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An Empirical Investigation of Normative, Affective, and Gender Influence on E-Commerce Systems Adoption

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ABSTRACT

Electronic commerce (e-commerce) systems adoption factors and the moderating effects of gender are important topics for e-commerce designers and human-computer interaction researchers. Even though there are a lot of research endeavors to explain e-commerce systems adoption, one of the main questions to be answered is regarding the normative and affective factors based on the theory of reasoned action and the self-determination theory. In this paper, the relationships among the social norms, perceived enjoyment, and their relationships to intention to adopt e-commerce system are tested (n = 322). Furthermore, the moderating effects of gender are tested based on the socio-linguistic literature. As expected, the influence of social norms is stronger in the female group while the influence of enjoyment is stronger in the male group. Theoretical and practical implications of these findings are discussed in the paper.

Keywords

E-commerce, social norms, enjoyment, gender, technology adoption

INTRODUCTION

Electronic commerce (e-commerce) systems adoption and the moderating effects of gender are important topics for e-commerce designers and human-computer interaction researchers. (Saeed et al., 2003; Gefen et al., 2003; Birkhofer, Schagel, and Tomczak, 2000). Even though there are a lot of research endeavors to explain e-commerce system adoption and online consumer behavior (e.g., Gefen et al., 2003; Grazoli and Jarvenpaa, 2000; Pennington et al., 2004), one of the main questions is how to understand the influences of social normative and affective factors on electronic customer relationship management (Saeed et al., 2003). Specifically, the complex effects of social norms – as a normative factor – and the perceived enjoyment – as an affective factor – on intention to use e-commerce system have not been tested in the previous research. This study investigates these important relationships with the moderating effects of gender based on the self-determination theory, theory of reasoned action, and socio-linguistic literature.

The organization of this paper is as follows: Section 2 presents the theoretical foundations and literature. Section 3 presents the research model. Section 4 presents the hypotheses. Section 5 outlines the research methodology and analysis. Section 6 then discusses implications for researchers and practitioners and concludes the paper.

THEORETICAL FOUNDATIONS AND LITERATURE

Self determination theory (Deci and Ryan, 1985) showed that all individuals have natural, innate, and constructive tendencies to develop an ever more elaborate and unified sense of self. It focuses on how individuals develop a coherent sense of self through regulation of their behavioral actions that may be self-determined, controlled, or motivated. Self determination theory emphasizes an individual's intrinsic motivation (perceived enjoyment) as a main behavioral mechanism in the general social behavior. Although there have been a lot of literature in the social psychology on the self determination theory, there have been limited application of this model to the e-commerce systems adoption in the IS domain. In the traditional systems, individual's voluntary and intrinsic motivation is not the main focus. However, as the hedonic systems such as internet and

online community are popular in e-commerce these days, intrinsic motivation should be investigated further for the successful IS adoption (Van der Hijden, 2004). Malhotra (2002) also argued that the tacit perspective of IS adoption should be managed and controlled mainly by self control or intrinsic motivation (perceived enjoyment), rather than by formal controls based on self determination theory. Perceived enjoyment refers to the extent to which the activity of using a computer system is perceived to be personally enjoyable in its own right aside from the instrumental value of the technology (Davis et al., 1992; Yi and Hwang, 2003). According to Davis et al. (1992, p. 1112), extrinsic motivation refers to "the performance of an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself," whereas intrinsic motivation refers to "the performance of an activity for no apparent reinforcement other than the process of performing the activity per se." Davis et al. (1992) and recently Venkatesh and Speier (2000) classified enjoyment as a type of intrinsic motivation and perceived usefulness as a type of extrinsic motivation. In this reason, perceived enjoyment is gaining a lot of interest from the IS research as an important intrinsic motivation variable in the technology adoption behavior.

