Cultural Influences on Hedonic Adoption Behavior: Propositions Regarding the Adoption of Competitive Video and Computer Online Gaming

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Abstract

Competitive video and computer online gaming has been one of the most rapidly growing segments of the video game market within the last ten years. Even though, it reaches across geographical boundaries, cultural influences on its adoption have gained only little scientific interest so far. To fill that gap, we suggest a research model of cultural influences on competitive video and computer online gaming adoption based on the Model of Adoption of Technology in Households, Social Network Theory, and Hofstede's Taxonomy of Culture. The model is depicted by the effect of (1) Power Distance, (2) Uncertainty Avoidance, (3) Individualism, (4) Masculinity, and (5) Long-Term Orientation on the relationships between the model constructs External Influences, Attitudinal Beliefs, Attitude, Behavioral Intention and Behavior.

Keywords: Competitive Online Gaming Adoption, Competitive Social Networks, Hofstede's Taxonomy of Culture
1 Introduction

Competitive video and computer online gaming has heavily gained in importance to the video game industry within the last ten years due to extended IT-infrastructure, increased bandwidth, and improved user interfaces and devices (Choi, Kim 2004).

Competitive video and computer online gaming is a specific type of online gaming (see Figure 1), the latter being defined as a technological innovation integrating broadband Internet technologies with networked gaming technologies through new web-based applications. It is characterized by its competitive and hedonic nature.

With massive-multi-player play modes, competitive video and computer online gaming forms the basis for the formation of professional teams of players, tournaments, and leagues on the Internet across geographical boundaries. It offers the opportunity to connect many formerly independent gamers in their personal networks in competitive environments. Among the most popular games are the Madden NFL series and Pro Evolution Soccer (each with about 5 million copies sold per year). The popularity of specific games varies geographically.

In order to play games, competitive video and computer online gaming requires devices such as PC's, handhelds and video game consoles. PCs are most common in Europe while consoles are traditionally popular in Asia and the US. (e.g., Forster 2005). Regarding the necessary broadband Internet access (OECD 2005), we observe about 264 million broadband Internet connections worldwide - a number expected to increase to 410 million by 2010 (TNS Infratest 2008). Looking at 2006 data, in the US, 39.2 million households possess broadband Internet access. The respective numbers are 32.5 million for Europe and 28.3 million for Asia (TNS Infratest 2008). This disparity may be explained by cultural differences (e.g., Han 2003).

Based on the availability of appropriate devices and broadband infrastructure, competitive video and computer online gaming attracts around 100 million players globally.
It accounts for a large share of the 130 million online gamers world-wide, who - in 2008 - together generate about US$ 14.9 billion revenue for the online gaming industry (OECD 2005).

Despite the importance of the online gaming industry, video and computer online gaming adoption has gained only little scientific interest so far (e.g., Hsu, Lu 2004). We try to fill this gap based on literature stemming from two fields, the Model of Technology Adoption in Households and Social Network Theory in innovation diffusion (e.g. Rogers 2003). In addition, we draw on Hofstede's Taxonomy of Culture.

By integrating the latter into adoption literature within the context of competitive video and computer online gaming, this paper contributes a research framework considering the cultural influences on the adoption of competitive video and computer online gaming.

2 Research Context: Competitive Video and Computer Online Gaming

Competitive video and computer online gaming refers to playing traditional video and computer games over the Internet. It draws on peer-to-peer or client server technology and refers to games played on PCs, handhelds or consoles in native speed with WiFi, LAN or 3G broadband Internet access.
Figure 1. Competitive Video and Computer Online Gaming

Besides being a one distinct version of online gaming (see Figure 1), competitive video and online gaming is also a form of sports denoted as eSports. As such, it is officially acknowledged as 'sport' in Brazil, Bulgaria, China, Italy, Korea, Russia and the US. Therefore, competitive video and online gaming is a global phenomenon institutionalized in national and international associations.

Underneath this institutional framework, it involves two distinct actors, namely (1) players and (2) organizers.

Players of competitive video and computer online games are on average males (95%), age 14 to 28, who play because of the competitive and social aspects of competitive video and computer online gaming (Nielsen Interactive 2005). They prefer competitive game genres like adventure (55%), sports (53%), racing (45%), strategy (43%) and shooters (37%). In order to pursue their interest, players are organized in international (1) squads and (2) clans. Squads are teams of players specialized in a certain discipline or game.

Clans are the 'clubs' compared to traditional sports, which consist of squads and organize the match operations of squads in tournaments and leagues on the Internet. In turn, tournaments and leagues are part of the business model of organizers.

