AN ABSTRACT OF THE DISSERTATION
FOR THE DEGREE DOCTOR OF PHILOSOPHY IN THE
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Title: The intention to buy and sell online: A model depicting the role of individual, technological, and informational factors along with the moderating function of cultural traits

Abstract Approved: Gwen Alexander, Ph.D.
(Chair)

This dissertation has examined the relationship between individual, technological, and informational factors and the behavioral intention to buy and sell online. In addition to this examination, moderating influences of individual-level cultural values on the preceding relationships were also analyzed. The quantitative approach of structural equation modeling was used for the analysis. The conceptual framework of this study was constructed using the theory of diffusion of innovations, the technology acceptance model, and Hofstede's cultural dimensions. Data for this research was collected using student participants at a midwestern state university. The analysis of the data has supported some of the proposed relationships. For instance, it was found that perceived usefulness, perceived ease of use, and personal innovativeness positively influence the intention to buy and sell online. Information privacy-security was found to negatively influence the intention in online selling, although this influence was not significant in online buying. Regarding cultural values, it was found that uncertainty avoidance, masculinity, and collectivism have moderating influences. However, these influences differed in magnitude and significance in online buying versus online selling. For

instance, collectivism had a significant moderating effect on the relationship between personal innovativeness and behavioral intention in online buying, whereas it did not have such an effect in online selling. Similarly, masculinity significantly moderated the relationship between perceived usefulness and behavioral intention to buy online, but there was no similar relationship in selling online. Uncertainty avoidance moderated the relationship between personal innovativeness and the behavioral intention in online buying. The approach and findings of this study carry significance for Library & Information Science (LIS) and Information Systems (IS). By examining user behavior and an intermediary (a web-based site), this study has contributed to our understanding of user-intermediary-bibliographic records interaction—an interaction that is at the core of LIS. This study has addressed the call for more focused research on online buying and selling, and has also provided a theoretical link between individual-level cultural values and intention, thus contributing to IS research. Implications for practitioners include a better understanding of the criteria for assessment of usability of library collections and information systems while giving attention to individual, technological, informational, and cultural factors.

The Intention to Buy and Sell Online: A Model Depicting the Role of Individual, Technological, and Informational Factors along with the Moderating Function of Cultural Traits

By

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CHAPTER 1
INTRODUCTION

Exchange has always been an important process in human lives. In the pre-industrial era, small towns and adjoining cities provided places where people could exchange their products, an exchange that was described as barter trade. With the industrial revolution, a change in the scope of human needs began. A greater demand for non-agricultural products necessitated the need to develop special marketplaces where people could buy different products in exchange for currency notes. Transactions became more numerous, and owing to a greater number of industries, competition increased. Corporations developed special departments, such as marketing, to disseminate information about products. Information became an important resource and pivotal to the diffusion of products and services.

Development of the Internet marked a new era that has extraordinarily influenced almost every sphere of human activities. The Web, a component of the Internet, has become a ubiquitous phenomenon. This development brought new meaning, similar to that of the industrial revolution, for trading. In terms of use, availability, and various other properties, the Web has provided an opportunity for traders to present products and/or services to a wider section of the population at a lower cost. On the other hand, users have also found online buying/selling to be convenient and cost effective (Zhou, Dai, & Zhang, 2007).

Online buying and selling has become an important way of satisfying user needs. According to Donthu and Garcia (1999), buying has become the most rapidly growing use of the Internet. In the U.S. it was estimated that online retail sales will grow at a 10% compound annual growth rate over the next five years and will reach to nearly $249

billion by 2014, whereas in Western Europe the same figures were estimated to be 11% compound annual growth rate and € 114 billion by 2014 ("Forrester Forecast," 2010). The increasing importance of online buying and selling has drawn attention from scholars. Success of a new technology/practice depends on its adoption; therefore, different researchers started investigating factors that play a role in the adoption of online buying and selling.

The technology acceptance model (Davis, 1989; Figure 1) has been the most widely used model in investigating the adoption of technologies. Davis proposed that perceptions of users regarding usefulness and ease of use of a technology shape their intention to adopt. These two perceptions, perceived ease of use—a person's belief that usage of a particular technology will be free of effort (Davis) and perceived usefulness—a person's belief that usage of a particular technology will increase his or her job performance (Davis) of a technology, have been found in various studies as significant determinants of intention to use (e.g., Adams, Nelson, & Todd, 1992; Agarwal & Prasad, 1999). This model has also been used in studies to analyze the adoption of online buying/selling. For instance Gefen and Straub (2000); Gefen, Karahanna, and Straub (2003); Heijden, Verhagen, and Creemers (2002); and McCloskey (2003/2004), (2006) examined the adoption of online buying/selling using the technology acceptance model. In addition to perceived ease of use and perceived usefulness, other factors were also proposed in these studies as influencing the intention to buy/sell online.

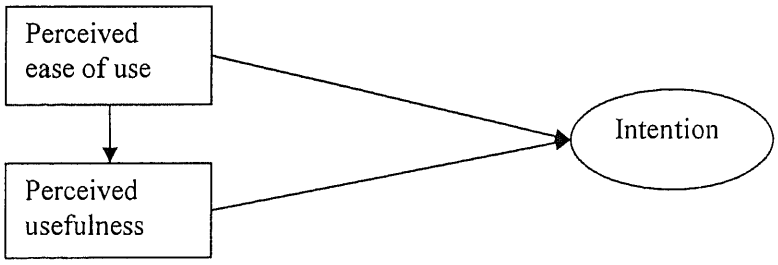

Figure 1. Primary technology acceptance model (TAM). The oval shape represents the dependent construct and the squares represent the independent constructs. These independent constructs were proposed to be influencing the behavioral intention in "Perceived usefulness, perceived ease of use, and user acceptance of information technology," by Davis, 1989, *MIS Quarterly*, *13*(3), 319-340.

The study by Gefen and Straub (2000) was an important step in researching online buying/selling. The purpose of the study was not to propose the factors that influence the intention to buy/sell online. Instead, the primary purpose was to investigate the difference in impact of perceived ease of use on adoption under the conditions where information technology (IT) provides the final product or service (e.g., using a Web site for collecting information) versus the conditions where IT is a means and not an end to it (e.g., using a Web site to buy a book). In another study, Gefen, Karahanna, and Straub (2003) analyzed the online purchase intentions of the users. They proposed that perceived ease of use, perceived usefulness, and trust will impact the intention to purchase online, and found support for their proposed model; furthermore, the belief of users regarding Web site safety mechanisms [security], sincerity of sellers, the nature of the interface, and its ease of use were found to influence trust by users in online transactions. McCloskey (2003/2004), (2006) investigated online trading using the technology acceptance model, along with the constructs of security and trust. She found that ease of use has an impact on user propensity to make an online purchase (2003/2004), and perceived usefulness and trust directly influence usage (2006).

Despite investigations regarding factors that influence the adoption of online buying/selling, few studies have examined the role of cultural values in the adoption of online buying/selling. Cultural influence is important, as it shapes values and influences behavior (Hofstede, 1980; 2001). Individual values evolve from experiences in dealing with different human and institutional factors operating in a culture. Values influence behavior (McCoy, 2002) and the nature of dispositions that an individual develops toward a certain situation or an issue. The adoption of online buying and selling

represents a situation where the role of individual cultural values in influencing behavior deserves attention.

The work of Hofstede (1980) provides insight into cultural dimensions that can aid in investigating the role of cultural values during the adoption process. His work on culture is highly influential in cultural theory among social science researchers (Nakata & Sivakumar, 1996). While working at IBM, Hofstede conducted a study and collected 116,000 responses from 66 different countries. These data were factor analyzed and classified into four dimensions: Individualism/Collectivism (relation of self with others); Masculinity/Femininity (importance of earnings and recognition versus relationship and cooperation); Uncertainty Avoidance (the need for formal rules and stability); and Power Distance (view about the distribution of power). A fifth dimension, long-term orientation (importance of future), was added later (Hofstede & Bond, 1988). Each country was given a score on each of the original four dimensions. Subsequently, these country scores were used by researchers to examine the role of the culture in issues ranging from Internet diffusion patterns to adoption of online buying and selling.

In view of the importance of culture, some researchers used cultural dimensions of Hofstede to investigate online buying and selling. Pavlou and Chai (2002) used the theory of reasoned action[1], along with the cultural dimensions of Hofstede, to investigate the adoption of online buying/selling in the U.S. and China. They did not collect individual cultural data, but instead used the country scores developed by Hofstede. In their findings, the lack of the impact for power distance on the proposed relationship was attributed to a small difference between the national power distance scores of the U.S.

[1] Theory of Reasoned Action proposes that the behavior is influenced by intentions to act, which in turn are determined by one's attitude towards the act and subjective norm (Ajzen & Fishbein, 1980).

and China. Park and Jun (2003) used Internet usage, perceived risks, and innovativeness on a cross-cultural basis to propose a model that could explain the unique patterns, if any, in the Internet buying behavior of American and Korean users. Nationality was used as a variable; however, they did not collect data on cultural values of the subjects. They noted that "...there are some cross-national differences in experience (action), but no difference in intention (attitude)" (p. 546).

The use of country scores to explain individual behavior is criticized. For instance, McCoy, Galletta, and King (2005) stated that "Because the usual national culture constructs are measured at the national level, they also should not be used in individual models of behavior or technology acceptance" (p. 211). Similarly, Srite and Karahanna (2006) argued that national culture is a macro-level phenomenon, but technology acceptance is an individual-level concern. The preceding statements provide convincing support to the perspective that cultural values should be measured at the individual level in studies examining the role of culture in individual behavior.

To the best of the researcher's knowledge, no study has investigated the adoption of online buying and selling by using individual cultural values. Furthermore, the technology acceptance model along with the individual level of cultural values has also not yet been used to explore adoption of online buying and selling. This study was an initial step in this direction and has provided an important foundation for the upcoming research on the adoption of online buying and selling.

Significance

Theoretical significance. There are differences in the behavior of individuals buying/selling online versus off-line, and these differences call for a different

conceptualization (Cheung,Chan, & Limayem, 2005). Despite the growing research on online buying and/or selling it has been noted that "...the scope of studies is rather broad, studies appear relatively fragmented with contradictory findings..." (Cheung et al., 2005, p. 2), and "...the research on what drives consumers to shop online has typically been fragmented" (Monsuwé, Dellaert, & Ruyter, 2004, p. 102). Furthermore, in spite of a substantial body of literature examining online buying and selling, there are significant gaps in the understanding of online consumer behavior (Dennis, Merrilees, Jayawardhena, & Wright, 2009). The present study is an important contribution toward addressing the call for more focused research on online buying and selling.

Additionally, adoption research on online buying and selling has thus far not provided a theoretical connection between the individual cultural values and the acceptance of online buying and selling. The studies of Pavlou and Chai (2002), Park and Jun (2003), Stafford, Turan, and Raisinghani (2004), and Slyke, Lou, Belanger, and Sridhar (2010) are some of the examples. This approach resulted in a lack of theoretical connection, as raised by Srite (2000), between cultural values and adoption of online buying and selling.

The current study, by assessing individual cultural values, has made an important contribution in developing a theoretical link between cultural values and adoption of online buying and selling. This study is also one of the few research endeavors that has used individual cultural values along with the technology acceptance model. This combination has aided in understanding the relationship between the constructs of the technology acceptance model and cultural values.

Practical significance. Owing to the ubiquitous nature of the Web, many traders are using online buying/selling as a means to promote products and services. The growth of a business, however, partly depends on increasing the number of users for its products and services. In online buying and selling, like the physical marketplace, it is important to understand the properties, concerns, and values that shape the intention of a user to buy and sell online. This understanding is important in attracting large numbers of users to online buying and selling.

Depending on the differing cultural values of individuals living within the same geographic region, better customization of an online buying and selling service can be achieved. This approach can help a corporation to apply better segmentation strategies and disseminate information through targeted advertising.

Purpose and Research Questions

The research on behavioral intention to adopt online buying and selling has not yet provided an account of cultural influences on individual intentions. The few studies that have analyzed the cultural influence did so by using country scores rather than individual cultural values. Differences in adoption, if any, were attributed to the cultural differences between the countries. This approach has a weakness. Srite (2000) wrote that the studies, which compare countries and attribute differences to culture, fail to make the theoretical connection between cultural variables and adoption of technologies. The present study is an important step in addressing that weakness. The primary research objective guiding this study is:

To examine the nature of relationships between personal, technological, informational constructs and intention to adopt online buying and selling under the

influence of individual-level cultural values. Thus, the study proposes the following research questions:

RQ1: Do the relationships between the intention to buy and sell online and the predictor (personal, technological, & informational) constructs hold?