Online consumer behavior is a voluntary individual behavior that can be explained by the theory of reasoned action (TRA) proposed by Fishbein and Ajzen (1975). TRA argues that behavior is preceded by intentions and that intentions are determined by the individual's attitude toward the behavior and the individual's social norms. Social norms are defined as a person's perception that most people who are important to him/her think he/she should or should not perform the behavior in question (Fishbein and Ajzen, 1975). There are several IS studies focusing on subjective norms or environmental influence on online consumer behavior. Limayem et al. (2000) found that subjective norms influence purchase intention ($\beta = .17$, $p < .001$), using a formative construct of subjective norms (family, media, and friends influences) in online consumer behavior. Rogers (1983) also suggests that there are external and internal sources of social influence affecting technology adoption belief. External sources were defined as including mass media, advertising, and other marketing-related sources, and internal sources were defined as word-of-mouth influence from friends, family, and others (Pathasarathy and Bhattacharjee, 1995; Lekkval and Wahlbin, 1973; Rogers, 1983). Kraut et al. (1999) highlight that other family members' Internet usage is an important factor in an individual's Web usage. Pathasarathy and Bhattacharjee (1995) found that external influence, interpersonal influence, and network externality are the distinguishing factors between discontinuing and continuing consumers. Expectation of e-commerce usefulness was negatively impacted by social disturbance (Han and Noh, 2000). Slyke et al. (2002) found that women viewed online shopping as a social activity rather than technology adoption. Saeed et al. (2003) also found that media influence is an important factor in the enhancement of customer value. Recently, Venkatesh et al.'s (2003) UTAUT revealed that social influence in voluntary contexts, such as e-commerce, operates by influencing perceptions about technology adoption.

Sociolinguists (e.g., Tannen, 1991; Yates, 2001) suggest that social communication behavior, including e-commerce, should be investigated with gender as a central social aspect. Men and women may communicate in what on a superficial level may seem the same language, but the social message behind the words between the average man and the average woman is quite different, as is how this message is interpreted (Yates, 2001). Socio-linguistic researchers argue that men and women have different social influence for conversational interaction (Coates, 1986; Gefen and Straub, 1997). Male patterns of communication tend to be based on the notion of a social hierarchy, while female patterns tend to be network-oriented (Tannen, 1995). In general, women focus more on creating intimacy, while men focus more on asserting independence and seeking respect (Gefen and Straub, 1997). Women's discourse tends to be more tentative and socially oriented, while men tend to be more categorical (Preisler, 1987). Furthermore, women show cooperation in their discourse, while men tend to be competitive (Coates, 1986). For men, discourse tends to be a struggle to preserve independence, while women's communication is inclined toward seeking and confirming intimacy, support, and consensus (Gefen and Straub, 1997). In the e-commerce or electronic systems context, Yates (2001) also found that men tend to access IS more to obtain information, while women did so more to interact with other people.

RESEARCH MODEL

A better understanding of the nature of systems users' affective and social normative factors will promise to contribute to the design of more effective e-commerce system and the company's successful electronic customer relationship management. Given that social influence is composed of different dimensions, such as affective commitment and compliance (Kelman, 1958), and most of previous IS studies tested only normative compliance, the roles of affective commitment in e-commerce systems adoption are theoretically important issues. In addition, social intervention for interaction and communication positively influence outcomes in varied dimensions of e-commerce and online application systems adoption (Rourke and Anderson, 2002; Garrison et al., 2003; Baugher et al., 2003; Gallardo et al., 2007; Ellis, 2007).

Based on insights into the social factors of systems adoption behavior, the role of affective commitment for the proactive adoption of systems is recently gaining significant interest from IS researchers (e.g., Venkatesh et al., 2003; Malhotra and Galletta, 2005). Malhotra and Galletta (2005) recently argued that a system user’s affective commitment development was omitted in the previous research model which investigated systems adoption in the IS literature based on Kelman’s (1958) social influence theory. Several studies in an e-commerce context have been investigated the relationship between social norms, perceived enjoyment, and intention to use e-commerce systems (e.g., Liao et al., 2008; Lim et al., 2000; Moon and Kim, 2001; van der Heijden, 2003). Thus, this paper investigates several psychological variables, which enables us to more fully understand the important factors and dynamic relationships involved in e-commerce systems adoption.

Sociolinguists also have claimed for years that men and women communicate with different underlying social objectives and their communication patterns are very different (Tannen, 1991, 1995). Yet the effects of gender on e-commerce systems adoption have been ignored in IS research, even though gender is a fundamental aspect of e-commerce and electronic communication, based on socio-linguistic research (Gefen and Staub, 1997). Although it is clear that gender should be considered in understanding social, affective, and intrinsic aspects of e-commerce, there has been not enough study on this important aspect. In this study, the moderating effects of gender are tested in the model based on socio-linguistic research (Tannen, 1991, 1995) and current IS literature (Gefen and Staub, 1997; Gefen and Ridings, 2005; Venkatesh et al., 2003; Venkatesh et al., 2000; Venkatesh and Morris, 2000). The proposed research model is in Figure 1, and the detailed hypotheses are as follows.

