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ITP4677

User Acceptance of Online Computer Games: A Two-Model Comparison

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INTRODUCTION

User interface design makes an important contribution to the effective presentation of the products. For web-based products in general and online entertainment in particular, attributes like the navigational structure, the interactive media, online help functions, and search mechanism are significant factors contributing to visitor and player retention. The relationship between such features and the effectiveness of the presentation of online computer games has not been widely explored in the literature. This paper explores the application of two distinct streams of research, the consumer behavior theories in marketing research, and the technology acceptance model (TAM) in information systems. It compares the predictive power of the two models in user attitude toward a computer game, and their intentions to return to the game.

THE TECHNOLOGY ACCEPTANCE MODEL (TAM) (MODEL 1)

In information systems research, a user's attitude toward technology is addressed in the Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989). TAM finds its root in the theory of reasoned actions (TRA) (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980), and proposes that perceived ease of use and perceived usefulness of technology are antecedents to user attitude toward the use of technology and subsequent behavior. TAM has been adopted in numerous studies testing user acceptance of various types of information technology, e.g., word processors (Davis et al., 1989), spreadsheet applications (Mathieson, 1991), e-mail (Szajna, 1996), and websites (Koufaris, 2002). This study applies the two constructs of the TAM model to online computer games and looks at the predictive power of each to user experience, reflected in his/her attitude toward the site and intention to play the game again.

H1a. Attitude toward the game is positively associated with perceived ease of use.

H1b. Intention to return to the game is positively associated with perceived ease of use.

H1c. Attitude toward the game is positively associated with perceived usefulness.

H1d. Intention to return to the game is positively associated with perceived usefulness.

CONSUMER BEHAVIOR MODEL (MODEL 2)

The World Wide Web is a valuable communications channel founded on a hypermedia system. The design and presentation of products and services, such as entertainment, are critical in influencing online visitors' attitude and intentions to return. Factors related to consumer behavior, attitude, and perception in the online environment have been gradually explored in recent research (Ducoffe, 1996; Chen & Wells, 1999; Eighmey, 1997; Koufaris, 2002). Attitude in turn mediates the effect of systems characteristics on behavioral intentions such as intention to revisit and intention to purchase products from the sponsoring companies.

Entertainment

An online game's entertainment effect is an important source of value for visitors and players of the game, just like entertainment provides value to consumers through its ability to enhance the experience of visitors to a website (Ducoffe, 1996). Pleasant messages impact attitude positively (Mitchell & Olson, 1981). Uses and gratifications research indicated that the entertainment value of a communications exchange lies in its ability to fulfill the audience's needs for escapism, diversion, aesthetic enjoyment, or emotional release (McQuail, 1983). Jupiter Research (1999) finds 36% of respondents engage in entertainment activities, like viewing videos, listening to audio, playing fantasy games, and visiting movie or sports sites. This paper proposes that the entertainment of an online computer game similarly nurtures a favorable attitude in the player toward the computer game, and in turn provides incentive to coming back in the future, and thus the following hypotheses.

H2a. Attitude toward the game is positively associated with perceived entertainment.

H2b. Intention to return to the game is positively associated with perceived entertainment.

Informativeness

Consumers consider information a major benefit of being exposed to any type of commercial messages (Ducoffe, 1996). Information is one of the need-satisfying functions derived from media communications, according to the extended uses and gratifications theory (McQuail, 1983). Consumers in the online environment value information just like in the traditional media, with 48% of respondents in a Jupiter Research survey citing their major use of the Web for product research and gathering information (1999). Eighmey (1998) finds that website users benefit from information that adds value in and of itself. In this study, we adapt the informativeness construct to online computer games in terms its informativeness in various aspects of the game clarity, progress report, performance updates, and related help functions.

H2c. Attitude toward the game is positively associated with perceived informativeness.

H2d. Intention to return to the game is positively associated with perceived informativeness.

Irritation

Irritation is an unintended outcome from visiting a website. It can be caused by tactics employed by advertisers and site or game promoter that annoy, offend, insult, or are overly manipulative (Ducoffe, 1996). It can also be a result of visitor feelings of confusion, distraction, and messiness due to the way a website or online game is presented and features incorporated (Chen & Wells, 1999). In the traditional media, an irritating commercial is one that provokes and causes displeasure and momentary impatience (Greyser, 1973; Aaker & Bruzzone, 1985). In the Web context, irritation may arise from the negative feelings about the organization, a feature of the site, or the visitor's frustration with the computer game. Thus we hypothesize the following.

H3e. Attitude toward the game is negatively associated with perceived irritation.

H3f. Intention to return to the game is negatively associated with perceived irritation.

METHODOLOGY

Research has been done in getting consumer reactions to their shopping experience with real world commercial sites. Jarvenpaa and Todd (1997) gathered consumer comments and responses to questions about electronic commerce after their visits to a real world website. Koufaris (2002) conducted a field study to understand online consumer attitudes and behavior. Chen and Wells (1999) developed an attitude toward the site (Ast) construct through gathering visitor evaluations of websites. An advantage of studies using real websites is the higher level of external validity obtained. We adopted three

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real online computer games in our field study. The games include a card game Black Jack, in a realistic table and chips environment, a simulated arcade game Supertris (like the video Tetris game), and a somewhat literally challenging Word Painter game (a word puzzle). Subjects were recruited through a gift incentive from undergraduate students, the majority of whom were computer-savvy, with most having played online games more that 20 times in the recent month, and who regularly spent over 10 hours a week surfing the Net. Each participant played two games and filled out a single-page questionnaire containing 7-point semantic differential scales for test variables. Sample demographic information with respect to age, gender, and prior experience with the net and online games was also taken. On average each participant spent 10 minutes trying out a game and filling out a survey for that game.