RQ2: Does culture moderate the relationship between the intention to buy and sell online and the predictor constructs?

RQ3: Do demographic factors influence participants' responses?

Conceptual Framework

Behavioral intention. Behavioral intention represents the extent to which a person is willing to perform a behavior. Intention is a good predictor of actual behavior and includes different motivational factors that influence a behavior (Ajzen, 1991). Intentions are used to predict the behavior as the assessment of actual behavior, depending on the nature of a study, can require a long period of time. For instance to measure the adoption success of a new technology, a study might have to assess the intentions of subjects towards the technology in the first phase and then to measure the actual adoption later.

In technology adoption literature there are multiple studies that have used behavioral intention to predict the actual behavior. For example, Pavlou and Chai (2002) proposed a model that included transaction intention (the intent to engage in a transaction) to predict the adoption of electronic commerce. In a study by Srite and Karahanna (2006), the proposed model used 'behavioral intention to use' to assess the adoption of personal computers and personal digital assistants. According to Ajzen (1991) a strong intention to engage in a behavior usually results in actual performance;

therefore, assessment of behavioral intention provides a valid measurement of actual behavior and was thus used in the current study to predict actual behavior.

Technology acceptance model. The primary objective of this research was to study the nature of relationships between personal, technological, informational constructs and intention to adopt online buying and selling under the influence of individual-level cultural values. Online buying and selling is a technology-mediated practice and can be studied with the models that have been developed specifically for understanding the acceptance of technology. The technology acceptance model (Davis, 1989) is one of the most widely used models to predict the adoption of technology. It is argued that this model is also applicable to investigate the intention to adopt online buying/selling (e.g., Gefen et al., 2003). This model provides a simple, yet robust, means to explore the acceptance of technology.

The technology acceptance model was developed within the discipline of information systems. This model proposed that the constructs of perceived ease of use and perceived usefulness would be fundamental in shaping the intention and influencing behavior relating to the acceptance of technology. According to Davis (1989), "perceived usefulness" and "perceived ease of use" are the important determinants of user acceptance of information technology.

The two constructs of perceived ease of use and perceived usefulness have been tested in various studies including (Adams et al., 1992; Agarwal & Prasad, 1999) and found to be important predictors of intention to use/accept a technology. Adams et al. conducted research that involved two studies. In the first study, they surveyed 118 individuals from 10 different organizations. The subjects were asked about the attitudes

relating to a messaging technology. Perceived ease of use and perceived usefulness were found to be significant in leaving an impact on the attitude and the behavioral intention. The other study included 73 students who were asked about three different technologies. Though the results regarding the influence of perceived ease of use and perceived usefulness were mixed, the researchers concluded that, nevertheless, the results showed the importance of both of these constructs.

Though important, the constructs of perceived ease of use and perceived usefulness are not sufficient to account for the role of various other factors that can play a role in technology acceptance; therefore, in later years, this model was extended and modified extensively. For instance, Chen, Gillenson, and Sherrell (2002) added the construct of compatibility to the technology acceptance model. They proposed a model to look at the behavioral intention of users relating to online buying/selling. The extended model was found to be reliable. In a study by Srite and Karahanna (2006), the construct of subjective norm was included in the technology acceptance model to investigate the moderating role of cultural values in technology acceptance. The authors extended the technology acceptance model on one hand and also proposed the measurement of culture at the individual level.

The constructs of perceived ease of use and perceived usefulness, as outlined in the technology acceptance model, are important but not adequate to represent the influence of social environment on the individual's intention to accept technology (Srite, 2000). Furthermore, the nature of a research problem can also necessitate considering the inclusion of variables that are pertinent to the investigation. During online buying and selling, for instance, the factors of information privacy and security are of paramount

importance and therefore warrant consideration in research on online buying and selling. Similarly, personality traits relevant to the phenomenon of adoption also deserve attention. To better assess the adoption of online buying and selling under the influence of cultural values, this study has extended the technology acceptance model by including variables of personal innovativeness, information privacy, and information security.

Personal innovativeness. Innovativeness shows the extent to which a person is willing to try a technology, product, and practice for the first time. This characteristic is a personality trait and affects behavioral intention. Personal innovativeness is an individual characteristic that is important in the adoption of technology and can motivate an individual to use a certain thing before most people in his/her referent group. Personal innovativeness in the online context was found to influence the individual's intention (e.g., Goldsmith, 2000). However, the technology acceptance model does not include a variable that accounts for individual differences (Agarwal & Prasad, 1998); therefore, they suggested that personal innovativeness should be included in the technology acceptance model, as it can help to explain how the perceptions are formed and influence intentions to use technology. Personal innovativeness was thus added to the technology acceptance model in this study to better assess the role of individual characteristics in shaping intention to buy and sell online.

Information. Individuals acquire and use information to solve different issues. The nature of available information facilitates the development of perceptions and subsequent behavioral intentions. From an individual and social perspective, information is of great importance. According to Salancik and Pfeffer (1978), the informational environment of individuals influences attitudes, beliefs, and behaviors. Information can

be of great importance in making choices. The technology acceptance model provides a framework that includes technological factors; however, not enough to account for the possible influence of information on users in an online environment.

In online buying and selling, information is disseminated to promote products and services. Users utilize this information to evaluate and make decisions. In event of a transaction, users also have to provide some personal information, such as address, credit card number, etc. This information facilitates online buying and selling but also poses a risk to the user, which is manifested in the form of concerns regarding the privacy and security of information.

In the online environment, an individual's concern about information privacy-security can be of significant value. Information privacy represents the condition of limited access to information; information security signifies the ability of a system to keep intruders from accessing the personal information. Information privacy and information security are both related. In various studies on online buying/selling, these two dimensions have been found to be of considerable importance. For example, Lee (2002) found that security, along with privacy, can help to build the trust of an individual toward online purchases. Information privacy and information security have been classified as important components of merchant and intermediary characteristics and have been proposed as factors that influence intention, adoption, and continuance of user online experiences (Cheung, Chan, & Limayem, 2005). In view of the importance of information privacy-security, this variable was added to the technology acceptance model and conceptualized to influence user intentions to buy and sell online.

Hofestede's cultural dimensions. Culture is described as a shared set of values, patterns of thinking, and collective feelings. Culture provides individuals a way to understand the world as well as respond to it. Beginning with early childhood, people start learning a set of values, which aids in forming responses to different problems/issues. Culture, therefore, is very important to understand the ways of people belonging to certain groups and societies. The work of Hofstede (e.g., 1980, 1997) is considered to be one of the highly influential works in cultural studies and has been used extensively in studies on individual behavior.

In addition to the technology acceptance model, Hofstede's cultural dimensions contributed to the conceptual framework of this study. Hofstede (1980) classified cultures into four dimensions: a) masculinity-femininity, b) individualism-collectivism, c) power distance, and d) uncertainty avoidance. A fifth dimension of long-term orientation was added later (Hofstede & Bond, 1988). These dimensions represent issues that most societies face. Responses of each society to these issues can vary among cultures. For example, masculinity/femininity exhibits the issues of achievement, recognition, and cooperation; individualism/collectivism shows the relationship of self to society; power distance signifies the relationship of individuals to authority and relationship to society; uncertainty avoidance indicates how people deal with uncertainty; and long-term orientation represents the orientation toward the future.

Among social science researchers, Hofstede's cultural dimensions are considered to be highly influential in cultural theory (Nakata & Sivakumar, 1996). This cultural framework has received strong empirical support (Sondergaard, 1994). These dimensions have been used extensively to ascertain the influence of various cultural characteristics on

the acceptance of technology (e.g., Akour, Alshare, Miller, & Dwairi, 2006; Lippert & Volkmar, 2007). Akour et al. studied the managers' intention to use the Internet. They proposed a model including the constructs of perceived usefulness, perceived ease of use, and Hofstede's cultural dimensions. Their findings concluded that power distance and individualism/collectivism impacted managerial intentions, while no support for the other two dimensions of uncertainty avoidance and masculinity/femininity was found.

Hofestede's (1980) cultural dimensions have been used in collaboration with the technology acceptance model to assess the role of personal characteristics in the user acceptance of technology and online commerce. For instance, Pavlou and Chai (2002) used the technology acceptance model and Hofstede's cultural dimensions to compare e-commerce acceptance in the U.S. and China. Lippert and Volkmar (2007) used the theory of reasoned action, the technology acceptance model, and Hofstede's cultural dimension of masculinity/femininity to examine the post-adoption attitudes and behaviors of the U.S. and Canadian users of a specialized supply- chain activity.

McCoy, Everard, and Jones (2005) used the technology acceptance model, along with cultural dimensions, to examine the e-mail usage of subjects from Uruguay and the U.S. They found that the technology acceptance model explained variance in behavioral intentions to use technology equally well in subjects from a non-North American country. However, the proposed relationships regarding the moderating affect of culture were not supported. The researchers concluded that it is not possible to assess the impact of individual cultural dimensions, in their current form, on the relationships in the technology acceptance model.

Hofstede's work, though quite useful in understanding national cultures and their impact on aggregate behaviors, is however, not suitable for exploring cultural influence on individual behavior. It has been argued that national culture is a macro-level phenomenon, whereas technology acceptance is an individual level-concern (Srite & Karahanna, 2006); consequently, the use of national-level scores for the description of individual cultural values is not appropriate. To better address the preceding concern, this study has assessed the cultural values of individuals using an individual-level approach.

Summary

The theoretical underpinnings presented above, particularly, the technology acceptance model and Hofstede's cultural dimensions have provided the conceptual framework of this study. To better examine intention to adopt online buying and selling under the influence of culture, relevant constructs of personal innovativeness and information privacy-security were added, and extended technology acceptance models were proposed, one for online buying and the other for selling (Figures 2 & 3).

The next chapter explains the relevant literature pertaining to the constructs of the extended technology acceptance model (Figures 2 & 3). Following this discussion, the notion of culture and its relevance to adoption was described. Next was presented the conceptualization of culture at the national and individual level. Finally, the moderating influence of the culture was discussed.

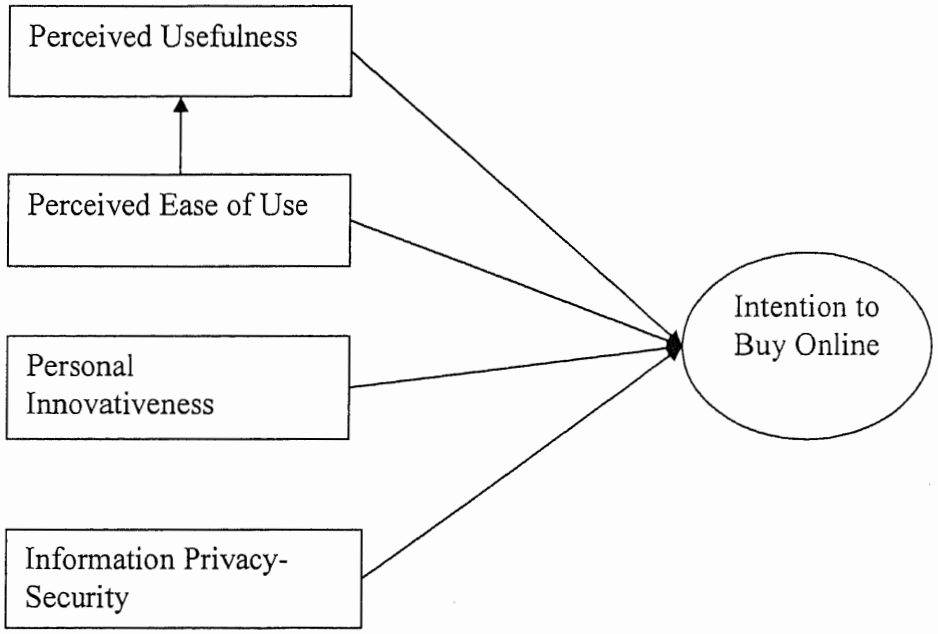

Figure 2. Extended technology acceptance model-buying (ETAMB). Two new independent constructs were added: personal innovativeness and information privacy-security. It was proposed that perceived usefulness, perceived ease of use, personal innovativeness, and information privacy-security will influence the intention to buy online.

