis	Independent variable	t-value	Significance	Support
H1	PDI	3.816	<0.001	Yes
H2	UAI	−3.176	0.012	Yes
H3	IDV	−2.941	0.017	Yes
H4	MAS	1.998	0.046	Yes
H5	LTO	5.231	<0.001	Yes

As demonstrated by the data analysis above, this preliminary study supports all the hypothesis we proposed. Consequently, we can answer the research question in our study. First, national cultural variables, such as PDI, UAI, IDV, MAS, and LTO are related to continuous online game playing; Secondly, national culture should be added to the acceptance and continuous usage framework in online game studies. Table 5 shows the summary of hypotheses testing of this study.

Table 5. Summary of testing the hypotheses 1 to 5

Culture variable	Hypothesized influence on cloud computing adoption	Results
Power distance index (PDI)	Positive	Confirmed
Uncertainty avoidance index (UAI)	Negative	Confirmed
Individualism index (IDV)	Negative	Confirmed
Masculinity index (MAS)	Positive	Confirmed
Long-term orientation index (LTO)	Positive	Confirmed

Our study provides substantive conclusions about the effects of national culture dimensions on continuous online game playing behaviors. We formulated a number of hypotheses regarding the influences of various national culture dimensions, such as

PDI, UAI, DVI, MAS, and LTO. According to our data analysis, we found evidence to support all of our hypotheses. We can preliminarily conclude that national culture does influence the continuous online game playing behaviors. Hofstede dimensions appeared to be a good theoretical background for online game playing behavior studies. Higher levels of the Power Distance, Masculinity, and Long-Term Orientation positively influence the continuous online game playing behaviors, while higher level of the Uncertainty Avoidance, and individualism has a significant negatively influence on continuous online game playing behaviors.

5 Conclusions

This research is the first study distinguishing continuous online game playing behaviors differences between different national cultures by adopting Hofstede's cultural dimension model. Our findings suggest that attention should be paid to differences between different areas, such as China and US. Per different culture and regulations, Chinese and US online game players have different player behaviors and decision-making habits. Additionally, the results from this study can help game vendors and developers to adjust their design strategies and marketing campaigns regarding to different online game players per each country's cultural traits.

This empirical study would also provide theoretical background to researchers who are working on online game research. This is the very first paper discussing online game playing behaviors under cultural circumstances. This research not only provides substantive conclusions about the effects of national culture dimensions influencing online game playing behaviors, but also emphasizes the importance of culture differences in online game study. Culture issues could be an additional dimension in many other online game acceptance or continuous playing studies. Researchers therefore can further expend their research models to more generalized applications.

The empirical findings would be beneficial in the theoretical understanding of the online game playing behavior. It may also help in driving the development and execution of a better acceptance and continuous use framework in online game playing research.

National culture played an important role in this research study even though it was limited to only focusing on two different cultural areas in the online game playing behavior research. In the future, we are planning to expend to other nations, such as European countries to further test the relationship between the cultural differences and online game playing. Additionally, we notice that in our preliminary study, in both countries, female players played much less than male players did. In social science studies, gender is one of the key factors influencing the study results. If we put gender as a control variable in our study, we may get some new information about online game playing in different countries. Thereby, providing more research for developers to capture new customers not already playing or provide better information on current players not included in our current research. Another variable to consider when researching the role of females from other countries is that they may be playing silently. Based on culture norms discussed per Hofstede, it is very likely that gender could have played a role in underestimating the number of females that are currently playing to avoid detection from their male counterparts.

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