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ABSTRACT

Current models of technology acceptance assume that there is a productivity gain that accompanies technology use. But hedonic information systems that are designed for entertainment or social networking purposes do not produce these same gains. This study proposes a new research model for the acceptance of hedonic information systems in order to explain user intentions. A preliminary qualitative study was conducted to validate the proposed model.

Keywords (Required)

Hedonic information systems, social networking, Millennials, Facebook, perceived enjoyment, flow

INTRODUCTION

While the goal of many information systems is to increase user productivity, hedonic systems are different. "The value of a hedonic system is a function of the degree to which the user experiences fun when using the system" (van der Heijden, 2004). One form of hedonic technology is social network websites, which show "explicit representations of the relationships between individuals and groups in a community" (Finin, Ding, Zhou and Joshi, 2005). Social networking websites are wildly popular, as indicated by the number of users that are registered with some of the prominent names in this arena: MySpace (54 million users), Friendster (24 million users), Facebook (6 million users), LinkedIn (5 million users), and Yahoo 360 (users unknown); (Jesdanun, 2006). While these websites may cater to different audiences, Facebook is for college students, for example, the goal of each is to bring people together to create social networks. In addition to catering to different audiences. each site is differentiating itself by adding features to attract a broader user base, including weblogs, podcasting, streaming of video and music, and e-mail capabilities.

Frequently, studies in the area of technology acceptance have focused on the use of software in an organizational context to improve productivity. The Technology Acceptance Model (TAM) is the most widely used model, and it posits that behavioral intentions to use information systems are based upon the perceived ease of use and perceived usefulness of said systems (Davis, 1989). If one applies Davis' measurement of usefulness, websites like MySpace and Facebook would be considered counterproductive, often interfering with the productivity of people in the workplace. These systems, however, have value when they are used for hedonic purposes. Since many hedonic information systems are used as social networking tools, what is missing from a model like TAM is a measure of worth of the social network. Based upon past theory and social networking technology, this study attempts to develop a model that will explain the use of websites like Facebook. Using qualitative data collected from surveying college students, the target population for Facebook, an attempt is made to link users to social networking technology in a more meaningful way than has been done in the past.

BACKGROUND

Characteristics of the User

Because Facebook is the social networking website to be studied in this paper, it is important to understand the characteristics of its users, which are college and high school students. These users are classified as Millennials, which are people born in or after 1982. Millennials "are unlike any other youth generation in living memory. They are more numerous, more affluent, better educated, and more ethnically diverse. More important, they are beginning to manifest a wide array of positive social habits that older Americans no longer associate with youth, including a new focus on teamwork, achievement, modesty and

good conduct" (Howe and Strauss, 2000). They are also the first generation to be born surrounded by technology, "growing up with a rattle in one hand, and a computer mouse in the other" (Syrett and Lammiman, 2003).

Some of the ways in which Millennials learn is through "teamwork, technology, entertainment and excitement, and experiential activities," and they prefer to communicate using electronic methods (Raines, 2002). Perhaps the largest differentiator between Millennials and past generations is "the social network that is people's lives," and the "impact of group mentality, and the tendency of what we might call the democratization of social interaction and how that changes this generation's relationship with almost everything they come in contact with" (Zeller, Bernstein and Marshall, 2006).

Both the size of the network and its influence has grown through the use of technology. Designers of social network websites have taken the characteristics of its users in mind, and have added tools to allow users to express themselves, to communicate with others, to join interest groups, to visually display each user's social network, leading to the immense popularity of sites like MySpace.

Description of Facebook

One of the social networking websites that caters to a niche market is Facebook. Launched on February 4, 2004, this site was designed to be an "online directory that connects people through social networks at schools," and is exclusively designed for high school and college students, requiring a university e-mail address to register (Facebook.com, 2006). Anecdotal evidence of heavy use is supported by data which shows that Facebook is 10th on the Internet in overall traffic, has 8.5 million users per month, and about 60% of its registered users visit the site daily (Hanson, 2005).

There are nine major features of Facebook, and among the most popular are a method for adding friends, a messaging center where e-mails can be sent to other users, the ability to post photos, and the ability to join groups of like-minded individuals. The site also has searching capabilities so that users can find friends both at their institution or at other institutions. Just added on February 25th, 2006, was the feature that will allow users at universities to connect with users at high schools. This feature was in demand because many freshman college students still have friends in high school with whom they would like to remain in contact. Another feature worth mentioning in Facebook is Pulse, which allows users to keep track of the most popular trends in music, movies, television, books, clubs, and hometowns, both at the user's institution and across all Facebook users.