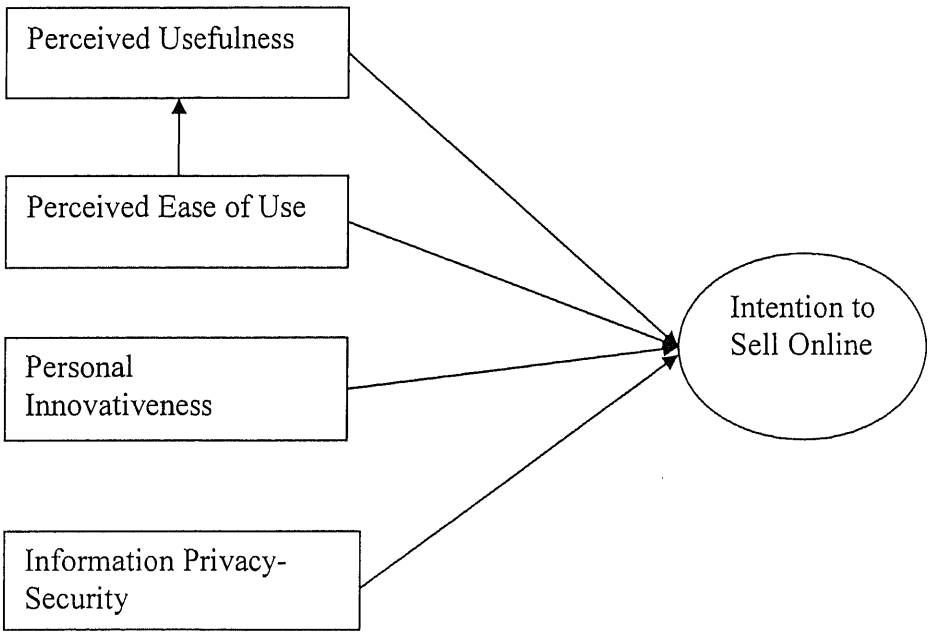

Figure 3. Extended technology acceptance model-selling (ETAMS). Two new independent constructs were added: personal innovativeness and information privacy-security. It was proposed that perceived usefulness, perceived ease of use, personal innovativeness, and information privacy-security will influence the intention to sell online.

CHAPTER 2

LITERATURE REVIEW

Direct Influence

The proposed models have used the technology acceptance model (Davis, 1989) as the primary model and extended them with the constructs of personal innovativeness, and information privacy-security. The nature of the relationship between the predictor constructs and intention to buy and sell online were further examined under the influence of culture using Hofstede's (1980) cultural dimensions. This combination had provided a perspective that helped to account for the moderating role individual cultural values play in shaping the user intention to adopt online buying and selling.

Perceived usefulness (PU). Perceived usefulness is an important determinant of usage intention and 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 usefulness represents the perception of the user about the possible benefit to be gained by learning or adopting a technology for the first time. Perceived usefulness has been found to be a significant predictor of attitude toward usage and actual use. According to Lin and Yu (2006), "Perceived usefulness has received extensive empirical support through validations, applications and replications by researchers and practitioners" (p. 113) (e.g., Davis, Bagozzi, & Warshaw, 1989; Eriksson, Kerem, & Nilsson, 2005; Igbaria, Zinatelli, Cragg, & Cavaye, 1997).

Davis et al. (1989) conducted a longitudinal study in which behavioral intentions to use a system were measured at time spans having a lag of 14 weeks. They found perceived usefulness to be a strong influence on behavioral intentions to use a system.

Igbaria (1994) and Igbaria et al. (1997) found perceived usefulness to be a factor that has a strong influence on micro-computer technology acceptance and system usage. Gefen et al. (2003) explored the effect of trust, perceived usefulness, and perceived ease of use on the intended behavior of consumers. They found perceived ease of use, perceived usefulness, and trust were important antecedents of e-commerce adoption. According to Gefen, et al. "perceived ease of use emerges as a central aspect of e-commerce, since it has both direct effects on intended use as well as indirect effects through trust and perceived usefulness" (p. 74).

McCloskey (2006) found perceived usefulness and trust had a positive, direct effect on usage. Thompson, Compeau, and Higgins (2006), while commenting on the hypothesis of their study, stated the relationship between perceived usefulness and intention to use as uncontroversial. In adoption, the importance of perceived usefulness is also well established in global settings. Eriksson et al. (2005) found perceived usefulness to be important in user acceptance of online banking in Estonia.

Perceived usefulness positively affects intention to buy and sell online. Along with the technology acceptance model Pavlou (2003) used the theory of reasoned action to predict acceptance of e-commerce and found perceived usefulness, together with perceived ease of use, important in e-commerce acceptance. Chen et al. (2002) used the technology acceptance model and the diffusion of innovations theory to examine consumer behavior in the virtual store context and found perceived usefulness as having an important affect on attitude toward using the virtual store. According to Monsuwé et al. (2004), the intention to buy online depends on perceived usefulness, perceived ease of use, and on emotional as well as hedonic dimensions.

Perceived ease of use (PEU). Perceived ease of use represents a person's belief that usage of a particular technology will be free of effort (Davis, 1989). Perceived ease of use, along with perceived usefulness, has been found to be an important antecedent of adoption (e.g., Adams et al., 1992; Akour et al., 2006; Szajna, 1996). The study by Szajna (1996) was a longitudinal research study in which perceptions about the ease of use and usefulness of an electronic mail system along with the intention to use and the actual usage were measured. He found support for the constructs of perceived ease of use and usefulness, and also suggested that the experience component should be added to the technology acceptance model.

Perceived ease of use has its roots in Bandura's theory of self efficacy (1982). Bandura defined self efficacy as "judgments of how well one can execute courses of action required to deal with prospective situations" (p. 122). According to Davis (1989), this definition of self efficacy is similar to perceived ease of use. Perceived ease of use and perceived usefulness affects attitude toward use and attitude impacts behavioral intentions, which in turn impacts actual usage (Davis). Thus, individuals who perceive a technology easier to use will develop favorable attitudes toward that technology and will use it (Alshare, Mesak, Grandon, & Badri, in press).

McCloskey (2003/2004) used the technology acceptance model to evaluate the acceptance of e-commerce and found that "ease of use has a direct effect on whether a consumer will make an online purchase" (p. 53). Heijden et al. (2002) found perceived ease of use, along with perceived risk, as important variables that influence the attitude toward purchasing online. The role of perceived ease of use in adoption has also been recognized in different countries. Guriting and Ndubisi (2006) found perceived ease of

use and perceived usefulness as strong determinants of behavioral intention to adopt online banking in Malaysia; Pagani (2004) found perceived ease of use and perceived usefulness along with price and speed of use as important determinants of mobile service adoption in Italy.

Zipf's (1949) conception of the principle of least effort (PLE) can also be used to understand the importance of perceived ease of use in adoption. According to Poole (1985), people estimate the effort required to do a task now and in the future and then perform it in a way that minimizes both the current and future effort required to perform the task. Perceived ease of use is a perception related to the effort required to perform a certain task and, according to the principle of least effort, people minimize or try to minimize the effort; thus, a positive perception of ease of use can play an important role in forming a positive attitude and intention to adopt a technology.

Mediating role of perceived usefulness (PU). Davis (1989) suggested that perceived ease of use will operate through perceived usefulness, and this claim was supported by numerous studies (e.g., Chin & Gopal, 1995; Gefen, 1997; Moore & Benbasat, 1991; Venkatesh, 1999; Venkatesh & Davis 1994). Through perceived usefulness, perceived ease of use affects the attitude directly as well as indirectly. Gefen and Straub (2000) found that perceived ease of use left an impact on perceived usefulness, which in turn influenced the intended inquiry and intended purchase. The indirect influence of perceived ease of use was also found in studies conducted outside North America. Pagani (2004) presented a model proposing the determinants of mobile service adoption. One of the hypothesized relationships was that perceived ease of use will influence perceived usefulness. The model was validated through a qualitative

exploratory study, using subjects from Italy and the U.S., and also tested empirically with data collected from subjects in Italy. Perceived usefulness and perceived ease of use emerged as one of the most important predictors of adoption. Additionally, he found support for the influence of perceived ease of use on perceived usefulness.

Personal innovativeness (PI). Personal innovativeness shows the extent to which a person is willing to use a technology/product for the first time. The current study has used the definition of Agarwal and Prasad (1998) who defined personal innovativeness as "the willingness of an individual to try out any new information technology" (p. 206). Personal innovativeness has received considerable attention in consumer behavior research. According to Hirschman (1980), "few concepts in the behavioral sciences have as much immediate relevance to consumer behavior as innovativeness" (p. 283). The effect of personal innovativeness on adoption has been recognized in different studies (e.g., Park & Jun, 2003; Venkatraman, 1991).

Park and Jun (2003) examined the differences between Korean and American subjects in terms of Internet usage, Internet innovativeness, perceived risks of Internet buying, and Internet buying behaviors. Their model proposed that innovativeness will influence Internet shopping intention. They found that innovativeness influenced the online shopping intention in subjects from both countries; however, they did not find any interaction between the nationality and innovativeness.

The construct of innovativeness has been used in relation with other constructs. Venkatraman (1991) explored the relationship between innovativeness and demographics. Midgeley and Dowling (1993) analyzed the relationship between innovativeness and the adoption of innovations. Steenkamp, Hofstede, and Wedel (1999)

examined the relationship between innovativeness and cultural values of individualism, uncertainty avoidance, and masculinity. Individualism and masculinity were found to positively affect innovativeness, but uncertainty avoidance had a negative influence.

Online buying and selling is a practice that represents a departure from established conventional buying and selling in markets. The intention to adopt online buying and selling can involve a comparison of the pros and cons associated with traditional versus online buying and selling. A person intending to adopt, therefore, has to be willing to deal with large amounts of information as well as associated risks/choices available in two different modes. Innovativeness motivates a person to learn more about new alternatives (e.g., Citrin, Sprott, Silverman, & Stem, 2000) and to take risks (e.g., Steenkamp et al., 1999). Online buying and selling can involve greater risk and may also require a comparison of alternatives available both on the Web and in the traditional marketplace; therefore, it can be argued that innovative individuals, owing to their willingness to try, will have a stronger inclination toward online buying and selling. The inclusion of personal innovativeness in technology acceptance models was proposed. For instance, Agarwal and Prasad (1998) suggested that personal innovativeness is an important individual-level variable and should be included in the technology acceptance model. Also they argued that the inclusion of personal innovativeness can help to understand development of perceptions (regarding information technology) and their role in formation of usage intentions.

Informational traits. More recently, information has drawn the attention of scholars. Marked changes in the nature of the economy, changes that shifted the economy from product-centered to information-centered, along with advances in information technology, have placed information at the heart of organizations. Information has become an important factor of both production (the other factors are land, labor, and capital) and a third sector of the economy distinct from the sectors of goods and services (BusinessWeek as cited in Sarvary & Parker, 1997). The role of information in organizations (Feldman & March, 1981) and its use in decision making has been examined (e.g., Afzal, Roland, & Al-Squri, 2009; Conrath, Montazemi, & Higgins, 1987). Feldman and March called into question the classical decision-theory point of view that information is gathered and used [rationally] because it helps individuals to make decisions. Instead, they observed that organizations and participants tend to value information that has less relevance. Much of gathered information is not even used during decision making, and participants act first and then ask for information. Salancik and Pfeffer (1978), on the other hand, noted the importance of the informational environment of an individual in shaping attitudes, beliefs, and behaviors.

In the online environment, information also occupies an important position. Traders disseminate information to promote products and services. This information facilitates users' decisions. However to complete transaction online, personal information has to be provided. The provision of personal information helps to complete a transaction but also poses a possible risk to the user. Failure to restrict unauthorized access to personal information may result in breach of privacy and reduce trust in the security features of a Web site.

The concern of individuals about access to their personal information represents privacy, while the ability of a system to limit the access of intruders to personal information signifies security. In an online environment, personal information is required to finalize a transaction, whereas technological safeguards are needed to protect information from being disclosed or used by the parties not involved in a transaction. According to Smith (1993), privacy "is the condition of limited access to identifiable information about individuals" (p. 106). The risk associated with the breach of privacy can have an important bearing on online buying and selling. The concern with information privacy has consistently emerged as one of the most important impediments to virtual trading (e.g., Lee, 2002; McCloskey, 2003/2004). Information security, on the other hand, entails the mechanisms that are necessary to minimize access to personal information by intruders. Information privacy and information security are interrelated and considered to be extremely important for the success of online buying and selling. Lee found security and privacy as antecedents of virtual trading; Han and Noh (1999) found that data security is important for the success of online trading.

Considering the increasing concerns regarding privacy and security of information, as well as the scope of the current study, a construct of information privacy-security has been added to the technology acceptance model and conceptualized as influencing the intention to buy and sell online.

Information privacy-security.

Information privacy. "Privacy is the condition of limited access to identifiable information about individuals" (Smith, 1993, p. 106). Privacy is valued in all cultures of the world, though the perception of privacy may vary from one culture to another. In relation to online buying/selling, the concern about privacy is developing among consumers across the board (Culnan & Armstrong, 1999). The intention to complete a transaction is heavily influenced by the extent of the available privacy. E-commerce (online buying and selling) adoption greatly depends on the satisfaction with concerns about privacy (Bakke, Faley, Brandyberry, & Troutt, 2005). Lee (2002), while commenting on the various concerns of online consumers, described *privacy* as one of the important concerns.