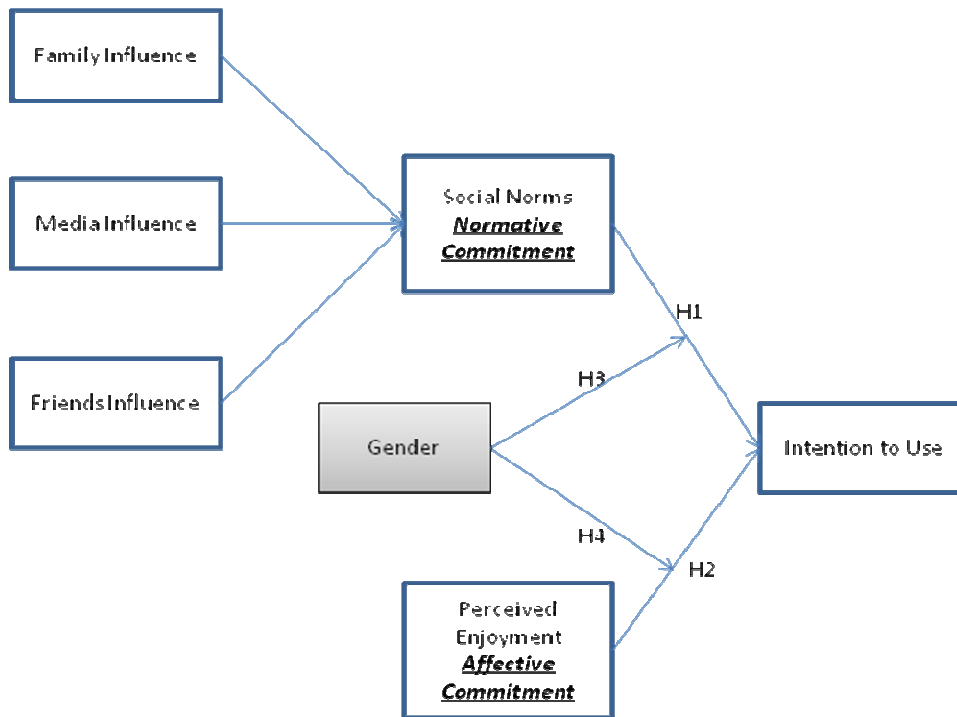


Figure 1. Proposed Research Model

HYPOTHESES

Theory of reasoned action (TRA) (Fishbein and Ajzen, 1975) argues that behavior is preceded by intentions and that intentions are determined by the individual’s attitude – similar to the perceived enjoyment – toward the behavior and the individual’s social norms. There are several IS studies focusing on social norms or environmental influence on online consumer behavior. Limayem et al. (2000) suggested that social norms influence purchase intention, using formative construct of social norms (family, media, and friends influences) in online consumer behavior. Thus, we hypothesize that;

H1: Social Norms will have a positive effect on Intention to Use.

Self-determination theory (Deci & Ryan, 1985) showed that all individuals have natural, innate, and constructive tendencies to develop an ever more elaborate and unified sense of self. It focuses on how individuals develop a coherent sense of self through regulation of their behavioral actions that may be self-determined, controlled, or motivated. Malhotra (2002) argued that tacit perspective of systems adoption should be managed and controlled mainly by intrinsic motivation rather than by formal controls based on the self-determination theory. Prior research such as theory of reasoned action proposed intrinsic motivation, such as perceived enjoyment or attitude, as a determinant of perceived ease of use and intention to use (Venkatesh, 2000; Venkatesh et al., 2002; Yi & Hwang, 2003). Thus, we hypothesize that:

H2: Perceived Enjoyment will have a positive effect on Intention to Use.

Gefen and Straub (1997) showed that women sense more social presence in work-related emails. Venkatesh and Morris (2000) also showed that women are more affected by social norms in their adoption of IT. Women do so more with the objective of creating social inclusion, while men communicate more with the objective of creating and preserving their status and exchanging information (Gefen and Ridings, 2005; Tannen, 1991). In the unified theory of acceptance and usage of technology (UTAUT) model, Venkatesh et al. (2003) showed that women have a stronger relationship between social influence and behavioral intention. Thus, we hypothesize that;

H3: Social Norms will have a stronger effect on Intention to Use in Females.

On the other hand, Venkatesh et al. (2000) also found that the decisions of men were more strongly influenced by their attitude (summation of intrinsic cognitive beliefs similar to perceived enjoyment) toward using the new technology, while women were more strongly influenced by social norm and perceived behavioral control. Generally, men are supposed to be more sensitive to self-motive or self-satisfaction than women (Anderson and Leaper, 1998; Edelsky, 1993; Herring, 1993; Holmes, 1992; Kilbourn and Weeks, 1997; Weatherall, 1998; West and Zimmerman, 1983). Based on an extensive review of the literature, Minton and Schneider (1980) concluded that men tend to be more self-confident that would be related to the intrinsic motivation. There has been no study that tests the moderating effect of gender in the relationship between perceived enjoyment and adoption intention in the e-commerce context. Thus, we hypothesize that;

H4: Perceived Enjoyment will have a stronger effect on Intention to Use in Males.