Organizers host and broadcast competitive video and computer online gaming events. Additionally, they also host online gaming platforms. The diversity of the business model of the

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1 According to Nielsen Interactive (2005), the main motives of players to play competitive video and computer online games are (1) playing with friends (60%), (2) challenge (56%) as well as (3) strategic thinking and action (42%)

2 Players from different geographical regions strongly vary in the games they play, although they may prefer the same game genres. An example is the game StarCraft being the most popular competitive video and computer online game in South Korea. Worldwide, over 9.5 mill. copies have been sold since its first release in 1998, however South Korea accounts for 4.5 mill.
organizers may be explained by their origin. While European and North American organizers moved from being hosts of so-called Local-Area-Network gaming events in the pre-Internet era to their current business model, Asian organizers started as broadcasters.

More recently, organizers gained public attention due to the International Olympic Committee, which co-hosted a competitive video and computer online gaming event in the supporting program of Beijing 2008.

A typical example for an organizer is Europe's biggest competitive online gaming league, the Electronic Sports League (ESL). It counts more than 800,000 registered users in 26 European countries and China, Israel, and the US. It has a three-stage pyramid league system reaching from free ladder games or tourneys for beginners over an Amateur Series for amateurs (€2 monthly fee) to a Pro Series for professionals. It comprises about 1,000 separate leagues playing 100 different game titles, thus covering the entire breadth of multi-player online gamers and games. Additionally, it covers every Pro-Series event live and exclusively on European television and on the Internet. Furthermore, it provides instant messaging and voice applications for all of its members and offers a platform for game mapping (i.e., developing new graphics and maps for existing game engines to create new games) and modding (i.e., altering of game engines to create new games. Europe's biggest online gaming league, thus, turns its platform for competitive video and computer online gaming into a modern dating platform through which players express themselves across geographical boundaries.

3 Theoretical Background

In order to model cultural influences on the adoption of competitive video and computer online gaming, we draw on three streams of literature. Namely those are (1) the Model of Technology
Adoption in Households, Social Network Theory in innovation diffusion, and Hofstede's taxonomy of culture. Each will be introduced in the following.

3.1 Model of Technology Adoption in Households and Multi-Dimensional Attitude

The model of technology adoption in households (Brown 2008; Brown, Venkatesh 2005; Venkatesh, Brown 2001;), building on the Theory of Planned Behavior (Ajzen 1991), has been used to model volitional and hedonic technology adoption (Todd 1995b), i.e., it examines the adoption of technology in non-work environments. The model consists of attitudinal beliefs, normative beliefs, control beliefs, attitude, subjective norm, perceived behavioral control, and behavioral intention. It refers to decomposed belief structures consisting of social, utilitarian and hedonic outcome beliefs (Taylor, Todd 1995b; van der Heijden et al. 2005; Venkatesh, Brown 2001; Zhang, Maruping 2008). Compared to the popular Technology Acceptance Model (TAM) introduced by Davis (1989), the model of the adoption of technology in households is considered superior for modeling the adoption of competitive video and computer online gaming (see also Huang et al. 2007). Weiss and Loebbecke (2008) suggest the integration of diffusion and adoption drivers following the model of the adoption of technology in households when modeling the adoption of competitive video and computer online gaming with a focus on attitude.

Attitude defined by Ajzen (1991, p. 188) as "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" is at least a bi-dimensional construct consisting of utilitarian and hedonic elements (Batra, Athola 1990; Crowley et al. 1992). It incorporates a social dimension (Campbell 1950) and thus bridges the gap to the adoption of technology innovation. Further, attitude influences behavioral intention through image and reciprocity (e.g., Agarwal, Karahanna 2000).
3.2 Social Network Theory

Social Network Theory (Barnes 1954; Scott 1991) examines the linkages between individuals rather than their attributes. It addresses the influence of social networks on behavior through the interference of individuals' beliefs and attitudes (e.g., Burkhardt 1994; Granovetter 1978).

Social Network Theory addresses four external influences of individuals' beliefs: (1) group membership, (2) network density, (3) opinion leadership and (4) network exposure (e.g., Valente 1995; v. Westarp, Wendt 2000). Group membership (e.g., Burkhardt 1994) mirrors social pressure and corresponding absorption within closed user groups. As competitive video and computer online gaming is not necessarily subject to closed user groups, network density, opinion leadership and Network Exposure are supposed to picture external influences of individuals' attitudinal beliefs. Network density (Burt 1980, 1982; Scott 1991) denotes the number of individuals' social ties in their personal networks relative to the number of possible ties. Opinion leadership (Lee et al. 2002) refers to early adopters' influence on adoption followers' beliefs, attitudes and behaviors through social interaction. It is often measured in combination with network density. Thereby, it replaces control beliefs and corresponding behavioral control by eliminating uncertainties arising from impersonal and unrestricted infrastructures (Pavlou, Fygenson 2006) through direct interaction (Becker 1970; Cancian 1979). Network exposure (Valente 1995) is defined as the share of adopters in an individual's personal network at a given time. Measured through direct ties, network exposure covers the manifested social influence of individuals, i.e., the cognition of pressure through individuals, beyond social pressure (Venkatesh, Brown 2001). It is an equivalent to normative beliefs and corresponding subjective norm (Ajzen 1991; Bandiera, Rasul 2006; Valente 2005; Venkatesh, Brown 2001).

