

GENDER DIFFERENCES IN THE USE OF E-COMMERCE: AN EXPANSION OF THE TECHNOLOGY ACCEPTANCE MODEL, PRELIMINARY RESULTS

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ABSTRACT

Employing the Expanded Technology Acceptance Model, we explain and empirically test the relationship between social norms regarding women and technology and the perceived use and perceived ease of use of e-commerce. Results indicate that men hold strong negative stereotypes about women and e-commerce while women do not. Based on the findings, we present recommendations that can be implemented by marketing educators to change men's negative attitudes.

INTRODUCTION

The Internet is rapidly growing as a medium through which people purchase goods and services. However, significant gender differences exist in the consumption and production (business development) of e-commerce. In the U.S., males and females each currently represent half of the Internet population and half of e-commerce consumers (Cyberatlas 2001a; Cyberatlas 2001b), but men still dominate women in time spent online, number of sessions, and total web pages viewed (Cyberatlas 2002). Outside of the U.S. and Canada, the differences between men and women are greater. For example, the percentage of female Internet users in the UK, Spain, France, Germany, and Italy is 41%, 40%, 39%, 37%, and 37%, respectively (Cyberatlas 2001b, 2002). In the production of e-commerce, a gender gap also exists. A study by The Standard (The Standard 2000) indicates that women represent only 34% of the Internet workforce. Additionally, anecdotal evidence suggests that very few women develop, own, or operate e-commerce businesses (McGrane 1999; Torres 1999).

As e-commerce emerges as a new business paradigm, the distribution of opportunities between men and women is at stake. Focusing on consumers, the objective of this paper is to explain and empirically test the reasons for this gender gap using the Expanded Technology Acceptance Model (E-TAM) in the context of e-commerce. We also offer recommendations that can be implemented by marketing educators to accelerate the participation and contribution of women in e-commerce.

TAM AND E-TAM

Receiving extensive empirical support in the MIS literature, the Technology Acceptance Model (TAM) explains the diffusion of a new technology (Davis 1986, 1989). The TAM model expands Fishbein and Ajzen's Theory of Reasoned Action (Ajzen and Fishbein 1980; Fishbein 1980; Fishbein and Ajzen 1975) by examining the role of the perceived usefulness (PU) and the perceived ease of use (PEU) of a new technology on the use of the new technology. Specifically, the TAM model predicts that PU, which is the value of using the technology compared to other possibilities, directly affects attitudes toward the use and the intent to use the new technology. In addition, PEU, defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis 1989, p. 320), affects attitudes toward use directly, as well as indirectly through PU. Attitude toward use affects behavioral intention and subsequently actual use of the technology. This model has been strongly supported by empirical work (Adams, Nelson, and Todd 1992; Agarwal and Prasad 1999; Davis 1993; Straub 1994).

Researchers have recently expanded upon this model to include access, involvement and social norms (see Figure 1) to explain women's lower participation in e-commerce as both producers and consumers (Bredin, Granitz, and Koernig 2001). Access is the actual or perceived ability to use technology. Involvement is the degree to which a person perceives the technology to be personally relevant. Previous research has strongly supported the positive relationship between access and involvement and the use of a new technology (Agarwal and Prasad 1999; Jackson, Chow and Leitch 1997). According to the E-TAM model, prior access to, and involvement with technology will positively affect an individual's PEU and PU of e-commerce (Bredin, Granitz, and Koernig 2001).

Based on Fishbein and Ajzen's attitude model (Ajzen and Fishbein 1980; Fishbein 1980; Fishbein and Ajzen 1975) which included a social norms component affecting attitudes, as well research demonstrating that social norms in general have a significant influence on IT behavior, and specifically, PU (Compeau and Higgins 1991; Gefen and Straub

1997, Hartwick and Barki 1994; Taylor and Todd 1995), Bredin, Granitz, and Koernig (2001) predicted that social norms have a direct relationship with PU and PEU of a new technology. Additionally, extending the results of research indicating that the perpetuation of social stereotypes of gender has resulted in women's negative attitudes and lower usage of technology (Hartwick and Barki 1994; Compeau and Higgins 1991), Bredin, Granitz, and Koernig (2001) hypothesized that differences in social norms across gender will lead to differences in PU and PEU of e-commerce.