METHOD AND ANALYSIS

The online survey was implemented with undergraduate business students, who voluntarily participated. The target university for the survey is in the northern region of the U.S. The experiment was conducted in an Internet classroom as suggested by Gefen (2002). Students were approached in an Internet-connected classroom, where each student had his/her own PC. The students were asked to navigate to www.amazon.com, and go through the procedure of purchasing a book without actually submitting the purchase transaction. Next, the students were asked to complete the experimental instrument of an online survey based on their experiences with the website. The main objective of this experiment was to refresh the participants' memory without manipulating the participants or creating perception. We developed an online survey website and posted this URL to the class management system (Blackboard™) for the students to access.

In the main test, 322 students voluntarily participated in the study. We awarded bonus points to the final grade of survey participants. It took around 20 minutes for the participants to navigate the website and 25 minutes to complete the survey. The average age of the main test participants was 22 years, and 56% were female. 92% of participants reported having used some e-commerce website to buy products before. 66% reported having used Internet 4 to 20 hours in a week, while 20% replied more than 20 hours. 15% replied that they used Internet less than 3 hours in a week. All measurement items are adapted and revised from previous research on the theory of reasoned action and the self-determination theory as we explained in the hypotheses section (see Appendix for detailed items). All questionnaire items used a 5-point Likert-type scale where 1 = completely disagree, 3 = neither agree nor disagree, and 5 = completely agree.

Measure validation and model testing were conducted using Partial Least Square (PLS) Graph Version 3.0 (Chin & Frye, 1998), a structural equation-modeling (SEM) tool that utilizes a component-based approach to estimation. PLS makes few assumptions about measurement scales, sample size, and distributional assumptions (Chin, 1998; Falk & Miller, 1992; Fornell & Bookstein, 1982; Wold, 1982). The model in this study has complex moderating relationships with the formative construct that can be tested by the PLS manipulation (Keil et al., 2000). Chin (1998, p. 311) advises that "if one were to use a regression heuristic of 10 cases per indicator," the sample size requirement would be 10 times (1) the largest number of formative indicators or (2) the largest number of independent variables impacting a dependent variable, whichever is the

greater. In our model, the largest number of formative indicators is only three. Thus, our sample size of 322 is more than adequate for the PLS estimation procedures.

Before testing the hypothesized structural model, we first evaluated the psychometric properties of the study variables through confirmatory factor analysis. The measurement model was assessed by using PLS to examine internal consistency reliability (ICR) and convergent and discriminant validity (Barclay et al., 1995; Chin, 1998; Yi & Davis, 2003). Internal consistencies of 0.7 or higher are considered adequate (Barclay et al., 1995; Chin, 1998; Yi & Davis, 2003). To assess convergent and discriminant validity, the square root of the average variance extracted (AVE) by a construct should be at least 0.707 (i.e., $AVE > 0.50$) and should exceed that construct's correlation with other constructs. Table 1 shows that the psychometric properties of the study variables were considered relevant and sufficiently strong to support valid testing of the proposed structural model.

The PLS structural model and hypotheses were assessed by examining path coefficients and their significance levels. Following Chin (1998), bootstrapping (with 500 resamples) was performed on the model to obtain estimates of standard errors for testing the statistical significance of path coefficients using a t-test. Figure 2 provides the results of hypothesis testing. All direct paths in the model were supported within the 0.001 significance level. To test the moderating effects of gender, we adapted the procedure by Keil et al. (2000). Hypotheses 3 and 4 were examined by comparing the path coefficients based on Wynne Chin as described by Keil et al. (2000). All the hypotheses were confirmed within the 0.001 significance level. Table 2 shows these results.

Table 1. Weights, Loadings, Internal Consistencies, and Correlations (n=322)

Construct	Weight/Loading		ICR	Social Norms	Enjoyment	Use
Social Norms	SocialNorm1	0.62	0.70	0.71		
	SocialNorm2	0.23				
	SocialNorm3	0.55				
Enjoyment	Enjoyment1	0.92	0.93	0.32	0.90	
	Enjoyment2	0.92				
	Enjoyment3	0.89				
Use	Use1	0.76	0.89	0.35	0.38	0.85
	Use2	0.87				
	Use3	0.91				