Adoption of online buying and selling depends partly on the nature of experience felt by the prospective customers. An unfavorable experience may lead to reluctance in the adoption of online buying and selling. Privacy breaches can impede consumers from accepting e-commerce (Bakke et al., 2005). Satisfying the user information privacy concerns leads to building of trust and a willingness among users to adopt new means of trade and exchange. According to Zviran (2008), users with an increasing privacy concern may become reluctant to provide complete information and use the Web.

Information security. Security is "the quality or state of being secure to be free from danger" (Whitman & Mattord, 2003, p. 9). Information security is related to technical aspects of an information system, i.e., the ability of an information system to safeguard personal and organizational information from intrusions. Though online buying/selling is expanding at a great pace, the concern about information security is also

increasing. Information security encompasses all those measures that are necessary to protect privacy.

Online trade helps users buy/sell products or services by investing a minimum amount of time and effort. The virtual mode reduces the search costs as well as the opportunity cost of time involved in making a transaction (Bakos, 2001). However, if users have doubts about the security of their information or have concerns about the security of the information system in use by an online seller, these concerns could outweigh the benefits offered by an online transaction. The concern with the security of data and of physical assets has drawn attention from both corporations and consumers (Davis, 1997). According to Miyazaki and Fernandez (2001), "indeed, the security of personal and financial information ... was not only the top concern of survey participants but also was the most predictive concern regarding the hypothesized relationships" (p. 38). Concerns with the security and privacy of information represent important impediments to the adoption of online buying/selling. While Han and Noh (1999) found low data security as an impediment to e-commerce adoption, Lee (2002) found that security along with privacy can help in building the trust of an individual toward online purchases. Privacy and security have been classified as important components of merchant and intermediary characteristics and have been proposed as factors that influence intention, adoption, and continuance of consumer online experiences (Cheung et al., 2005). Information security has become an important concern for users, and satisfaction of this concern is important for the adoption as well as expansion of online buying and selling.

Moderating Influence of Cultural Dimensions

Culture. In social science research, culture has been a phenomenon of great interest. It includes patterns of thinking, feelings, and reactions (Kluckhohn, 1951) as well as factors such as education, art, and literature and also encompasses the social environment that shapes expression of feelings and responses to issues (Hofstede, 1997). There are numerous definitions of cultures; Srite (2000) noted that most of them describe it as a common set of features shared by a group of people. Hofstede (1980) defined culture as "the collective programming of the mind which distinguishes the members of one human group from another" (p. 260). According to Hofstede (1997), mental programs represent patterns of thinking, feeling, and acting; however, individuals retain in themselves the ability to deviate from their own patterns of actions. The definition by Hofstede was used in this study because of its widespread use in the literature and simple, yet clear, description of culture.

Importance of culture. Culture plays an important role in shaping the values and influencing the behavior of people (Hofstede, 1980; 2001). Individual values develop from experiences with various human and institutional factors operating within a culture. The set of individual values emerging from these experiences influences behaviors (McCoy, 2002), and, therefore, increases the importance of understanding the role that cultural values play in shaping individual dispositions.

Depending on individual experiences, responses to different issues can be quite unique. However, social anthropologists concluded that different societies face the same issues, but answers differ (Hofsetde, 1997). Alex Inkeles, a sociologist, and Daniel Levinson, a psychologist, published a survey on English-language literature on national

culture and suggested that the following issues represent common problems experienced throughout the world: these include the relationship of individuals to authority, and to society, as well as the concept of masculinity and femininity; other issues include how people deal with uncertainty and the way in which people express their feelings (as cited in Hofstede, 1997). Hofstede was given the opportunity to study survey data regarding the values of people working at local subsidiaries of IBM in over 50 countries; the empirical analysis revealed issues predicted by Inkeles and Levinson. These dimensions, which emerged in the analysis, were given the names of power distance (relation to authority), individualism/collectivism (relation of self with the group), masculinity/femininity, and uncertainty avoidance (way of dealing with uncertainty). The cultural dimensions of Hofstede closely resemble the categories described by Inkeles and Levinson (McCoy, 2002) and can be used to ascertain the cultural values manifested in individual responses.

Culture and adoption. Adoption is an acceptance of practice, artifact, or a course of action. It denotes a behavior, which is exhibited in relation to an issue at hand. Keeping in view the importance of culture in influencing behavior, various studies have examined the role of culture during adoption. For example, Straub (1994) examined the effect of culture on the diffusion of e-mail and fax messages in the U.S. and Japan. The information technology experiences of Japanese workers were compared to those of Americans. He found that the Japanese were reluctant to adopt e-mail and viewed it as less suitable for intragroup communication, whereas their American counterparts were receptive to the use of e-mail. Straub attributed this difference in adoption behavior to the cultural differences present between the U.S. and Japanese people. Another study by

Rose and Straub (1998) looked at the technology acceptance in five Middle Eastern countries. The differences in adoption were explained with the use of utility features of usefulness and ease of use. A reference to cultures of these countries was given, but culture was not given as a reason for differences in adoption patterns. A study by Straub, Keil, and Brenner (1997) used Hofstede's country scores to explain differences in adoption. The difference in individual behavior was attributed to the national culture. Various other studies, for example, Akour et al. (2006) and Pavlou and Chai (2002) also used the country scores to explain the differences in adoption behavior.

Level of analysis.

National level. Hofstede (1980) conducted a study at IBM between 1967 and 1973. He analyzed data from 116,000 responses to a survey instrument from 66 different countries. The data were factor analyzed and classified into four dimensions: Individualism/Collectivism, Masculinity/Femininity, Uncertainty Avoidance, and Power Distance. A numeric score on each of these dimensions was calculated for every country in the sample. This numeric score represented the cultural orientation of the employee's country of origin. These scores have been used extensively in cultural, cross-cultural research, and, though found to be valid and reliable, have been deemed not suitable in research contexts where the objective is to study individual behavior (McCoy et al., 2005; Straub, Loch, Evaristio, Karahanna, & Srite, 2002). These scores were criticized for several reasons. For instance, the scores were calculated for individuals working at the same organization (Erez & Earley, 1993). Also the scores were calculated over three decades ago; since then, cultures of the countries have changed considerably, and it is

likely that the scores have also changed (McCoy et al.; Srite 2000). These concerns led to the development of approaches that analyze the cultural values at the individual-level.

Individual level. At the national level, the conceptualization of culture can be problematic as related to individual conduct. Commenting on the Hofstede's country scores, McCoy et al. (2005) stated "the assumption that is implicit in the use of "country scores" is that the scores of each country reflect the collective cultures of all individuals from that nation" (p. 214). This approach suffers from an important flaw. Since in almost any nation there are many subcultures with unique influences on individuals, the classification of all the individuals on the basis of some national traits ignores influences that are specific to an individual. The traits may have been acquired through interactions with the cultures outside one's own national culture or with the sub-cultures present within a national culture. An individual living within a national culture may possibly exhibit behaviors that are in marked contrast to national traits. This concern prompted scholars to develop approaches that could assess cultural properties at the individual level. The work of Triandis, Leung, Villarel, and Clack (1985) illustrates an important step. They examined the psychological dimensions of allocentrism versus diocentrism, which corresponds at the societal level to collectivism versus individualism. Allocentrism represents the collectivistic qualities, such as need for support and low levels of alienation; diocentrism refers to individualistic traits, such as emphasis on achievement. The study found that there were individuals with collectivistic values living in an individualistic society as well as people with individualistic values. In view of the importance of individual level measurement, studies started examining adoption with this approach.

In their study, Srite and Karahanna (2006) collected data, the primary dataset, from students of 30 different countries and measured their cultural orientation individually without considering countries of origin. They argued that national culture is a macro-level phenomenon, whereas technology acceptance is an individual-level concern; therefore, this approach was better in predicting individual disposition. For the current study, cultural values on the dimensions of collectivism, masculinity, and uncertainty avoidance were measured at the individual level. It helped to accurately measure, identify, and associate cultural attributes in accordance with the individual dispositions rooted in a broad array of influences.

Uncertainty avoidance (UAI). "Uncertainty avoidance is the lack of tolerance and the need for formal rules" (Hoecklin 1995, p. 31). This dimension measures the extent to which people in a society feel threatened by and try to avoid ambiguous situations. They may do so by establishing more formal rules or rejecting deviant ideas and behavior. Uncertainty avoidance can have an important impact on the acceptance of change. Cultures high in uncertainty avoidance show a strong resistance to change (Kale & Barnes, 1992). Adoption of online buying and selling requires a change in pre-established ways of trading; therefore, people having high uncertainty avoidance will find it difficult to accept online buying and selling quickly. Internet shopping inherently involves more uncertainties than shopping at a traditional store (Lim, Leung, Sia, & Lee, 2004); hence, uncertainty avoidance can affect intentions to adopt online buying and selling.

Personal innovativeness, as an example of a characteristic of early adopters (Rogers & Shoemaker, 1971), a judgment independent of the communicated experience

of others (Midegley & Dowling, 1978), and a desire to obtain information about innovation (Hirschman, 1980), received considerable attention in adoption/buying behavior research. Risk taking, independence, and tolerance of ambiguity are among many factors that correlate with personal innovativeness (Steenkamp et al., 1999). Uncertainty avoidance is related to risk taking and tolerance of ambiguity (Hofstede, 1997); whereas innovativeness represents a tendency to learn more about innovations (Citrin et al., 2000), a cognitive style that includes personal attitudinal features (Joseph & Vyas, 1984). Individuals with high uncertainty avoidance will avoid risk taking and therefore be reluctant to adopt the things with which they don't have any prior experience. On the other hand, low uncertainty avoidance will prompt an individual to try new products/practices and remain ahead in his/her social circle.

Individualism/Collectivism (IDV). The dimension of individualism/collectivism assesses whether ties between individuals are strong or weak (Hoecklin, 1995). Individualism/collectivism portrays the relationship of self with others; for example, how a person relates him/herself with the broader societal makeup. The in-groups have a strong influence on the decision making of an individual having collectivistic values. According to Toffoli (1997), the extent of connectedness with others will affect self, which in turn will influence behavior. Individualism/collectivism received notable support in the literature as one of the most important cultural variables that influences intention. According to Yeniyurt and Townsend (2003), "the individualism/collectivism dimension appears to be the most extensively employed dimension in cross-cultural consumer behavior research" (p. 380).

Srite and Karahanna (2006) noted that people with individualistic orientation give more importance to personal skills and goals than to the group membership. On the contrary, due consideration is usually given to in-group opinions, beliefs and norms within a collectivistic orientation (Hui & Triandis, 1985; Triandis, 1989). Collectivistic values foster the need to confirm with opinions of a referent group; however, people with individualistic values are less concerned about the opinion of others (Srite & Karahanna).

Personal innovativeness. Personal innovativeness is the quality of adopting a product relatively earlier than most other members in one's group (Roger & Shoemaker, 1971). Personal innovativeness is a feature that enables an individual to make a choice independently on his or her own accord. According to Steenkamp et al. (1999), "innovativeness was found to be correlated positively with optimum simulation level, independence, extraversion, impulsivity, risk taking, tolerance of ambiguity, inner-directed (versus other-directed) social character..." (p. 56). Steenkamp et al. (1999) found individualism to have a positive affect on individual innovativeness; Lynn and Gelb (1996) found individualism influenced national-level innovativeness. Individualistic values persuade individuals to place more importance on self and attitudes that benefit self (Bontempo & Rivero, 1990, as cited in Srite & Karahanna, 2006), influencing the extent of personal innovativeness and its relationship with the intention to adopt.

Information privacy. Information privacy represents concern about the boundary present between self and others. Within collectivistic values, self is identified with a group, which comprises a large number of individuals. On the other hand, individualistic values draw close boundaries around one's self. Hogg and Abrams (1988) describes the concept of *identity* as "...a person's knowledge that he or she belongs to a social category

or group" (as cited in Stets & Burke, 2000, p. 225). Persons with individualistic values see themselves distinct from society (Hofstede, 1980). For instance, their identities depend on fewer social associations, as compared to the individuals with collectivistic values. According to Komito (1998), norms developed within a community guide behavior and enable members to develop a collective identity, an identity that represents shared norms and values within a group. Information privacy represents a belief about the possible sharing of information that is related with self, and as individualistic values promotes the control over one's identity, therefore suggesting a greater concern for one's privacy.