MODEL CONSTRUCTS

Perceived Enjoyment

Since the value of a hedonic information system is the fun experienced by a user, any model that attempts to explain the use of these systems should include the construct of perceived enjoyment, which is "the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated" (Davis, Bagozzi and Warshaw, 1992). It has been used to study the acceptance of instant messaging technology, handheld Internet devices, learning technologies, and web portals, to name a few (Li, Chau and Lou, 2005; Bruner and Kumar, 2005; Lee, Cheung and Chen, 2005; van der Heijden, 2004). When compared to the usefulness construct, it was found that perceived enjoyment was a much better predictor than perceived usefulness in determining intentions to use hedonic systems (van der Heijden, 2004). It is theorized that since the value of a hedonic system is measured by fun, enjoyment will take the place of perceived usefulness in the research model. Based on this idea, the more a user perceives a system to be enjoyable, the more likely the individual is to say that he/she will use the system.

H1: Perceived enjoyment is positively associated with behavioral intentions to use a hedonic information system.

Perceived Ease of Use

Introduced by Davis (1989) perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort." A main construct in the TAM model, it has been positively associated with both the perceived usefulness and intentions to use a system. In this case, since the usefulness is measured by fun, the following hypotheses are presented.

H2: Perceived ease of use is positively associated with behavioral intentions to use a hedonic information system.

H3: Perceived ease of use is positively associated with perceived enjoyment in hedonic information systems.

Perceived Number of Users / Perceived Critical Mass

Many forms of hedonic systems include a social component which helps raise the enjoyment level. Instant messaging, social-networking websites, massive multi-player online role-playing games (MMORPG) like EVE, Guild Wars, and Worlds of War Craft, and virtual worlds like Second Life all contain social elements. While past MIS constructs like social norms and social influence have focused on the importance of what others think of an individual's use of a system, this does not seem to adequately capture the social aspect in question here. Network size seems more appropriate and two constructs in the recent literature do so: perceived number of users and perceived critical mass. In their study on instant messaging technology, Wang, Hsu, and Fang (2005) explain that while the actual size of the network can actually be determined, an individual's use of the technology is more dependent on whether he/she perceives there to be friends or relevant others using the system. Critical mass was a phenomenon described by Rogers (1995) and explains that the "use of technology suddenly increases when a certain number of users have adopted the technology." Li et al. (2005) state that the "benefit of using a communication technology cannot be achieved by an individual if his or her communication partners do not use the technology." So the more associated partners using the technology, the more beneficial it becomes. In this case, that benefit is in the form of added enjoyment, leading to the next hypothesis.

H4: Perceived critical mass (or perceived number of users) is positively associated with perceived enjoyment in hedonic information systems that include social aspects (such as MMORPGs and social networking websites).

Computer Playfulness

Introduced by Webster and Martocchio (1992), computer playfulness "describes an individual's tendency to interact spontaneously, inventively, and imaginatively with computers." Venkatesh (2000) theorizes that those who are more playful will be more likely than others to use a system for the sake of using it, and will often underestimate the difficulty in using the system. This difficulty will be overcome by the user with higher computer playfulness because he/she is enjoying the act of using the system. Thus, those with higher levels of computer playfulness will perceive the system as easier to use. While the rationale behind this linkage is justifiable, this study will theorize that computer playfulness should be linked instead to perceived enjoyment. Webster and Martocchio (1992) found that playfulness was associated with positive mood, so that those with higher levels of playfulness derive more enjoyment from using the system. Because of this past finding, the following linkage is hypothesized:

H5: Computer playfulness is positively associated with perceived enjoyment in hedonic information systems.

Flow

Csikzentmihalyi (1990) introduced the concept of flow and defined it as ''the holistic experience that people feel when they act with total involvement.'' Applied in a MIS context, Agarwal and Karahanna (2000) described a construct similar to flow called cognitive absorption. This multidimensional construct is comprised of heightened enjoyment, curiosity, control, focused immersion (the ability to block outside distractions) and temporal dissociation (the perceived loss of time while using a system). Cognitive absorption was positively linked to perceived ease of use and perceived usefulness.

Flow has also been defined as "a state of mind sometimes experienced by people who are totally involved in some activity," and can be described as a unidimensional construct. It was found that flow was positively associated with intentions to play on-line games (Hsu and Lu, 2004).