Table 2. Comparison of the Path Coefficients in both Samples

Hypotheses	Male (n=138)		Female (n=184)		T-value comparing the two genders
	Path coefficients	Standard Error	Path coefficients	Standard Error	Male – Female
H3: Social Norms will have a stronger effect on Intention to Use in Female.	0.21***	0.079	0.28***	0.068	-8.574***
H4: Perceived Enjoyment will have a stronger effect on Enjoyment in Male.	0.40***	0.077	0.25***	0.067	18.429***

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

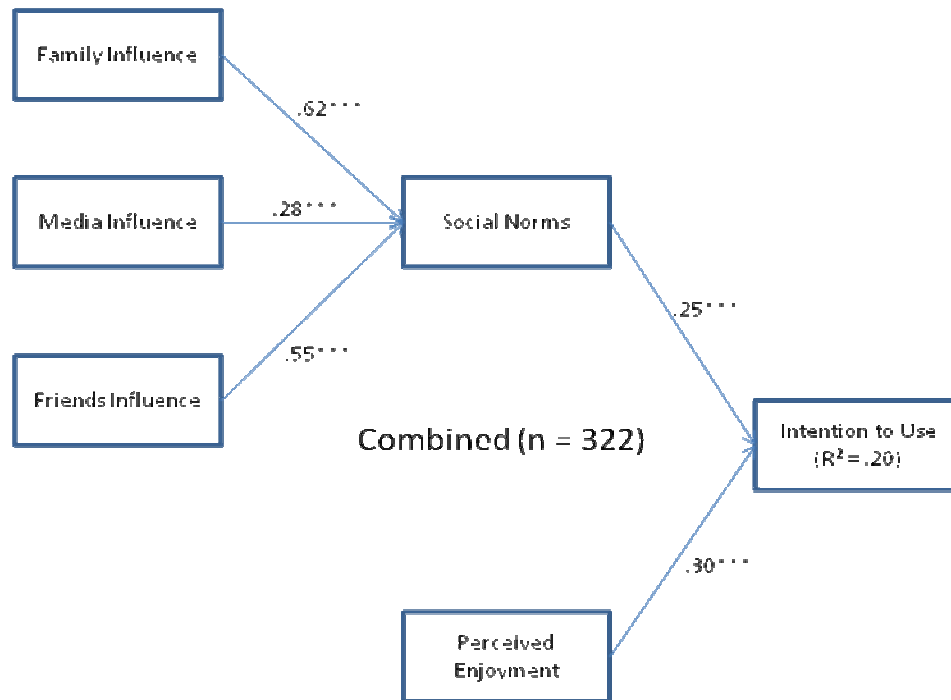


Figure 2. PLS Test Results of Combined Gender

IMPLICATIONS AND CONCLUSION

There are several important findings in this study. Kelman's (1958) social influence theory and TRA that explain theoretical distinctions between the varied processes (affective, and normative) by which social influences change behavior has been applied to the e-commerce systems contexts. Malhotra and Galletta (2003, 2005) argued that previous IS literature focused on commitment by compliance (to gain extrinsic reward), which makes our understanding of social influence, such as social normative and affective, and IS adoption behavior incomplete. This study confirms that Kelman's social influence theory and TRA successfully applied to the e-commerce systems contexts in that the affective commitment is also an important factor to systems adoption.

Socio-linguistic research suggesting that men tend to focus discourse on hierarchy and independence, while women focus on intimacy and solidarity is applied to e-commerce contexts. In general terms, men communicate more with the objective of creating and preserving their social status or intrinsic motivation, while women do so more with the objective of creating rapport and social normative inclusion (Gefen and Ridings, 2005; Tannen, 1994). The empirical findings from the other literature can be connected and cumulated to the current study's findings in e-commerce context.

This research investigates the normative and affective factors based on the theory of reasoned action and the self-determination theory. Furthermore, the moderating effects of gender are tested based on the socio-linguistic literature. In the analysis with 322 samples, the influence of social norms is stronger in the female group while the influence of enjoyment is stronger in the male group. The findings of this study would be helpful for the e-commerce researcher and practitioners in understanding the online consumers' behaviors, which is essential for the successful e-commerce systems implementation.

APPENDIX. MEASUREMENT ITEMS

Social Norms

The members of my family (e.g., parents) think that I should make purchases through the Web.

The media frequently suggest to us to make purchases through the Web.

My friends think that I should make purchases through the Web.

Enjoyment

I would find using Amazon.com to be enjoyable.

Using Amazon.com would be pleasant.

I would have fun using Amazon.com

Intention to Use

I intend to check the product information in Amazon.com frequently.

I intend to receive email from Amazon.com frequently.

I intend to get the information regarding the sales using Amazon.com frequently

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