RESULTS

The two proposed models were separately tested. Within each model, two multiple regression analyses were conducted based on 105 useable data points collected from the field study. One model considered attitude toward the game as the dependent variable, and the other treated intention to return as the dependent variable.

In Model 1, perceived ease of use and perceived usefulness of the game explained about 34% of the variance (adjusted R-squared) in attitude toward the game. Both variables are significant at $p < .01$ as predictors of attitude. About 57% of the variance in intention to return to the game were explained by the same two variables, with each again significant at $p < .01$. An immediate observation is that the two variables seem to be better predictors of intention to return to the game (play the game again). Thus we conclude that hypotheses H1a, H1b, H1c, and H1d were supported in this study.

In Model 2, both perceived entertainment and perceived irritation were significant predictors of attitude toward the game, at $p < .01$, while perceived informativeness is not significant ($p > .10$). The model explained 64% of variance in attitude. In the mean time, the three variables in Model 2 explained 80% of the variance in intention to return, with both perceived entertainment and perceived informativeness significant predictors of such intentions, while perceived irritation is not a significant predictor of intention to return ($p > .10$). In summary, we conclude that hypotheses H2a, H2b, H2d, and H2e were supported, and H2c and H2f were not.

DISCUSSION

Model 1 based on TAM seems to provide a consistent framework to consumer acceptance of technology, including online computer games such as those tested in the field study. On the other hand, the three perceptual antecedents to online consumer behavior as a whole seem to explain a significant portion of variance in attitude and behavioral intentions, but did not serve as consistent predictors in the two regression runs. Replication of this study should further examine the roles played by each factor.

This study used college students (between ages 16 and 25, and some between 25 and 30) as participants, who are deemed appropriate subjects in that they make a significant of the Internet population (GVU's 10th Survey). However, whether the general public will respond in the same way as the student sample did in this study is unknown. The games selected for this study were as broad as possible with the inclusion of three distinct types of games. Nonetheless, factors such as the amount of animation and interactiveness could potentially influence the results.

Findings of this study are encouraging. Perceptual antecedents to consumer attitude toward traditional communications and advertising media were compared to TAM in this study, and the majority of the relationships were validated via hypotheses tested. Like much prior research in consumer behavior and technology acceptance, this study was observational. Future research should explore experimental designs to study the effects of content factors, such as color, animation, and audio, on attitudinal consequences. As the population of online game players grows dramatically in the next few years, the line of research connecting online game design and user behavior is promising.

REFERENCES

1 Aaker, D.A., and Bruzzone, D.E. (1985). Causes of irritation in advertising. *Journal of Marketing*, 49, 47-57

2 Ajzen, I., and Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall

3 Chen, Q., and Wells, W.D. (1999). Attitude toward the site. *Journal of Advertising Research*, 39(5), 27-38

4 Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13, 319-340

5 Davis, F.D., Bagozzi, R.P., and Warshaw, P.R. (1989). User acceptance of computer technology: comparison of two theoretical models. *Management Science*, 35(8), 982-1003

6 Ducoffe, R.H. (1996). Advertising value and advertising on the Web. *Journal of Advertising Research*. 36(5), 21-34

7 Eighmey, J. (1997). Profiling user responses to commercial Web site. *Journal of Advertising Research*, 37(3), 59-66

8 Fishbein, M., and Ajzen, I. (1975). *Belief attitude, intention and behavior: an introduction to theory and research*. Reading, MA: Addison-Wesley

9 Greyser, S.A. (1973). Irritation in advertising. *Journal of Advertising Research*, 13(1), 3-10

10 GVU's 10th Survey (1998). *GVU's 10th WWW User Survey*. Available at http://www.cc.gatech.edu/user_surveys/survey-1998-10/

11 Jarvenpaa, S.L., and Todd, P.T. (1997). Consumer reactions to electronic shopping on the World Wide Web. *International Journal of Electronic Commerce*, 1(2), 59-88

12 Jupiter Research (1999), Inside the mind of the online consumer — increasing advertising effectiveness, by Johnson, M., Slack, M., and Keane, P. *Jupiter Research* @ http://www.jupiter.com, Volume 18, Aug. 19,1999

13 Koufaris, M. (2002). Applying the technology acceptance model and flow theory to online consumer behavior. *Information Systems Research* (forthcoming)

14 Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research*, 2(3), 173-191

15 McQuail, D. (1983). *Mass Communication Theory: An Introduction*. London: Sage Publications

16 Mitchell, A. A., and Olson, J.C. (1981). Are product attribute beliefs the only mediator of advertising effects on brand attitudes? *Journal of Marketing Research*, 18, 318-332

17 Szajna, B. (1996). Empirical evaluation of the revised technology acceptance model. *Management Science*, 42(1), 85-92

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