It is theorized that in some, but not all types of hedonic systems, flow will be an important construct. Since the more a user is involved with and immersed in a technology, the more fun the technology is to the user, so a positive association between flow and perceived enjoyment is theorized. With technologies like instant messaging, virtual worlds, MMORPGs and both on and offline video games, this relationship should hold true. However, because of the nature of websites like Facebook, where communication is asynchronous, and there is no goal to accomplish as there is in video games, it is hypothesized that flow will not play a significant role in the acceptance process.

H6: Flow is positively associated with perceived enjoyment in hedonic information systems that have either a goal orientation or have synchronous communication capabilities.

RESEARCH MODEL

The following model describes the proposed process by which hedonic information systems are adopted.
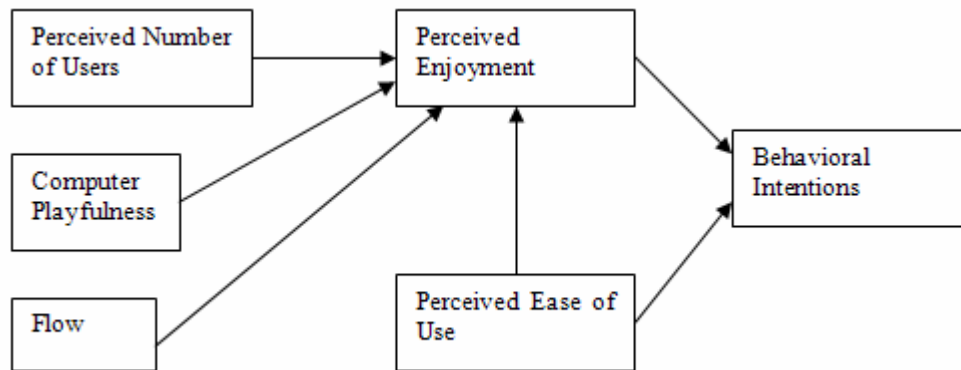

Figure 1. Research Model

QUALITATIVE STUDY

A study was conducted at a small, private, Midwestern university, with the goal of validating this research model. Sixty-three students fully participated in the study, all of whom are current users of Facebook.   As mentioned previously, some important themes for Millennials, the target audience of Facebook, are teamwork, technology, entertainment and excitement, experiential activities, and social networking.   Subjects were asked the following questions in order to determine if the proposed research model fit with the reasons for use.

Q1. What do you enjoy most about Facebook?

Q2. What are some positive aspects of using Facebook?

Q3. What are some negative aspects of using Facebook?

Q4. Why do you place your personal information, including photographs, on Facebook?

Question 1	Question 2	Question 3	Question 4
Communicating with friends (29 responses)	Fun / Interesting / Exciting (54 responses)	Privacy / Misuse (34 responses)	Method of communication (39 responses)
Looking at / posting pictures (17 responses)	Socialization / Networking (41 responses)	Addicting (11 responses)	Networking / Making New Friends (14 responses)
Networking / Making new friends (8 responses)	Ease of Use (28 responses)	Time-Consuming (10 responses)	Fun (10 responses)

Table 1. Top Three Responses to Survey Questions

RESULTS

In the case of Facebook, the purpose of the website is to allow users to create social networks across campuses, and to enjoy themselves in the process. There are no productivity gains, in the traditional sense, of using this website. The target audience values entertainment and excitement, teamwork, social activities, and experiential activities.

In line with what Millennials are believed to value, and in response to the question about the positive aspects of Facebook, the subjects indicated that the site was fun / exciting, allowed for socialization and the expansion of their social networks, and was easy to use. This finding lends support for the research model constructs of perceived enjoyment, perceived number of users, and perceived ease of use.

Possible support for the inclusion of flow in the research model comes from the responses about the negative aspects of Facebook. While a vast majority of respondents were concerned about their privacy, other responses indicated that the website was addicting and time-consuming. People that experience flow indicate that they have lost track of time and are immersed in the activity. One could infer from the responses that some of these users may have been experiencing flow (or the cognitive absorption constructs of temporal dissociation and focused immersion), and that it wasn't necessarily a positive thing, given the demands of today's busy student. Something that needs to be examined in more detail is whether flow has a positive or a negative impact on enjoyment. Given what these respondents indicated, flow seems to be a negative consequence of technology use, and therefore should have a negative impact on perceived enjoyment.

