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RESEARCH NOTE

USER ACCEPTANCE OF HEDONIC INFORMATION SYSTEMS[1]

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Abstract

This paper studies the differences in user acceptance models for productivity-oriented (or utilitarian) and pleasure-oriented (or hedonic) information systems. Hedonic information systems aim to provide self-fulfilling rather than instrumental value to the user, are strongly connected to home and leisure activities, focus on the fun-aspect of using information systems, and encourage prolonged rather than productive use. The paper reports a cross-sectional survey on the usage intentions for one hedonic information system. Analysis of this sample supports the hypotheses that perceived enjoyment and perceived ease of use are stronger determinants of intentions to use than perceived usefulness. The paper concludes that the hedonic nature of an information system is an important boundary condition to the validity of the technology acceptance model. Specifically, perceived usefulness loses its dominant predictive value in favor of ease of use and enjoyment.

Keywords: User acceptance, technology acceptance model, hedonic information systems, perceived enjoyment, perceived ease of use, perceived usefulness

Introduction

An important and long-standing research question in information systems is how we can accurately explain user acceptance of information systems (DeLone and McLean 1992). The dominant paradigm in this area of research is rooted in Davis' technology acceptance model (TAM) (Davis 1989; Davis et al. 1989), which posits that user acceptance can be explained by two beliefs: *perceived usefulness* and *perceived ease of use*. Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis 1989, p. 320). Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis 1989, p. 320). An important addendum to the model is a third belief called *perceived enjoyment* (Davis et al. 1992). This concept is defined as "the extent to which the activity of using

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the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated" (Davis et al. 1992, p. 1113).

Since its original publication, the TAM model has undergone substantial replication, refinement, and extension. This body of research by and large confirms that perceived usefulness is the strongest predictor of user acceptance across a diverse area of research settings, at the expense of perceived ease of use and perceived enjoyment (Adams et al. 1992; Mahmood et al. 2001; Taylor and Todd 1995; Venkatesh and Davis 2000). The effect of perceived enjoyment, in particular, is consistently weaker than the effects of the original two beliefs (Davis et al. 1992; Igbaria, Parasuraman, and Baroudi 1996; Igbaria, Schiffman, and Wieckowski 1994).

This general pattern notwithstanding, a number of exceptions have been reported in the literature (e.g., Atkinson and Kydd 1997; Moon and Kim 2001; Venkatesh 1999). The information systems in these studies appear to be accepted less because of their perceived usefulness than because of their perceived enjoyment and perceived ease of use. Examples of such systems include the World Wide Web, systems used in the home or leisure environment, games, and game-based training versions of work-related information systems. These results suggest a boundary condition on the relative importance of the TAM belief set.

In line with consumer behavior literature that distinguishes between utilitarian and hedonic products (Hirschman and Holbrook 1982; Holbrook and Hirschman 1982), we can classify these types of systems as *hedonic*. The term hedonic derives from the word *hedonism*, a term used to denote the doctrine that pleasure or happiness is the chief good in life (Merriam-Webster 2003). Hedonic systems aim to provide self-fulfilling value to the user, in contrast to *utilitarian* systems, which aim to provide instrumental value to the user. Instrumentality implies there is an objective external to the interaction between user and system, such as increasing task performance. Hedonic systems do not aim to facilitate any such objective. In its purest form, interacting with a hedonic system is designed to be an end in itself.

The utilitarian or hedonic nature of a system can be identified by looking at the tactics that system developers employ to encourage use. The objective of a utilitarian information system is to increase the user's task performance while encouraging efficiency. Therefore, an important tactic that developers employ is to align system functionality with task requirements, and to provide as little distraction as possible to help the user perform his or her task (for examples on task technology fit, see Goodhue 1995). The dominant design objective is *productive* use.

In contrast, the value of a hedonic system is a function of the degree to which the user experiences fun when using the system. To have a pleasurable experience, individuals often seek sensations on multiple sensory channels (Holbrook and Hirschman 1982). Therefore, important tactics that developers employ are the inclusion of hedonic content, animated images, a focus on colors, sounds, and esthetically appealing visual layouts. The dominant design objective is to encourage *prolonged* use.