Information security. Information security represents concern about the safety of the transaction medium as well as of the assets housing the personal information (Miyazaki & Fernandez, 2001; Shergill & Chen, 2005). Along with privacy, security has been found to be related with risk perceptions and concerns regarding online buying (Shergill & Chen, 2005). According to Miyazaki and Fernandez (2000), "the issues of privacy and security are interrelated, because when the protection of consumer privacy is considered, the secure storage and transmission of consumer information contained in organizational databases also are viewed as the responsibilities of participant organizations" (p. 55). Individualistic values strengthen the need to have greater control over one's information. Effective information security measures ensure the safe transmission, storage, and use of personal information, and, therefore, can strengthen the perception about control over information. This perception can increase one's affinity toward using the Web for trading.

Masculinity/Femininity (MAS/FEM). According to Hofstede (1997), the masculine dimension manifests the importance given to earnings, recognition, advancement, and challenge; on the other hand, the feminine dimension represents the importance of relationships, cooperation, and social-oriented roles. Hoecklin (1995) stated that "these values concern the extent of emphasis on work goals and assertiveness, as opposed to personal goals" (p. 38). Within masculine orientation, more value is placed on material things: success, wealth, and achievement (Steenkamp et al., 1999). The value in masculine orientation comes from the purchase or adoption of new products and technologies. The possession of the latest and novel things is a symbolic means of demonstrating achievement (Yeniyurt & Townsend, 2003). The purchase of new products symbolizes the success of a person in the society and reflects a given level of status (Rogers, 2003). Acquisition of new products thus reinforces the quality of being masculine. Masculinity/Femininity affects personal innovativeness. Steenkamp et al. (1999) investigated the role of individual and national cultural antecedents of buyer innovativeness. They found that higher masculine values positively affect the personal innovativeness.

Masculine values are task oriented (Alshare et al., in press) and ego enhancing (Hofstede); feminine values are relationship oriented and concerned with greater social involvement (Hofstede, 1980). Individuals with feminine cultural values will place low value on competitiveness, aggressiveness, and challenge. The adoption of new technologies can sometimes involve challenge and competition in learning; consequently, the inclination to adopt new products and technologies can be weaker for individuals with feminine orientations. Perceived usefulness portrays one's belief about the possible

benefit that can be gained by adopting a new course of action (Davis, 1989). According to Srite and Karahanna (2006), perceived usefulness is closely related to achievement of work goals and advancement. Masculine cultural values place importance on achievement and personal growth. Individuals with masculine values may find adoption of new technologies provides a feeling of success, growth, and achievement.

Individuals with varying masculinity/femininity display unique orientations and behaviors. Feminine traits are identified with solidarity, close relationships, respect, and less job stress (McCoy, Galletta, & King, 2007). Perceived ease of use represents the belief that one can perform a certain task with less effort (Davis, 1989). Less effort is important to keep personal stress level at the minimum. Perceived ease of use is conceptually related with femininity as femininity values the least stress on the job. According to Venkatesh and Morris (2000), individuals with feminine values consider the availability of technology support staff important due to relational needs. The affinity to create a pleasant and stress free environment (Srite & Karahanna, 2006) and the inclination toward having social relations can motivate an individual having feminine values to have a positive perception regarding ease of use of online buying and selling.

Demographic Variables

Demographic variables represent various features that are used to describe a population. These variables include, but are not limited to, age, gender, education, income, and marital status. Demographics play an important role in shaping human behavior. In many instances, people having similar demographic features form homogenous dispositions toward a certain phenomenon. The role of demographics, both

direct as well as indirect, can be very helpful in deciphering any patterns that emerge due to different population characteristics in a study.

Venkatesh and Morris (2000) investigated the role of gender in adoption of new technology and found that men based their decision to use technology on a criterion that was different from women. According to Venkatesh, Morris, Davis, and Davis (2003), age, gender, and experience moderate behavior toward information technology. In the context of online buying/selling, Donthu and Garcia (1999) found age and innovativeness, in addition to convenience, impulsiveness, variety seeking, and risk aversion, as distinguishing features of online buyers. Education, convenience orientation, experience orientation, channel knowledge, perceived distribution utility, and perceived accessibility were found to impact user online buying behavior (Li, Kuo, & Russell, 1999). In consideration of the potential importance of demographic variables, data regarding different demographics (e.g., age, gender, education, nationality etc.) were collected and subsequently analyzed to assess the nature of interaction between demographics and predictor and criterion constructs.

Summary

The literature relevant to the constructs of perceived usefulness, perceived ease of use, mediating role of perceived usefulness, personal innovativeness, information privacy, and information security, was discussed. Furthermore the notion of culture along with the level of analysis and Hofstede's (1980) cultural dimensions was presented. The moderating influence of individual cultural values on the relationship among independent constructs and dependent constructs was discussed. The next chapter describes the research methodology. Issues pertaining to the use of the survey questionnaire as well as

the student sample were discussed. Furthermore the statistical procedure of Structural Equation Modeling (SEM) was explained along with the details of the procedures that were employed within SEM to validate the proposed research model.

CHAPTER 3

RESEARCH METHOD

This chapter presents the hypotheses and the research models, describes the analytical lens, provides operational definitions and explains the development of the instrument used in this study. It also explains the sampling and research design of the study, elaborates on the validation of measures and finally provides an account of a pilot test.

Hypotheses and Research Models

Based on the literature review, relationships among independent constructs and dependent constructs were proposed and various hypotheses were formulated. Two research models, one for the intention to adopt online buying and the other for the intention to adopt online selling, were formulated (Figures 4 & 5).

H_{1a}: Perceived usefulness will have a positive influence on intention to buy online.

H_{1b}: Perceived usefulness will have a positive influence on intention to sell online.

H_{2a}: Perceived ease of use will have a positive influence on intention to buy online.

H_{2b}: Perceived ease of use will have a positive influence on intention to sell online.

H_{2c}: Perceived ease of use will positively affect perceived usefulness in online buying.

H_{2d}: Perceived ease of use will positively affect perceived usefulness in online selling.

H_{3a}: Personal Innovativeness will have a positive influence on intention to buy online.

H_{3b}: Personal Innovativeness will have a positive influence on intention to sell online.

H_{4a}: Information privacy-security concerns will have a negative influence on user intention to buy online.

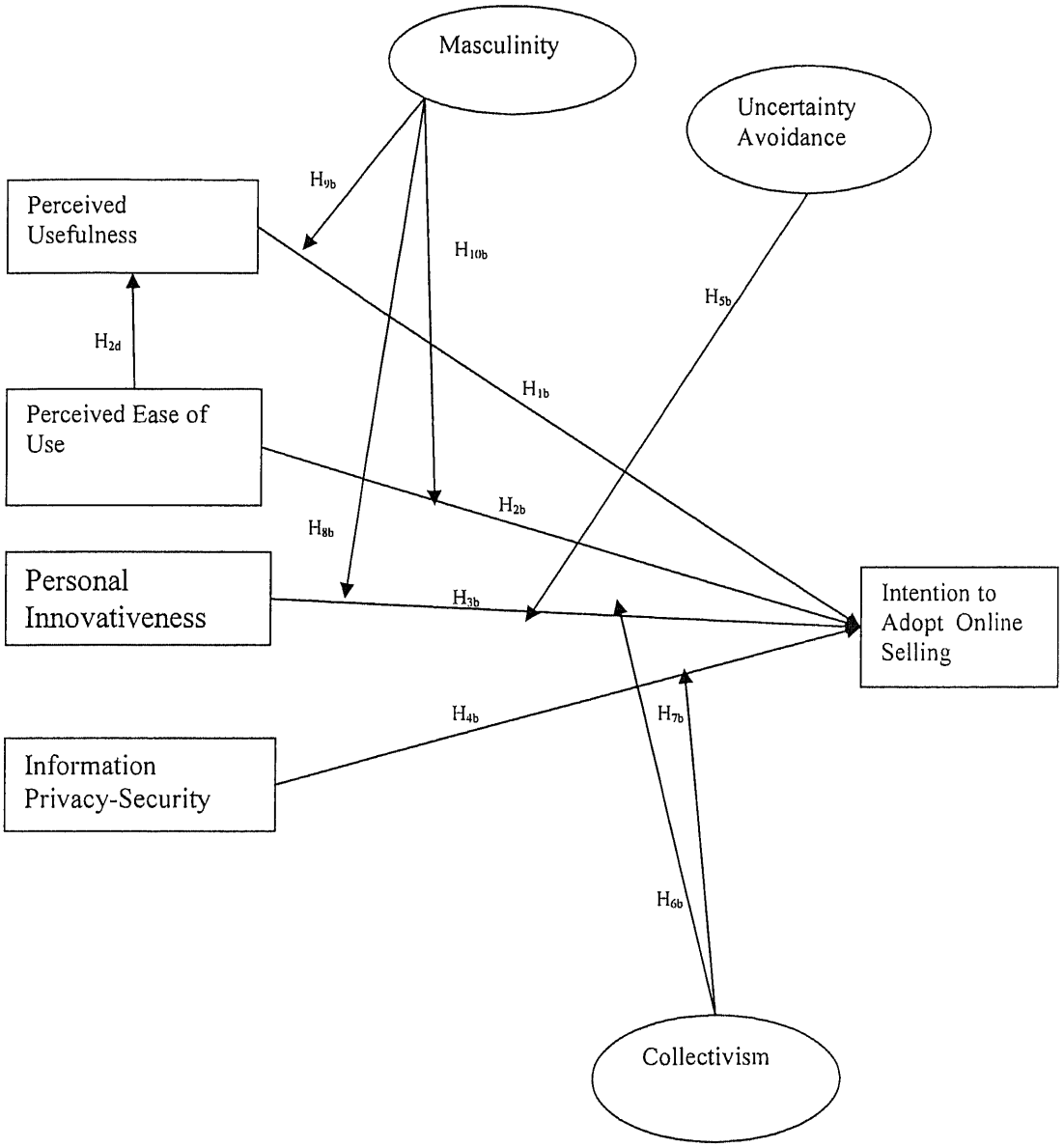

Figure 4. The proposed research model-Intention to adopt online buying

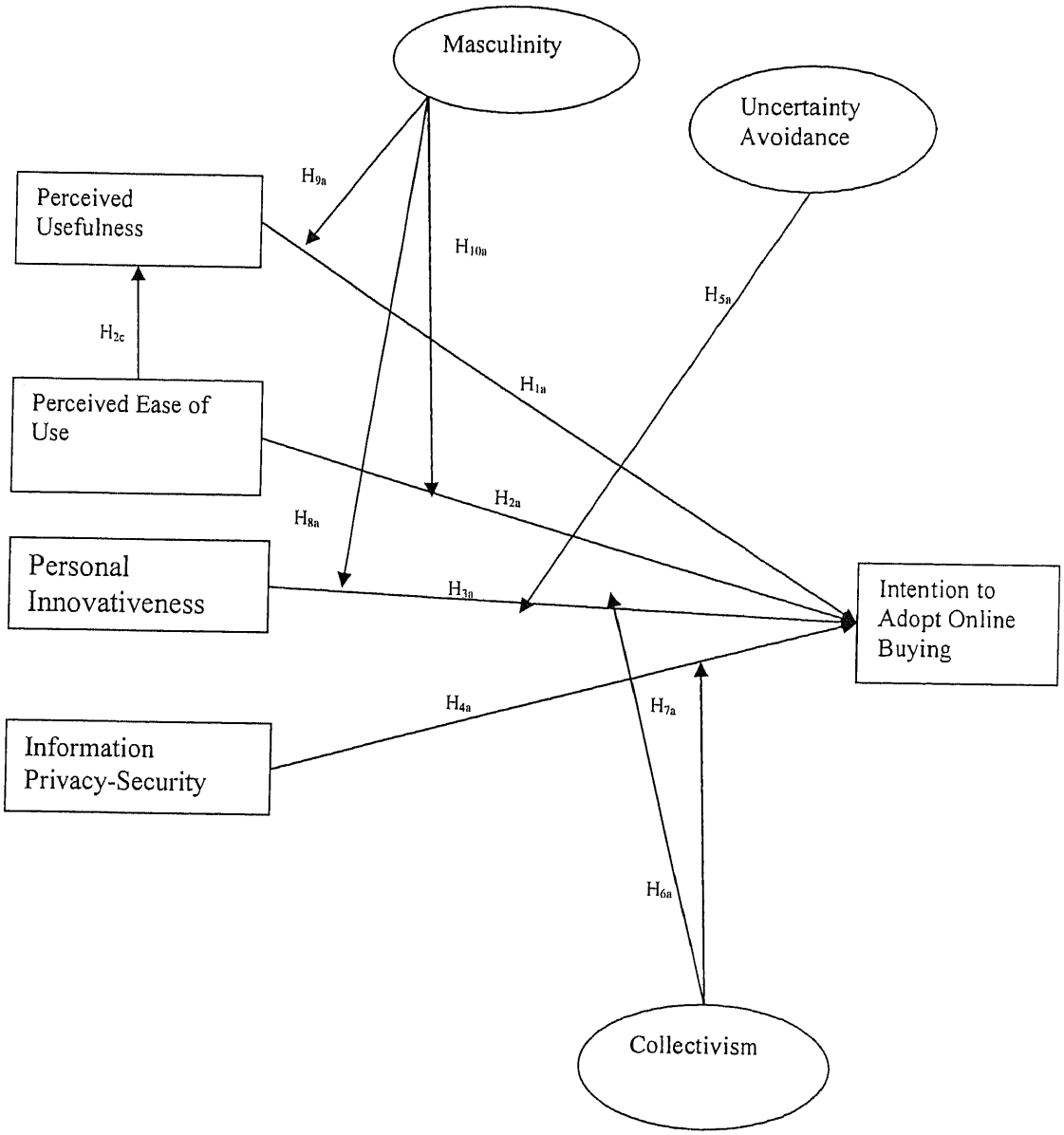

Figure 5. The proposed research model-Intention to adopt online selling

H_{4b}: Information privacy-security concerns will have a negative influence on user intention to sell online.