Respondents indicated that communicating with friends, and networking were two of the most important factors leading to enjoyment (Question 1). These same two factors also were the reasons associated with sharing their information / photos on the site (Question 4).

CONCLUSIONS / FUTURE DIRECTIONS

Overall, the theoretical research model appeared to match up with the reasons why college students are using Facebook. The values of Millennials, like fun, teamwork, and social networking all seemed to be implicitly designed into the website with great care. This is a great example of a technology matching the demands and desires of its end-users, and the proposed research model attempts to explain the acceptance process of this type of hedonic / social networking system.

The next step in this process is to empirically test the research model using the constructs proposed in the model and with previously tested scales.   The researchers intend to collect data over multiple campuses, thereby increasing the generalizability of the results to Millennials all over the country.

REFERENCES

1. Agarwal, R. and Karahanna, E. (2000) Time flies when you're having fun: cognitive absorption and beliefs about information technology usage, *MIS Quarterly*, 24, 4, 665-694.

2. Bruner, G. C. and Kumar, A. (2005) Explaining consumer acceptance of handheld internet devices, *Journal of Business Research,* 58, 553-558.

3. Csikzentmihalyi, M. (1990) Flow, the Psychology of Optimal Experience, Harper & Row, New York.

4. Davis, F. D. (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology, *MIS Quarterly*, 13, 3, 318-340.

5. Davis, F. D. Bagozzi, R. P. and Warshaw, P. R. (1992) Extrinsic and intrinsic motivation to use computers in the workplace, *Journal of Applied Social Psychology*, 22, 1111-1132.

6. Facebook.com , Retrieved February 16, 2006 from http://www.facebook.com/about.php

7. Finin T. Ding, L. Zhou, L. and Joshi, A. (2005) Social networking on the semantic web, *The Learning Organization*, 12, 5, 418-435.

8. Hanson, L. (2005) Student networking is in-your-facebook, IndyStar.com, Retrieved February 12, 2006 from http://www.indystar.com/apps/pbcs.dll/article?aid=/20051116/living/511160360/1007/living.

9. Howe, N. and Strauss, W. (2000) *Millennials rising: the next generation*, Vintage Books, New York.

10. Hsu, C.L. and Lu, H. P. (2004) Why do people play on-line games? an extended TAM with social influences and flow experience, *Information & Management*, 41, 853-868.

11. Jesdanun, A. (2006) MySpace rises as new online star, Retrieved February 16 2006 from http://www.cbsnews.com/stories/2006/02/12/ap/business/mainD8FNQNQO0.shtml

12. Lee, M.K.O. Cheung, C. M. K. and Chen, Z. (2005) Acceptance of internet based learning medium: the role of extrinsic and intrinsic motivation, *Information and Management*, 42, 1095-1104.

13. Li, D. Chau, P. Y. K. and Lou, H. (2005) Understanding individual adoption of instant messaging: an empirical investigation, *Journal of the Association for Information Systems,* 6, 4, 102-129.

14. Raines, C. (2002) *Managing Millennials*, Retrieved February 15, 2006 from http://www.generationsatwork.com/articles/millenials.htm.

15. Rogers, E. M. (1995) *Diffusion of Innovation* (4th ed.), Free Press, New York.

16. Syrett, M. and Lammiman, J. (2003). Catch them if you can, *Director*, 57, 3, 70-76.

17. van der Heijden, H. (2004) User acceptance of hedonic information systems, *MIS Quarterly*, 28, 4, 695-704.

18. Venkatesh, V. (2000) Determinants of perceived ease of use: integrating control, intrinsic motivation and emotion into the technology acceptance model, *Information Systems Research*, 11, 4, 342-365.

19. Wang, C. C. Hsu, Y. and Fang, W. (2005) Acceptance of technology with network externalities: an empirical study of internet instant messaging systems, *Journal of Information Technology, Theory and Application*, 6, 4, 15-28.

20. Webster, J. and Martocchio, J.J (1992) Microcomputer playfulness: development of a measure with workplace implications, *MIS Quarterly*, 16, 2, 201-226.

21. Zeller, T. Bernstein, D. and Marshall, C. (2006) A generation serves notice: it's a moving target [Electronic Version], *New York Times*, Late Edition East Coast, 3.1, Retrieved February 15, 2006 from http://proquest.umi.com.argo.library.okstate.edu/pqdweb?did=973362091&sid=11&Fmt=3&clientId=4653&RQT=309&VName=PQD