The consumer behavior literature demonstrates that what specifically determines intention to consume depends on the utilitarian or hedonic nature of the product (Babin et al. 1994; Holt 1995; Venkatraman and MacInnis 1985). This research note develops a parallel argument that what shapes intentions to use is dependent on the utilitarian or hedonic nature of the information system. The note first shows how the hedonic nature of a system affects the TAM model. Findings of existing TAM studies are reconciled by focusing on the hedonic or utilitarian nature of the systems under study. The note then proceeds with an empirical study in which the TAM model is applied to a hedonic system. Discussion of the findings and a discussion of areas for further research conclude the note.

Theory

The logic of the hypotheses discussed below is framed in the context of motivational theory (Deci 1975). User acceptance is determined by two fundamental types of motivation: extrinsic and intrinsic. An extrinsically motivated user is driven by the expectation of some reward or benefit external to the system-user interaction. An intrinsically motivated user is driven by benefits derived from the interaction with the system per se (cf Brief and Aldag 1977, pp. 497).

The definition of perceived usefulness draws attention to an outside benefit, external to the system-user interaction: improving job performance. Therefore, the construct focuses on extrinsic motivation. In contrast, the definition of perceived enjoyment specifies the extent to which fun can be derived from using the system as such. Therefore, perceived enjoyment focuses on intrinsic motivation. Thus for utilitarian systems, we can expect extrinsic motivation to be the dominant predictor of intentions to use the system—at the expense of intrinsic motivation. Similarly, for hedonic systems, we can expect intrinsic motivation to be the dominant predictor of intentions to use the system—at the expense of extrinsic motivation.

These distinctions are perhaps most relevant to developing conceptual clarity when examining use of the Web. TAM applications to the Web have reported belief rankings in which usefulness dominates enjoyment (e.g., Cheung et al. 2000; Teo et al. 1999) but also belief rankings in which it doesn't (e.g., Moon and Kim 2001; van der Heijden 2003). The focus on the hedonic versus utilitarian nature of systems helps explain these mixed findings.

The Web serves both utilitarian *and* hedonic purposes, and the nature of the Websites that people surf determines which belief takes precedence. This is illustrated by an early study that explored Web usage patterns of students (Atkinson and Kydd 1997). Perceived enjoyment strongly influenced Web use for entertainment purposes and perceived usefulness strongly influenced Web use for course-related purposes. Theoretically, this can be explained because students seek hedonic Websites to satisfy their entertainment purposes and utilitarian Websites to satisfy their course-related purposes.

The focus on the hedonic versus utilitarian nature of systems also helps when comparing TAM research conducted in home environments with research in workplace environments. TAM originates from the study of information systems that increase productivity in the office environment. People are known to use information technology to bring their work into their home environment, for example, through the use of distributed work arrangements (Venkatesh and Vitalari 1992). This productive use of technology notwithstanding, there are many hedonic aspects to household technology use, such as playing computer games and instant messaging (Kraut et al. 1999; Venkatesh 1996; Venkatesh and Brown 2001). The distinction between work and home can blur the more important conceptual distinction between utilitarian and hedonic. Because the home environment is the natural habitat of hedonic systems, we can expect that, in general, perceived enjoyment will play a more dominant role in home environments, and perceived usefulness will be more dominant in workplace environments. Nonetheless, in extending the logic of TAM to the household environment it is important that explicit distinctions between hedonic and instrumental usage are considered.

Collectively, these outcomes suggest

> *Hypothesis 1*: For hedonic systems, perceived enjoyment is a stronger predictor of behavioral intention to use than perceived usefulness.

Perceived ease of use is an assessment of the mental effort involved in the use of the system. In assessing perceived ease of use, a user focuses on the interaction with the system as such, and not on objectives external to this interaction. This has important ramifications for the role of ease of use in predicting user acceptance of hedonic and utilitarian systems. In completing utilitarian tasks,

the interaction with the system is subordinate to the achievement of external goals. Consequently, in the context of utilitarian systems, perceived ease of use is less central to the prediction of intentions to use a system than perceived usefulness.