H_{5a}: The relationship between intention to buy online and personal innovativeness will be moderated by uncertainty avoidance such that the relationship will be stronger for the individuals with a low level of uncertainty avoidance.

H_{5b}: The relationship between intention to sell online and personal innovativeness will be moderated by uncertainty avoidance such that the relationship will be stronger for the individuals with a low level of uncertainty avoidance.

H_{6a}: The relationship between intention to buy online and personal innovativeness will be moderated by collectivism such that the relationship is weaker for the individuals with a high level of collectivism.

H_{6b}: The relationship between intention to sell online and personal innovativeness will be moderated by collectivism such that the relationship is weaker for the individuals with a high level of collectivism.

H_{7a}: The relationship between intention to buy online and information privacy-security concern will be moderated by collectivism such that the relationship is weaker for the individuals with a high level of collectivism.

H_{7b}: The relationship between intention to sell online and information privacy-security concern will be moderated by collectivism such that the relationship is weaker for the individuals with a high level of collectivism.

H_{8a}: The relationship between intention to buy online and personal innovativeness will be moderated by masculinity such that the relationship is stronger for the individuals with a high level of masculinity.

H_{8b}: The relationship between intention to sell online and personal innovativeness will be moderated by masculinity such that the relationship is stronger for the individuals with a high level of masculinity.

H_{9a}: The relationship between intention to buy online and perceived usefulness will be moderated by masculinity such that the relationship is stronger for the individuals with a high level of masculinity.

H_{9b}: The relationship between intention to sell online and perceived usefulness will be moderated by masculinity such that the relationship is stronger for the individuals with a high level of masculinity.

H_{10a}: The relationship between intention to buy online and perceived ease of use will be moderated by masculinity such that the relationship is weaker for the individuals with a high level of masculinity.

H_{10b}: The relationship between intention to sell online and perceived ease of use will be moderated by masculinity such that the relationship is weaker for the individuals with a high level of masculinity.

As shown in the figures 4 and 5, the models are comprised of independent constructs (personal innovativeness, perceived ease of use, perceived usefulness, and information privacy-security), moderating cultural constructs (masculinity, uncertainty avoidance, and collectivism) and the dependent constructs (intention to buy online and intention to sell online). Three different types of relationships were represented by the arrows. Arrows flowing from the independent constructs to the dependent construct represented the dependence relationship. The arrow going from perceived ease of use to perceived usefulness represented a dependence relationship, but it also showed that

perceived usefulness was an independent as well as a dependent construct—representing a mediating relationship. Arrows pointing from the moderating constructs (collectivism, uncertainty avoidance, and masculinity) to the paths between the independent constructs and the dependent construct represented the moderating influence of cultural constructs on the dependence relationships.

Analytical Lens

Understanding of a phenomenon and analysis of findings depend on certain assumptions. These assumptions in turn develop from paradigms dealing with the question of how a phenomenon can be known. Two such paradigms are of importance: one proposes that knowledge of a phenomenon can be acquired through a deep analysis of its subject, and access to the subject can be gained through observations, in-depth interviews, journalistic entries and the Experience Sampling Method (Kubey, Larson, & Csikszentmihalyi, 1996); a paradigm known as subjectivist. The other paradigm, named positivist, proposes that a phenomenon can be known by analyzing its various parts. This process, which is based on the hypothetico-deductive method and includes formulation of questions, hypotheses, their empirical validation, and theorization (Crow, 2009), is the paradigm that has provided the underlying assumptions and the analytical lens in this study.

Research Approach

The research objectives of this study were addressed through a quantitative approach using student subjects at a state university in the Midwestern U.S. Using a survey questionnaire, data was collected in a classroom setting. The survey method was chosen to ensure provision of the amount of data required for the quantitative approach of

Structural Equation Modeling (SEM). With a survey, data can be collected spontaneously, inexpensively (Whitten & Bentley, 2007) and in a short period of time (McNeill & Chapman, 2005). Data was analyzed using descriptive and inferential statistics; Statistical Package for the Social Science (SPSS™ 18.0) was used for that purpose. The proposed models (for online buying and online selling) were tested with a multivariate data analysis technique of *Covariance based-Structural Equation Modeling* using software called "Linear Structural Relations (LISREL™ 8.80)."

Operational Definitions

Definitions of the constructs used in this study are shown in Table 1. Measurement of a phenomenon begins with correct definitions (Hair, Black, Babin, Anderson, & Tatham, 2006); the accurate conceptualization of a construct, through definition, is important to assess its dimensions. This conceptualization leads to the development of a scale that operationalizes a construct. Definitions, as well as measurement scales of constructs, have been adapted from the studies that conceptualized the phenomenon, developed the scales, and validated them through empirical examination. Furthermore, the literature review also provided evidence for appropriateness of the sources of definitions and their operationalization.

Table 1

Operational Definitions

Construct	Definition
Behavioral Intention	Indications of how hard people are willing to try and how much an effort they are planning to exert to perform the behavior.
Personal Innovativeness	The willingness of an individual to try out any new information technology.
Perceived Usefulness	The extent to which people believe that a particular application will help them to perform their job better.
Perceived Ease of Use	The degree to which a person believes that using a particular system would be free of effort.
Privacy	A condition of limited access to identifiable information about individuals.
Information Security	Protecting information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction.
Individualism/Collectivism	The attributes of having loose ties, concern with the self and the immediate family, whereas collectivism refers to a greater concern with group cohesion, strong interpersonal ties, and loyalty with the group.

Table 1 (continued)

Operational Definitions

Construct	Definition
Uncertainty Avoidance	The extent to which the members of a culture feel threatened by uncertain or unknown situations.
Masculinity/Femininity	Masculine values place greater emphasis on earnings, advancement, and challenge while feminine values place importance on relationships, cooperation, and better environment.

Note. Behavioral Intention adapted from "The theory of planned behavior," by Ajzen, 1991, *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211; Personal Innovativeness adapted from "A conceptual and operational definition of personal innovativeness in the domain of information technology," by Agarwal & Prasad, 1998, *Information Systems Research*, *9*(2), 204-215; Perceived Usefulness and Perceived Ease of Use adapted from "Perceived usefulness, perceived ease of use, and user acceptance of information technology," by Davis, 1989, *MIS Quarterly*, *13*(3), 319-340; Privacy adapted from "Privacy policies and practices: Inside the organizational maze," by Smith, 1993, *Communications of the ACM*, *36*(12), 105-122; Information Security adapted from "http://www.law.cornell.edu/uscode/html," Individualism/Collectivism; Uncertainty Avoidance; Masculinity/Femininity adapted from "*Cultures and organizations: Software of the mind* (2nd ed.)," by Hofstede, 1997, McGraw-Hill Inc.

Survey Questionnaire

In this study, research questions were concerned with testing of (a) hypothesized relationships between independent constructs (perceived usefulness, perceived ease of use, personal innovativeness, information privacy-security) and the dependent construct (intention to buy and sell online), (b) the hypothesized moderating influences of moderating constructs (uncertainty avoidance, individualism/collectivism, and masculinity/femininity) on the relationship between independent constructs and the dependent construct, and analysis of (c) the influence that demographic factors have on the participants' responses.

Survey methodology was used, as it is an important tool "...to produce quantitative descriptions of some aspects of the studied population" (Pinsonneault & Kraemer, 1993, p. 77). The quantitative description is verifiable; the survey itself is easily replicable and enables a researcher to gather large amounts of data in a relatively short period of time (McNeill & Chapman, 2005). The use of survey helps a researcher to collect information quickly (Whitten & Bentley, 2007) and ensures a greater response rate ("Plus & Minus of Survey Methods," n.d.). There are, however, some concerns with the use of a survey. For instance, the length of the survey can be an important issue; the use of a survey may constrain the ability of a researcher to ask open-ended questions, and once a survey is distributed, it is difficult to make changes if intervening conditions necessitate them ("Plus & Minus of Survey Methods," n.d.).

The questionnaire was developed by using instruments from previous studies. If instruments for any of the constructs were not available in the literature, the researcher

developed the questions (items) and used statistical procedures to assess their validity and reliability.

Details regarding the questionnaire, e.g., studies from which the question/items were adapted, the abbreviations of constructs, and the number of questions relevant to each construct are presented in Table 2. Questions were adapted from the following studies because constructs were developed and validated in them. While choosing questions, the contextual similarity of the studies was also considered.

Table 2

Constructs & Studies

Survey Questions	Constructs	Abbreviations
1-7	Personal Innovativeness	(PI)
8-16	Perceived Ease of Use	(PEU)
17-24	Perceived Usefulness	(PU)
25-28	Information Privacy-Security	(PRS)
29-31	Information Security	(PRS)
32-33	Information Security	(PRS)
34-37	Intention	(BI)
38-39	Intention	(BI)
40-45	Individualism/Collectivism	(IDV)
46-47	Uncertainty Avoidance	(UAI)
48	Uncertainty Avoidance	(UAI)
49-54	Masculinity/Femininity	(MAS/FEM)

Note. PI adapted from "Adoption of internet shopping: the role of consumer innovativeness," by Citrin, Sprott, Silverman, & Stem, 2000, *Industrial Management & Data Systems*, *100*(7), 294-300; PEU, PU, PRS (25-28) adapted from "Evaluating electronic commerce acceptance with the technology acceptance model," by McCloskey, 2003/2004, *Journal of Computer Information Systems*, *44*(2), 49-57; PRS (29-31) adapted from "The effects of internet experience and attitude toward privacy and security on internet purchasing," by George, 2000, *Proceedings of the 8th European Conference on Information Systems*, 1053-1058; PRS (32-33) by researcher; BI (34-37), IDV (40-45), UAI (46-47) adapted from "The role of espoused national cultural values in technology acceptance," by Srite & Karahanna, 2006, *MIS Quarterly*, *30*(3), 679-704; BI (38-39), UAI (48), MAS/FEM (49-54) adapted from "An exploratory analysis of culture, perceived ease of use, perceived usefulness, and internet acceptance: The case of Jordan," by Akour, Alshare, Miller, & Dwairi, 2006, *Journal of Internet Commerce*, *5*(3), 83-108.

The construct of personal innovativeness (items, 1-7) was developed by Goldsmith and Hofacker (1991) and modified by Citrin et al. (2000). Items were adapted from Citrin et al. as their study examined the adoption of Internet shopping, which provided a contextual similarity. Constructs of perceived ease of use (items, 8-16), perceived usefulness (items, 17-24) were adapted from McCloskey (2003/2004). Items 8 to 16 were originally developed by Davis (1989); however, McCloskey reworded them as the context of her study was based upon e-commerce and did not include adoption of a system in an organization, as was the case in the study by Davis.

The construct of information privacy-security was represented by items 25-28. Items 25-28 were adapted from McCloskey (2003/2004) and items 29-31 from George (2000); whereas items 32 and 33 were developed to increase the measurement effectiveness of information privacy-security scale. Items 25-28 represent different aspects of the information privacy-security. Items 25-28 measure the user information privacy-security concern and items 29-33 measure the importance that users place on the security aspects of a Web site. The construct of intention was operationalized through items 34-39. Items 34-37 were adapted from Srite and Karahana (2006); items 38 and 39 were adapted from Akour et al.

The constructs of individualism/collectivism and uncertainty avoidance were operationalized by items (40-45) and (46-48), respectively. All the items, except 48, were adapted from Srite and Karahanna (2006). Item 48 was adapted from Akour et al. (2006). The construct of masculinity/femininity was measured using items (49-54), which were adapted from Akour et al. (2006).