In this research, we empirically test the relationships highlighted in dashed lines depicted in the extended TAM model (E-TAM) for consumer participation in e-commerce (see Figure 1).

METHODOLOGY

We conducted preliminary research to examine the relationship between social norms and PU and PEU. We tested this hypothesis using a random digit dialing phone survey of households in Orange County, California and we spoke to a total 271 individuals aged 18-55. 54.2% of the respondents were female. Of all females 62% had purchased on the Net, while 70% of males had purchased on the Net. Males and females in the sample were equally employed (71%), while 16% of the sample was students.

The dependent measures used in this experiment included social norms, PEU, and PU. PEU was a four-item scale and PU was a six-item scale. Both of these scales were based upon original scales developed by Davis (1989, 1993) and validated by Doll, Hendrickson, and Deng (1998). Social norms were measured using a five-item scale (adapted from Murphy, Coover and Owen 1989). Subjects verbally responded to each of these measures by selecting a number between 1 and 7 (7 signifies greater agreement) that best represented their beliefs.

RESULTS

Scores for the dependent measures were constructed by averaging the item responses for each measure. Reliability estimates for these multi-item factors were: PU (.89), PEU (.86), and social norms (.66). A multiple regression analysis was conducted to test the hypothesis. It revealed a significant relationship between social norms and PU ($B = .152$, $p = .017$), and a significant relationship between social norms and PEU ($B = .168$, $p = .011$). These results suggest that social norms do affect perceived usefulness and perceived ease of use.

Univariate tests were conducted to further explore the relationship between these variables. In this analysis, we were interested in determining if any differences in social norms could be accounted for by subject gender. The results revealed a significant main effect of gender on social norms ($F = 5.922$, $p = .003$). These results indicate that, compared to females, males are more likely to subscribe to negative social norms about women with respect to technology usage (4.96 versus 5.46).

DISCUSSION AND IMPLICATIONS

The results lend strong empirical evidence to support this portion of the extended TAM. Social norms do affect PU and PEU. Additionally, results of the analysis indicate that, compared to women, men are more likely to subscribe to negative social norms about women and computer usage and these differences in social norms subsequently affect PEU and PU. Thus male dominating attitudes and perpetuating stereotypes may predetermine the positions held by women in e-commerce.

As the results of our survey reveal that men (compared to women) in the U.S. are more likely to hold stereotypical social norms about women and technology, our recommendations focus upon changing the perceptions of men about women and technology. We do so by placing women in a position of Internet competence. We believe that by modifying the presentation of women and the Internet, we can further strengthen the position of women as consumers of e-commerce. Additionally, these recommendations will help women in countries outside the U.S. where they have not achieved the same level of usage. While many of these attitudes and behaviors begin in childhood, they are perpetuated at the college and university level. Therefore, we focus our recommendations on what marketing educators can accomplish.

Our ideas focus on integrating the Internet throughout the marketing discipline. This will ensure that it is incorporated into diverse material for students with varying interests. We present some recommendations for each of the major marketing courses.

Principles of Marketing: Assign teams of students the task of studying the Marketing Strategy of an organization where they're required to collect a portion of their information using Internet resources (Web pages; Lexis-Nexis, Dow Jones, ABI/Inform). For this recommendation to be successful, the instructor must take responsibility for creating the teams and assigning the tasks to the individuals in the

teams. The teams can be structured two ways. First, the instructor can create mixed gender teams, where each team studies a different organization and assigns the Internet research portion to women in the teams. Second, the instructor can have the entire class study one organization where the instructor creates gender-segregated teams and assigns the female teams the task of researching the organization on the Internet.