By contrast, in the context of hedonic systems, the achievement of external goals is subordinate to using the system itself. The focus on user experience implies that an assessment of the effort involved in user-system interaction is more important than an assessment of the degree to which that interaction helps in achieving external benefits. Consequently, in the context of hedonic systems, perceived ease of use is more central to the prediction of intentions to use a system than perceived usefulness.

The distinction between hedonic and utilitarian helps to explain some of the results on ease of use we have seen in the literature with respect to Web use. The hedonic nature of the Web would suggest that perceived ease of use is a strong predictor of user acceptance. Indeed, Atkinson and Kydd (1997) found significant effects of ease of use on the usage of the Internet for entertainment (hedonic) purposes. There were no significant effects for ease of use to predict Internet use for course-related (utilitarian) purposes. Teo et al. (1999) found significant effects of perceived ease of use on frequency of Internet use in general. Moon and Kim (2001) found that perceived ease of use was the strongest of the three predictors of attitude toward using the Internet. This again suggests the need to carefully distinguish whether the underlying task is utilitarian or hedonic.

The close connections between perceived ease of use and hedonic value have been found in other TAM studies as well (Venkatesh 1999 2000). Perceived ease of use was significantly higher after game-based training compared to traditional training (Venkatesh 1999). In another study, intrinsic motivation strongly predicted perceptions of ease of use (Venkatesh and Davis 1996). Finally, empirical evidence suggests that information systems that are visually more attractive are also regarded as easier to use (Tractinsky et al. 2000; van der Heijden 2003).

In sum, these findings suggest

> *Hypothesis 2*: For hedonic systems, perceived ease of use is a stronger predictor of behavioral intention to use than perceived usefulness.

Method

A cross-sectional survey design was employed to examine the hypotheses developed in the previous section. The empirical setting was a Dutch movie Website that presented itself to its visitors as an "innovative platform for everybody who loves cinema, watches movies and has a passion for moving images." The colorful homepage of the Website contained movie news and gossip that the staff updated daily. The Website also gave information on new and upcoming movie premieres and the latest news on the whereabouts of celebrity movie stars. A "movie agenda" link on the homepage provided access to movie listings of cinemas in major Dutch cities. The site maintained a set of movie trailers for users to download and watch. A popular feature of the site was the opportunity for users to comment on a movie after they had seen in it in the cinema.

To measure user acceptance of this Website, the measures for intentions to use and perceived ease of use were taken from an updated TAM model, TAM2 (Venkatesh and Davis 2000). Perceived enjoyment was measured using four semantic differential scales which were taken from past enjoyment research (Chang and Cheung 2001; Igbaria, Iivari, and Maragahh 1995). The measures are included in the appendix to this paper. All measures were translated into Dutch by the author, then back translated into English by an independent translator, and verified by an independent native speaker.

The original TAM scale for perceived usefulness was problematic because it could not be tuned well to the hedonic nature of the information system under study. In particular, the outside outcome (improved job performance) was inappropriate in

this context. For this reason, new items were constructed that attempted to preserve the utilitarian nature of the scale. This was done by asking people to what extent the use of the Website would help them make more informed decisions about which movies to go and see in the cinema. This linked the information system to an outcome external to the user-system interaction (i.e., watching a movie in the cinema).

At the time of research, the company that operated the Website had 14,920 registered users in its user database. A total of 5,500 users were randomly sampled from this population. E-mails were sent with an invitation to participate in the survey. The survey itself was located on a Web server, and a Web link to this server was provided in the invitation.

The set of e-mails that were selected from the user database contained 168 incorrect or otherwise invalid addresses. In all, 5,332 e-mails (97 percent) were sent to valid e-mail addresses. Eventually, 1,144 users completed the survey, of which 480 of the respondents were male (42 percent) and 658 were female (58 percent). Their average age was 27 years old (standard deviation: 10.2).

Results

Cronbach alphas for each measure (found in the appendix) indicated that construct reliability was acceptable. An exploratory factor analysis was conducted on the data to find evidence of convergent and discriminant validity. Table 1 presents the factor loadings for the solution using principal components analysis with varimax rotation. The total variance explained is 75 percent. Each item loaded low (less than .40) on a "foreign" factor, and high (greater than .60) on the "parent" factor, suggesting convergent and discriminant validity of the constructs.