All the scale items, except items relating to demographics and computer/Internet literacy, were Likert type statements (Likert, 1932) on a 5-point scales (1 = *strongly disagree* and 5 = *strongly agree*). The survey questionnaire was pilot tested for validity and reliability.

Participants & Research Design

Participants. Sampling of a population can be done through either (a) probability or (b) non-probability sampling procedures (Babbie, 1995). When a sample is chosen with the use of random numbers, i.e., every individual has an equal chance of getting selected, the sampling procedure is described as probability sampling. There are, however, instances when the research is at exploratory stage, and a list of the target population is not available, or the target population is a group with unique attributes that can be used to select the subjects; then, non-probability sampling procedures are used, and convenience sampling is one of these procedures.

The use of a convenience sample has some pros and cons. Among the pros are that it (a) provides deeper understanding of the research, which is at an exploratory stage, (b) helps to illustrate the application of a new method (Ferber, 1977), (c) enables a researcher to pre-test a questionnaire, and (d) allows the researcher to experiment with different research designs in a relatively short period of time with little cost. Ferber noted that limitations of convenience sampling necessitate greater emphasis upon justifying representativeness of the sample. He further stated that generalizations can be made, but they should include prospects of further verification with the use of probability sampling.

A convenience sample of the student body at a Midwestern university served as the population. The student population was used as it provides reduced variability in data (Peterson, 2001) and ease of access. Voich (1995) noted that workers and students

possess the same values and beliefs. According to Robertson and Hoffman (2000), the use of student subjects is reasonable when the objective of a study is to examine everyday cultural values. Based on the analysis of various meta-analytic studies, Peterson concluded that the variability in responses within a construct and among constructs is less for students than for non-students.

Research design. The research problem was concerned with testing of the relationship between various independent constructs (e.g., personal innovativeness, information privacy-security, etc.) and dependent constructs (intention to buy and sell), as well as the moderating influence of cultural values on the noted relationships. The predictive ability of an independent construct can be ascertained by calculating the correlation or covariance between an independent and a dependent construct.

There can be different types of relationships among constructs, for example, (a) a relationship where one construct depends on another construct: this kind of relationship is described as dependence relationship (b) a construct acting as an independent construct in one relationship but becoming a dependent construct in another: this kind of relationship is described as mediating relationship, and (c) a construct moderating the relationship between two constructs: a relationship that is described as moderating relationship. The empirical validation of these relationships enables a researcher to test the hypothesized model and further the process of theory construction.

After specification of relationships among constructs, the researcher develops a structural model to represent the proposed relationships. In addition to the structural model, a measurement model is also developed. The measurement model describes various items/questions that, according to the researcher, operationalize the constructs in

the best manner. Development of structural and measurement models leads to a phase where different statistical procedures are applied to test the validity and reliability of the postulated models. Depending on the nature of the method applied, the nature of these statistical procedures varies. For example, if regression analysis is used as a method, Exploratory Factor Analysis (EFA) and Cronbach's α are used to test the validity and reliability, respectively, of the measurement model, and regression analysis is applied to test the validity of the structural model. However, if statistical procedures like Structural Equation Modeling (SEM) are used, Confirmatory Factor Analysis (CFA) is used to test the validity and reliability of the measurement model and relevant SEM techniques (Covariance-Based or Partial Least Squares) are used to test the structural model.

The validation of postulated relationships in regression analysis both in the measurement and structural model requires the running of different analyses, depending on the complexity of the relationships involved. For example, EFA and reliability test are required to examine validity and reliability. After these procedures, regression analysis is applied. If, however, multiple relationships (dependence, moderating) exist, then regression analysis would have to be applied multiple times. In addition, the measurement and the structural model would be analyzed in complete isolation of each other. This limitation leads to various constraints; for instance, the underlying causality can be misinterpreted as no single run can dissect all of the variance in a complex research model (Gefen, Straub, & Boudreau, 2000), which limits the use of regression analysis in circumstances that involve dependence, independence, and moderating relationships, present in a single model, among constructs.

Regression analysis assumes equal importance of all items toward a construct. In the case of multiple items, responses to the items are averaged, and that average is considered as the correlation of all of these items toward a construct. Averaging of item responses makes it difficult to assess the real contribution of moderating variables (interaction terms) (Chin, Marcolin, & Newsted, 2003), and the result is underestimation of the effect size.

In addition to these concerns, multiple regression tends to underestimate interaction effect (Chin et al., 2003), which is an important part of the proposed models in the current study. The present study was investigating the relationship between the independent variables and the dependent variable as well as the influence of various moderating variables (cultural values) on that relationship; therefore, a method was needed to estimate the various interaction terms correctly, assess the importance of each item in the instrument, and test the validity of the proposed model. Structural Equation Modeling (SEM) is a statistical approach that provides the means to achieve these objectives and thus has been used to examine the soundness of the measurement and the structural model.

Structural equation modeling (SEM). Structural Equation Modeling is a family of statistical procedures that depicts multiple relationships among constructs through the use of equations quite similar to multiple regression equations. However, an important distinction between SEM and regression is the ability of SEM to model multiple relationships among independent and dependent variables simultaneously (Hair et al., 2006; Gefen et al., 2000). Another feature of SEM is its ability to test the measurement

and structural model in one analysis. On the other hand, different and somewhat unrelated analyses are required in regression analysis to perform the same task.

Structural Equation Modeling addresses some of the limitations associated with regression analysis and also provides more robust application of statistical procedures. For example, by using SEM, a researcher can examine the measurement and structural model in one analysis. Furthermore, it also enables a researcher to test the different types of relationships among constructs more accurately in a single analysis. However, covariance-based SEM is not suitable for a small sample size and for data that violate the assumption of a multivariate normal distribution (Gefen et al., 2000).

Structural Equation Modeling can be performed by using different techniques. Covariance analysis and Partial Least Squares are two notable SEM techniques. These techniques differ in their underlying statistical assumptions and objectives of analysis (Gefen et al., 2000). Numerous softwares are available to perform these two types of analyses, e.g., LISREL, AMOS, EQS for covariance analysis and PLS, PLS-Graph for partial least squares.

Covariance analysis. Covariance analysis examines the plausibility of the hypothesized model; it tests whether the proposed model is supported by the data. The validation of the proposed model shows that the operationalization of the theory under examination has been confirmed (Gefen et al., 2000). Covariance analysis is employed using softwares like LISREL, AMOS, and EQS. Covariance-based SEM does not average the responses of items; and thus, each item has its unique contribution towards the construct that it measures. Covariance-based SEM can measure the strength of interaction terms more accurately. An important property of covariance-based SEM is its

ability to examine the extent of unidimensionality. "Unidimensionality is the degree to which items load[2](only on their respective constructs without having "parallel correlational pattern(s)" (Segars, 1997, as cited in Gefen et al., p. 25). The unidimensional items will not have an association with any of the constructs that are not represented by them. Covariance-based SEM also provides a wide array of model-fit indices, which explains how well the proposed model fits the data. Covariance-based SEM develops a best possible covariance structure and then compares it with the observed covariance structure. This practice enables a researcher to see the extent to which the proposed relationships are supported. Consequently, a researcher can confirm the validity of the proposed relationships and underlying theory. According to Gefen et al., covariance-based SEM can test the theory provided that the research model is based on a sound theoretical base.

Structural Equation Modeling techniques are described as second generation data analysis methods (Gefen et al., 2000). Covariance-based SEM is appropriate to test the validity of the framework that is used to develop a set of hypotheses. In the current study, the proposed models represented constructs and relationships, some of which have been validated by previous research and shown to have an influence on the intention to buy and sell online. However, the moderating influence of individual cultural values on the dependence relationships, as proposed in this study, had not yet been assessed. Consequently, the objective was to test the new structural and measurement model and confirm the underlying theory. Covariance-based SEM confirms or disconfirms the proposed model based on observed data. The preceding features of covariance-based

[2] Loading represents the strength of relationship between an item and its factor (construct).

SEM were in accordance with the objectives of the present study and thus made it an appropriate choice in the context of this research.

Validation of the Measures

Validity. The concept of validity is at the heart of the measurement. Validity represents the appropriateness of a measure and indicates whether it is appropriately measuring a construct or not. Validity includes reliability; thus a measure can be reliable but not valid, whereas a valid measure would always be reliable. Validity is a broad notion and manifests itself through various dimensions. According to Bagozzi (1980), there are six criterions that should be met to establish construct validity. Below is a discussion of each one of them.

Theoretical meaningfulness of concepts. Theoretical meaningfulness of concepts denotes the representative character of a description, i.e., a description of a concept should be adequate. The description should be based on a theory (Karahanna, 1993), and its language should convey the meaning of the concept. According to Srite (2000) there is no empirical test that can be done to ascertain this validity. However, using concepts that have been described and operationalized in the previous studies can at least minimize the risk of using a description devoid of a theoretical base.

Observational meaningfulness of concepts. Observational meaningfulness questions to what extent the concept (construct) under question is accurately represented by the questions chosen to measure it. This criterion, according to Haynes, Richard, and Kubany (1995), denotes the degree to which questions of an instrument are relevant and representative of the targeted concept for a specific study; or, as stated by Srite (2000), it shows the relationship between the concept and its operationaliztion. Methodologists

argue that there is no empirical test to asses this criterion (e.g., Guion, 1977), and a possible way to increase the correspondence between a concept and its operationalization is to exercise due care while developing instruments (Goodhue, 1988).

Internal consistency of operationlizations (Reliability). Internal consistency is concerned with the homogeneity of observations (Bagozzi, 1980). Reliability represents the ability of items in measuring a construct consistently over repetitive instances using similar participants under the same or different approaches. Reliability is "the degree to which measures are free from error and therefore yield consistent results" (Peter, 1979, p. 7). A reliable measure represents a substantial correlation with itself (Peter, 1981) and provides an opportunity to replicate studies and validate measures.

Reliability of items is the consistency of a scale to reflect the construct it is measuring. A person should get the same score on a questionnaire completed at different intervals of time (Field, 2005). Cronbach developed a measure of reliability known as Cronbach's alpha 'α.' (as cited in Field). Reliability of a scale is calculated by splitting it into two halves in all possible ways. If a scale is reliable, the score on one half should correlate highly with the score on the other half. The average of these values is equal to Cronbach's α, which is a commonly used measure of scale reliability (Field).

Convergent validity. According to Straub, Boudreau, and Gefen (2004) "Convergent validity is evidenced when items thought to reflect a construct converge, or show significant, high correlations with each other, particularly when compared to the convergence of items relevant to other constructs, irrespective of method" (p. 21). Stated a bit differently, convergence is established when two different methods of measurement of a concept lead to similar results (Srite, 2002). Similar results show the non-existence

of methods bias. However, it does not mean that convergent validity cannot be assessed in a study using a single method of data collection (as is the case in current research). Factor analysis enables a researcher to analyze the extent of loadings and cross-loadings, if any, of each item on construct(s). This helps to examine the nature as well as magnitude of relationship between items and constructs.

In the current study, both EFA and CFA were used to estimate the convergence. Segars (1997) argues that a significant ratio of factor loadings to their respective standard errors exhibit convergent validity. Hair et al. (2006) wrote that significant factor loadings, variance extracted, and reliability all are the measures of convergence. When items thought to measure a concept represent a higher correlation with each other as compared with the correlations with other concepts then the convergent validity is evidenced.

Discriminant validity. Discriminant validity represents the degree to which the measures that ought to reflect a concept are distinct. An indication of the existence of a concept is that its measures should be distinct from those that are not believed to represent that concept (Straub et al., 2004). This can be manifested through higher correlations among measures of same concept as compared with their correlations across different concepts (Srite, 2000). According to Srite when a data is collected using one method, as in the case in this study, the strongest test of discriminant validity occurs, as the differences among the measures can be attributed to the concepts rather than method. There are various ways to ascertain the extent of discriminant validity. For instance, Multitrait-Multimethod Matrix (MTMM), Confirmatory Factor Analysis, and Exploratory Factor Analysis can be used to assess the discriminant validity. The present

study has used both the Exploratory Factor Analysis and Confirmatory Factor Analysis to examine the discriminant validity.

Nomological validity. "Nomological validity is the degree to which predictions from a formal theoretical network containing the concept under scrutiny are confirmed" (as cited in Bagozzi, 1980, p. 129). Nomological validity has a relationship with the existence of an established research tradition. That is, when a researcher selects a set of concepts from an established research steam and predicts relationships among them, then a confirmation of these relationships establish the nomological validity. A relationship confirmed in the past and in the present strengthens the validity of the underlying theory. The following chapters will have a discussion on nomological validity as assessed in this study.

Pilot Test.