Weiss and Loebbecke (2008) suggest to merge network density and opinion leadership into the a construct termed 'social interaction design'.
3.3 Hofstede's Taxonomy of Culture

Following Hofstede (1980, p. 260), culture is "the collective programming of the mind which distinguishes the members of one human group from another". Hofstede's taxonomy of culture presents cultural clusters constituting a cultural framework based on five dimensions (Hofstede 1980, 1983, 2001; Hofstede et al. 1990):

- **Power Distance**: Degree to which individuals of a culture consider inequality among people to be acceptable.
- **Uncertainty Avoidance**: Degree to which individuals of a culture feel uncomfortable with unpredictable change and ambiguity.
- **Individualism**: Degree to which individuals of a culture prefer their personal goals compared to the goals of their personal networks, although the personal networks may provide protection in return.
- **Masculinity**: Degree to which individuals of a culture appreciate competition, materiality and assertiveness. According to traditional sex-roles, high masculinity is associated with higher degrees of appreciation for competition, materiality and assertiveness (Hofstede 1998).
- **Long-Term Orientation**: Degree to which individuals of a culture consider their future while decision making (Hofstede, Bond 1988).

Recently, Hofstede's taxonomy of culture has gained scientific attention with regard to hedonic adoption in individual contexts (e.g., Dinev et al. 2008; Pavlou, Chai 2002; Vance et al. 2008; Zhang, Maruping 2008). Although rare, it is suitable for investigating cultural influences on individuals' IS related adoption behavior (Srite; Karahanna 2006; Dinev et al. 2008; Ford et al. 2003).

4 Research Model and Propositions
To integrate cultural influences (power distance, uncertainty avoidance, individualism, masculinity, and long-term orientation) into the model of competitive online gaming adoption, we turn to Hofstede's (1980, 1983, 2001) taxonomy of culture. We propose a model of cultural influences on the adoption of competitive video and computer online gaming with five main research propositions (see Figure 2).

![Figure 2. Proposed Research Model](image)

4.1 Power Distance

Power distance accounts by definition for the influence of opinion leaders on opinion followers (Hofstede 1980, 1983; Zhang, Maruping 2008). The higher the degree of power distance, the more likely is the willingness of individuals from lower levels of a culture to conform with the behavior of powerful individuals, i.e., opinion leaders (Straub et al. 1997). Thus, individuals being part of cultures with higher degrees of power distance are more likely to join others in adopting new information technologies.

Driven by the influence of their personal network, i.e., its density and the number of opinion leaders belonging to it (e.g., Burt 1980, 1982; Scott 1991, Lee et al. 2002), individuals recognize
that their adoption decisions have (1) social, (2) utilitarian, and (3) hedonic outcomes in terms of social recognition (Brown et al. 2006; Taylor, Todd 1995b; van der Heijden et al. 2005; Venkatesh, Brown 2001). They understand that their behavior will affect their image and may be useful to gain social status.

*Proposition 1a* The influence of Social Interaction Design, i.e., the density of an individuals personal network and its degree of opinion leadership, on individuals' Attitudinal Beliefs will be higher for high Power Distance individuals.

*Proposition 1b* The influence of Network Exposure on individuals' Attitudinal Beliefs will be higher for high Power Distance individuals.

### 4.2 Uncertainty Avoidance

Uncertainty avoidance describes the feeling of ambiguity of individuals when confronted with unknown situations.

If defined as a technological innovation, competitive video and computer online gaming involves the perception of uncertainty by individuals by definition (e.g., Burkhardt 1994).

Whether individuals apply for membership in a clan or even if they just search for a trustworthy Internet platform to play on – the variety of offers and the unrestricted and imperfect infrastructure of the Internet both exude uncertainty (Pavlou, Fygenson 2006).

According to prior literature on innovation adoption, individuals turn to others with prior experience if confronted with uncertainty (Becker 1970; Cancian 1979). Individuals with high uncertainty avoidance values will, thus, be more eager to consult their personal networks in search for recommendation when deciding on the adoption of competitive video and computer online gaming. They themselves perceive that they do not have enough knowledge to finally assess the outcomes of their adoption decision. In turn, individuals need enough adopters in their
personal network to gain a comprehensive review of risks and chances associated with competitive video and computer online gaming. Thus, the higher the number of adopters in an individuals' personal network, the higher the number of possible sources of recommendation.