Subsequent to the factor analysis, a structural equation model using maximum likelihood was estimated with AMOS 4.01 (Arbuckle and Wothke 1999). Fit measures indicated acceptable fit (RMSEA = .07, NFI = .99, TLI = .99). The model estimates are shown in Figure 1. The standardized regression weights for perceived usefulness, perceived ease of use, and perceived enjoyment are .15, .32, and .25 respectively. This supports both hypothesis one and hypothesis two. Compared to perceived usefulness, both perceived ease of use and perceived enjoyment have approximately twice as much predictive value to explain intention to use.

Discussion

The empirical study supports the hypotheses that perceived enjoyment and perceived ease of use are stronger determinants of intention to use a hedonic information system than perceived usefulness. The conclusion is that the hedonic nature of an information system is an important boundary condition to the validity of the technology acceptance model. Specifically, perceived usefulness loses its dominant predictive value in favor of ease of use and enjoyment.

The broader implication for further research is that attention is drawn to the important role of system purpose. This research shows that if the purpose is to provide hedonic, rather than utilitarian, value, then the predictive importance of the determinants changes. This finding suggests that progress in user acceptance models can be made by focusing on the nature of system use (whether utilitarian or hedonic), in addition to the inclusion of additional determinants.

The second conclusion from the empirical study is that perceived ease of use plays a pivotal role in the user acceptance of hedonic information systems. The construct assists perceived usefulness in contributing utilitarian value, and it assists perceived enjoyment in contributing hedonic value. More importantly, perceived ease of use *itself* directly contributes to future intentions to use the hedonic system because it either enhances or inhibits the user's hedonic experience. The implication of this conclusion is that, while ease of use

Table 1. Summary of Items and Factor Loadings for Varimax Orthogonal Four-Factor Solution

		Factor Loading			
	Item	**BI**	**USF**	**ENJ**	**EOU**
1	BI1	.86			
2	BI2	.89			
3	USF1		.82		
4	USF2		.86		
5	USF3		.64		
6	USF4		.87		
7	USF5		.85		
8	ENJ1			.68	
9	ENJ2			.76	
10	ENJ3			.86	
11	ENJ4			.81	
12	EOU1				.79
13	EOU2				.82
14	EOU3				.83
15	EOU4				.77

Note: BI = Behavioral intention to use; USF = Perceived usefulness; ENJ = Perceived enjoyment; EOU = Perceived ease of use. Factor loadings below .40 are suppressed.

is a critical system development variable in any type of system, it is especially so for hedonic information systems.

One important limitation of this study is that the sample is biased toward users rather than non-users. Those who perceive the Website as less useful, difficult to use, or less enjoyable are not likely to have registered for the Website. Thus, a survival bias may have crept into the research design as those non-users were not included in the sampling frame. It is conceivable that a person's motivation for intending to use a hedonic information system follows a different pattern from a person's motivation *not* to use a hedonic information system. We encourage other researchers to look further into this issue.

Individual differences typically act as antecedents to the three core beliefs—perceived usefulness, perceived enjoyment, and perceived ease of use. The consumer behavior literature has long recognized that some consumers tend to be more hedonic and others more utilitarian (see Venkatraman and MacInnis 1985). It is likely that users are also either more hedonic or more utilitarian in their disposition to use information systems. These dispositions could provide a richer understanding of the user acceptance of hedonic systems. One way to measure this hedonic disposition is by looking at computer playfulness (Webster and Martocchio 1992).

The environment for which system developers design information systems often determines the