Consumer Behavior: The instructor can create an assignment where students must study and contrast the Internet consumer behavior of males and females in the U.S. Based on previously cited statistics, it will become evident that women have achieved equal levels to men in Internet penetration and as consumers of e-commerce.

Market Research: In the Market Research class, the instructor could have students study Internet consumer behavior. One of the questions that the professor could pose in the assignment is whether there are demographic differences in e-commerce use. However, as opposed to using exclusively secondary data, the students could conduct primary research (i.e. a survey) to understand the behavior firsthand. They could then compare their results to secondary data. Finally, the teams could be structured similar to those in the Marketing Principles class with the women being responsible for the technology-end of the project (data analysis).

Market Strategy: In this class, the instructor can choose cases that portray women as competent producers of e-commerce and e-marketing strategy. In the Harvard Business Case series, there are several excellent cases. First, the *Staples.com* case introduces Jeanne Lewis as the President and CEO of Staples and portrays her as a visionary in setting up an e-commerce business. Additionally, the main character in the case, Kelly Mahoney, is portrayed as an experienced and successful dotcom executive. The case *Meg Whitman at e-Bay* profiles Meg Whitman as a successful, intelligent and in-control CEO of eBay. Finally, *Autobyte.com* presents Anne Benvenuto deliberating Internet strategy as Senior Vice President of Marketing at Autobyte.

CONCLUSIONS

Our objective was to explore the relationship between women and e-commerce using the E-TAM. By testing the effect of Social Norms upon PU and PEU, we brought empirical evidence to support this new portion of the E-TAM model, as well as presenting empirical evidence explaining why a gender gap persists in the consumption of e-commerce. Based on the

preliminary finding that men hold stronger negative stereotypes about women and e-commerce than women, our recommendations focused on improving the situation by changing the attitudes of men.

We recommend two areas for future research. First, while these recommendations may aid in increasing the e-commerce usage of females, their effect upon females as producers of e-commerce must be measured. Second the E-TAM model should be tested using different variables beyond gender such as age, education, occupation and income.

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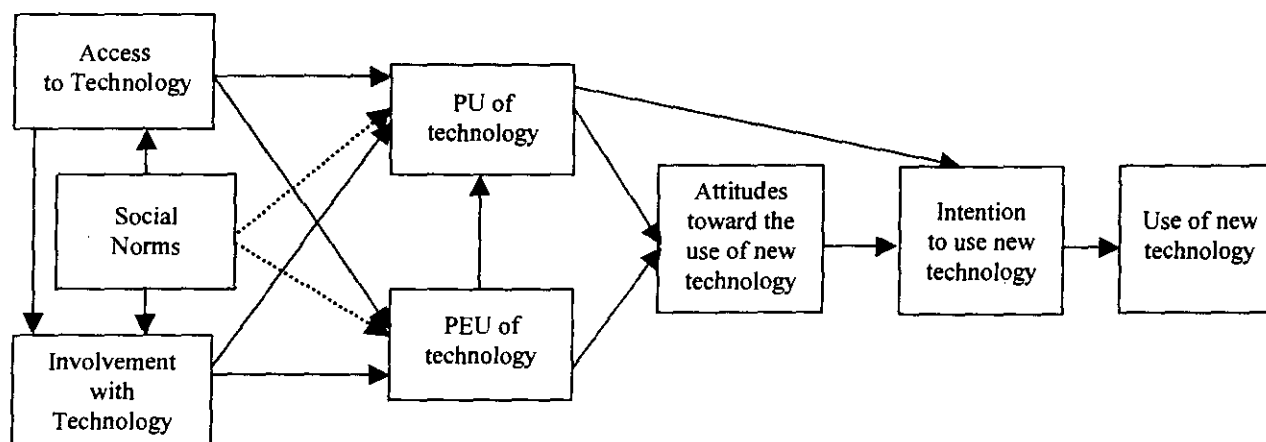


FIGURE 1: Extended Technology Acceptance Model