**Proposition 2a** The influence of Social Interaction Design on individuals' Attitudinal Beliefs will be higher for high Uncertainty Avoidance individuals.

**Proposition 2b** The influence of Network Exposure on individuals' Attitudinal Beliefs will be higher for high Uncertainty Avoidance individuals.

### 4.3 Individualism

Hofstede (1980) defines individualism as the degree to which individuals of a culture prefer to act as individuals. Individuals with high individualism values, therefore, rather aim at their own goals than to work towards group goals. Individuals, therefore, form their outcome beliefs independent of the appreciation of their personal networks regarding the target behavior in case of high individualism values (Zhang, Maruping 2008).

Relating to competitive video and computer online gaming, individuals with high individualism values, thus, neither assess the social and utilitarian outcomes, e.g., image, reciprocity or money, nor the hedonic outcomes, i.e., the enjoyment obtained, under consideration of the preferences of others within their personal network. They do not possess a preference for strong relationships within their personal network (Hofstede 1980; Srite Karahanna 2006; Zhang, Maruping 2008).

**Proposition 3a** The influence of Social Interaction Design on individuals' Attitudinal Beliefs will be higher for low Individualism individuals.

**Proposition 3b** The influence of Network Exposure on individuals' Attitudinal Beliefs will be higher for low Individualism individuals.
4.4 Masculinity

Hofstede (1998) describes masculinity as the degree to which individuals of a culture appreciate competition, materiality and assertiveness as outcomes of their adoption decisions. Therefore, individuals with high masculinity values emphasize the competitive aspect of video and computer online gaming. They do not want to play with each other but rather aim at competing with others. Individuals with high masculinity values search for the opportunity to present themselves and gain acceptance. In other words, they do not observe competitive video and computer online gaming as a means to an end in itself, i.e. there is merely something hedonic about it to them. Hence, their attitude towards the adoption of competitive video and computer online gaming mainly depends upon their social and utilitarian outcome beliefs.

This falls in line with prior research on the influence of masculinity on adoption behavior, which showed that the attitude of individuals with high masculinity values towards an adoption decision depends upon individuals’ outcome beliefs on image and personal achievement (e.g., Tan et al. 2004).

*Proposition 4a The Influence of Social Outcome Beliefs on Attitude will be higher for high Masculinity individuals.*

*Proposition 4b The influence of Utilitarian Outcome Beliefs on Attitude will be higher for high Masculinity individuals.*

*Proposition 4c The influence of Hedonic Outcome Beliefs on Attitude will be weaker for high Masculinity individuals.*

4.5 Long-Term Orientation

According to Hofstede and Bond (1988), long-term orientation refers to the degree of providence in current decision making by individuals of a culture. Individuals with high long-term
orientation values emphasize the social and utilitarian outcomes while shaping their attitude towards competitive video and computer gaming. They observe it as a way to socialize and get in touch with others besides having fun while playing. Individuals with high long-term orientation values, thus, use competitive video and computer online gaming as a means to an end in itself.

*Proposition 5a* The Influence of Social Outcome Beliefs on Attitude will be higher for high Long-Term Orientation individuals.

*Proposition 5b* The influence of Utilitarian Outcome Beliefs on Attitude will be higher for high Long-Term Orientation individuals.

*Proposition 5c* The influence of Hedonic Outcome Beliefs on Attitude will be weaker for high Long-Term Orientation individuals.

5 Research Contribution and Outlook

We propose a research model for investigating cultural influences on competitive video and computer online gaming adoption. The suggested model is based on three streams of literature: (1) the Model of Technology Adoption in Households, (2) Social Network Theory, and (3) Hofstede's Taxonomy of Culture. It is determined by the influences of (1) Power Distance, (2) Uncertainty Avoidance, and (3) Individualism on the relationship between External Influences and Attitudinal Beliefs as well as the effect of (4) Masculinity and (5) Long-Term Orientation on the linkages between Attitudinal Beliefs and Attitude.

Our research provides a first step towards investigating culture not only in an organizational but also in an individual adoption context. It pictures disclosed preferences and needs of individuals of a culture and thus offers valuable insights for managers trying to understand international competitive video and computer online gaming adoption differences.

Future research may want to test for empirical support of our model. Additionally, it should look at the influence of institutional or political variables such as communication source, political
environment, educational system, and legal framework on the beliefs and attitudes of individuals in order to comprehend competitive social networks in more depth.

6 References