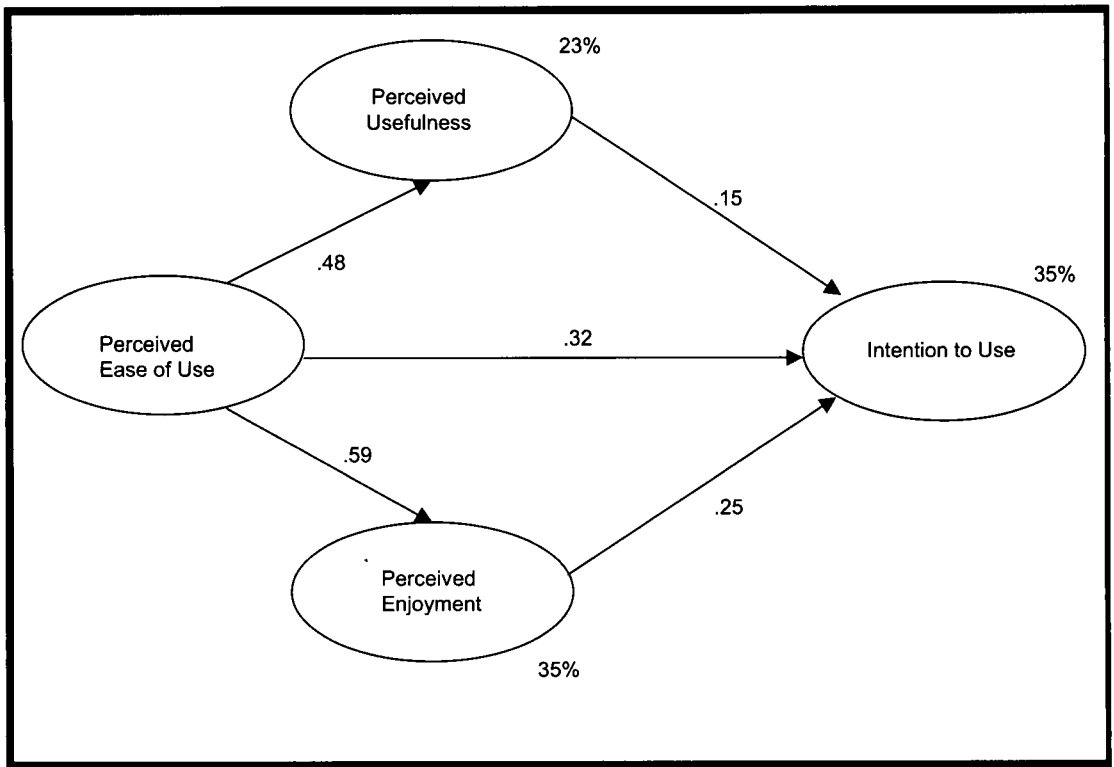

Figure 1. Structural Equation Model (Only latent variables are shown. Percentages indicate squared multiple correlations. All standardized regression coefficients are significant at $p < 0.001$.)

utilitarian or hedonic nature of their systems. In particular, work environments are associated almost exclusively with utilitarian information systems. Systems with purposes that are squarely hedonic are often controversial in those environments. This research, however, suggests that hedonic value can play a pivotal role to increase acceptance of otherwise utilitarian information systems. The user acceptance of hedonic and utilitarian systems proceeds along two different belief configurations. Therefore, if people reject a utilitarian system, system developers may want to add hedonic features to invoke the other configuration to achieve user acceptance. This is much like a parent persuading a child to swallow a bitter pill by administering it with a sweetener to make it go down more easily. It would seem useful (and perhaps enjoyable) to embark on systematic research on how hedonic features could add to the acceptance of utilitarian systems.

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Appendix

Survey Instrument

Perceived usefulness (seven-point Likert scale, ranging from highly disagree to highly agree; developed specifically for this research project). Alpha = 0.90
By using <the system>

- I can decide more quickly and more easily which movie I want to go see than in the past
- I can better decide which movie I want to go see than in the past
- I am better informed about new movies
- I can decide more quickly and more easily whether I want to go see a particular movie or not
- I can better decide whether I want to go see a particular movie or not

Perceived ease of use (seven-point Likert scale, ranging from highly disagree to highly agree; Venkatesh and Davis 2000). Alpha = 0.87

- The interaction with <the system> is clear and understandable
- Interaction with <the system> does not require a lot of mental effort
- I find <the system> easy to use
- I find it easy to get <the system> to do what I want it to do

Perceived enjoyment (seven-point semantic differentials; Cheung et al. 2000; Igbaria et al. 1995). Alpha = 0.86

- Enjoyable—disgusting
- Exciting—dull
- Pleasant—unpleasant
- Interesting—boring

Behavioral intention (seven-point Likert scale, ranging from highly disagree to highly agree; Venkatesh and Davis 2000). Alpha = 0.87

- I intend to revisit <the system> shortly
- I predict that I will revisit <the system> in the short term