Description. In the later half of spring and early summer of 2009, the instructors in various departments were contacted to seek their support for the administration of the survey. Subsequently, the survey was administered in a classroom setting. Participants included both undergraduate and graduate students. Brief instructions regarding the survey, the purpose of the study, and the rights of participants were explained. A total of 73 respondents completed the survey. Six of the surveys were discarded owing to lack of information, leaving a total of 67 usable surveys. All the data was first recorded on paper sheets and then transferred to an Excel-spreadsheet. The data was finally transferred from the Excel-spreadsheet to SPSS™ 18.0. To ensure the accuracy of data coding, every 5th observation in the SPSS™ was matched with the Excel-spreadsheet and the paper sheet.

Reliability and validity.

Factor analysis. Factor analysis is a statistical tool that can aid in assessing the extent of a construct's discriminant and convergent validity. These two facets of validity are considered to be vital in demonstrating the ability of a question/item to measure a construct. Factor analysis entails certain conditions that ought to be met in order to make the analysis valid. For instance, it is recommended that for every question there should be 7-10 observations; the determinant of the correlation matrix should be more than .00001; and the sample should be adequate not only for the whole study but also for individual measures (Field, 2005). In view of the sample requirements, it was not statistically reasonable to run a single factor analysis including all the questions. Therefore, as recommended by Srite (2000) separate factor analyses, including related constructs, were run. Factor analyses pertaining to all the independent constructs (Table 3, 4), dependent constructs (Table 5), cultural constructs (Table 6), along with the explained variance are presented below.

Table 3

Model for Intention to Adopt Online Buying: Initial Rotated Factor Matrix for Perceived Ease of Use, Perceived Usefulness, Personal Innovativeness, and Information Privacy-Security

	Factors					
Scale	1	2	3	4	5	6
PEUB3	.860					
PUB4	.819					
PEUB1	.783					
PEUB2	.639					
PEUB4	.512				-.445	
PI2		.763				
PI1		.734				
PI4		.721				
PI5		.668				
PUB3			.821			
PUB2			.806			
PUB1			.725			
PUB5		-.485	.701			
PRSB2				.907		
PRSB1				.905		
SEBS				.663		
PI6					.814	
PI7		.509			.537	
SEB1						.900
SEB2	.472					.528

Note. Loadings greater than .4 are presented. Extraction method is Principal Component Analysis and the Rotation Method is Varimax with Kaiser Normalization. Rotation converged in 7 iterations. The cumulative % of variance explained = 74.312%. PEUB = Perceived Ease of Use Buying; PUB = Perceived Usefulness Buying; PI = Personal Innovativeness; PRSB = Information Privacy-Security Buying; SEB = Security Buying; SEBS = Security Buying-Selling.

Table 4

Model for Intention to Adopt Online Selling: Initial Rotated Factor Matrix for Perceived Ease of Use, Perceived Usefulness, Personal Innovativeness, and Information Privacy-Security

	Factors			
Scale	1	2	3	4
PUS5	.913			
PUS3	.903			
PUS2	.822			
PUS4	.609			
PUS1	.584	.455		
PI3	-.434			
PEUS2		.883		
PEUS3		.810		
PEUS1		.737		
SES2		.619		
PRSS2			.911	
PRSS1			.803	
SES1	.448		.695	
SEBS			.680	
PI5				.825
PI1				.760
PI7				.727
PI4				.689
PI6				.564

Note. Loadings greater than .4 are presented. Extraction method is Principal Component Analysis and the Rotation Method is Varimax with Kaiser Normalization. Rotation converged in 6 iterations. The cumulative % of variance explained = 66.771%. PEUS = Perceived Ease of Use Selling; PUS = Perceived Usefulness Selling; PI = Personal Innovativeness; PRSS = Information Privacy-Security Selling; SES = Security Selling; SEBS = Security Buying-Selling.

Table 5

Rotated Factor Matrix for Behavioral Intention (Buying and Selling)

Scale	Factors	
	1	2
BIS2	.941	
BIS1	.902	
BIS3	.871	
BIB1		.863
BIB2		.840
BIB3		.788

Note. Loadings greater than .4 are presented. Extraction method is Principal Component Analysis and the Rotation Method is Varimax with Kaiser Normalization. Rotation converged in 3 iterations. The cumulative % of variance explained = 77.771%. BIS = Behavioral Intention Selling; BIB = Behavioral Intention Buying.

Table 6

Initial Rotated Factor Matrix for Individualism/Collectivism, Uncertainty Avoidance, and Masculinity/Femininity (Cultural Constructs)

Scale	Factors			
	1	2	3	4
IDV3	.831			
IDV5	.821			
IDV2	.798			
IDV4	.792			
IDV1	.708			
IDV6	.617	.481		
MAS1		.867		
UAI2		.765	.424	
UAI1		.725		
MAS6		.663		.463
MAS2			.728	
MAS4			.708	.437
MAS5			.597	
UAI3		.483	.539	
MAS3				.898

Note. Loadings greater than .4 are presented. Extraction method is Principal Component Analysis and the Rotation Method is Varimax with Kaiser Normalization. Rotation converged in 9 iterations. The cumulative % of variance explained = 67.665%. IDV = Individualism/Collectivism; UAI = Uncertainty Avoidance; MAS = Masculinity/Femininity.

It can be seen that constructs of perceived ease of use and perceived usefulness presented a fairly clean loading structure, i.e., most of the items loaded on their respective constructs without having correlation with other constructs. The constructs of personal innovativeness and information privacy-security had items that cross-loaded, i.e., items had correlations with more than one construct. For example, PI7 in case of personal innovativeness and SEB2 in case of information privacy-security had cross-loadings. There were items, for instance, PUB4, PI6, and SEB1 that did not load on their respective constructs in the online buying model (Table 3). In the selling model, all the constructs depicted a fairly clean loading structure. There were items, for example, PI3 and SES2 that did not load on their relevant constructs. There were also items that exhibited cross-loadings: PUS1 (perceived usefulness construct) and SES1 (information privacy-security construct) (Table 4). The rotated component matrix of behavioral intention (buying and selling) presented a very clean loading pattern. All the items loaded on their relevant constructs and also with quite high loading scores (Table 5). The initial component matrix of cultural constructs presented items with cross-loadings as well as the items that did not load on their respective constructs (Table 6). Items with cross-loadings included (IDV6, UAI2, MAS6, MAS4, and UAI3), and item MAS1 did not load on its relevant construct (Table 6). The rotated component matrix of cultural constructs exhibited some cross-loadings as well as items loading on the constructs that were not conceptualized as their representative. For instance, item (UAI3) measuring uncertainty avoidance cross-loaded on the dimension measuring masculinity/femininity, whereas item (MAS1) measuring masculinity/femininity loaded on the dimension of uncertainty avoidance. Furthermore, items (MAS6, MAS4, and MAS3) measuring masculinity/femininity

formed a separate component different from the one formed by the other three items measuring masculinity/femininity. The initial reliabilities of all constructed were calculated and presented in Table 7.

With an objective to obtain clean factor loadings several factor matrices for online buying, selling models, and cultural constructs were run. As a result, some items were dropped. The resulting factor matrices are presented in Tables 8, 9, and 10. The constructs in the matrices (pertaining to online buying, selling, and culture) presented a clean loading structure. The reliability values for all the constructs were calculated and presented in Table 11. All of the reliability values exceeded the recommended value of .70 (Nunnally, 1978) except that of masculinity/femininity (.539). Though the reliability of masculinity/femininity could be improved by dropping item MAS3, doing so would result in having a negative α. At this point, this item was left with an objective to analyze it in greater detail during the main phase of the study.

Table 7

Initial Reliabilities of Constructs

Construct	Questions	Cronbach's Alpha (α)	Problematic Items
Personal Innovativeness Buying (PI)	1, 2, 4, 5, 6, 7	.794	___
Personal Innovativeness Selling (PI)	1, 3, 4, 5, 6, 7	.716	3 & 6 corrected item-total correlation .077 & .291
Perceived Ease of Use Buying (PEUB)	8, 10, 11, 13	.810	___
Perceived Ease of Use Selling (PEUS)	9, 12, 14	.837	___
Perceived Usefulness Buying (PUB)	15, 17, 19, 21, 23	.851	___
Perceived Usefulness Selling (PUS)	16, 18, 20, 22, 24	.889	___
In[1]. Privacy-Security Buying (PRSB)	25, 27, 29, 31, 32	.712	32 corrected item-total correlation .241
In. Privacy-Security Selling (PRSS)	26, 28, 30, 31, 33	.755	33 corrected item-total correlation .272
Behavioral Intention Buying (BIB)	34, 36, 38	.788	___
Behavioral Intention Selling (BIS)	35, 37, 39	.896	___
Individualism/Collectivism (IDV)	40-45	.854	___
Uncertainty Avoidance (UAI)	46-48	.792	___
Masculinity/Femininity (MAS)	49-54	.628	49 & 53 corrected item-total correlation .282 & .266

Note. 1 = Information.

Table 8

Model for Intention to Adopt Online Buying: Final Rotated Factor Matrix for Perceived Ease of Use, Perceived Usefulness, Personal Innovativeness, and Information Privacy-Security

Scale	Factors			
	1	2	3	4
PI4	.765			
PI5	.764			
PI1	.756			
PI2	.719			
PI7	.663			
PRSB1		.895		
PRSB2		.891		
SEBS		.731		
PUB3			.860	
PUB2			.825	
PUB1			.676	
PEUB3				.791
PEUB1				.781
PEUB2				.760

Note. Extraction Method is Principal Component Analysis and the Rotation Method is Varimax with Kaiser Normalization. Rotation converged in 5 iterations; Cumulative % of Variance Explained = 71.662%.

Table 9

Model for Intention to Adopt Online Selling: Final Rotated Factor Matrix for Perceived Ease of Use, Perceived Usefulness, Personal Innovativeness, and Information Privacy-Security

Scale	Factors			
	1	2	3	4
PUS3	.920			
PUS5	.897			
PUS2	.839			
PUS4	.652			
PI5		.832		
PI1		.779		
PI7		.728		
PI4		.694		
PI6		.523		
PEUS2			.858	
PEUS3			.828	
PEUS1			.760	
PRSS2				.927
PRSS1				.863
SEBS				.685

Note. Extraction Method is Principal Component Analysis and the Rotation Method is Varimax with Kaiser Normalization. Rotation converged in 6 iterations and the cumulative % of Variance Explained = 71.392%.

Table 10

Final Rotated Factor Matrix for Individualism/Collectivism, Uncertainty Avoidance, and Masculinity/Femininity (Cultural Constructs)

Scale	Factors		
	1	2	3
IDV3	.855		
IDV5	.833		
IDV4	.801		
IDV2	.791		
IDV1	.697		
UAI2		.894	
UAI1		.848	
UAI3		.667	
MAS4			.806
MAS3			.731
MAS5			.395

Note. Extraction Method is Principal Component Analysis and the Rotation Method isVarimax with Kaiser Normalization. Rotation converged in 5 iterations and the cumulative % of Variance Explained = 65.565%.

Table 11

Final Reliabilities of Constructs

Construct	Questions/Items	Cronbach's Alpha (α)	Problematic Items
Personal Innovativeness Buying (PI)	1, 2, 4, 5, 7	.825	___
Personal Innovativeness Selling (PI)	1, 4, 5, 6, 7	.778	___
Perceived Ease of Use Buying (PEUB)	8, 10, 11	.773	___
Perceived Ease of Use Selling (PEUS)	9, 12, 14	.837	___
Perceived Usefulness Buying (PUB)	15, 17, 19	.829	___
Perceived Usefulness Selling (PUS)	18, 20, 22, 24	.895	___
In. Privacy-Security Buying (PRSB)	25, 27, 31	.829	___
In. Privacy-Security Selling (PRSS)	26, 28, 31	.793	___
Behavioral Intention Buying (BIB)	34, 36, 38	.788	___
Behavioral Intention Selling (BIS)	35, 37, 39	.896	___
Individualism/Collectivism (IDV)	40-44	.862	___
Uncertainty Avoidance (UAI)	46-48	.792	___
Masculinity/Femininity (MAS)	51-53	.539	53, corrected-item total correlation was .248

Summary

This chapter has laid out the details pertaining to operational definitions, operationalization of constructs, sample population, research design, and pilot test. Within research design, the research method along with the rational of choosing this method as well as the description of validity was provided. The pilot test was presented and its role in establishing the validity of measures was explained. This chapter provided the foundations for the next one: a chapter that presents data analysis (descriptive and inferential), elaborates on the course that was taken to examine the measurement and structural models, and the support or lack of it as derived from the statistical parameters (path coefficients, significance values, correlations etc.). The preceding aided in having a broad picture of the way in which the constructs interacted with each other, and in drawing conclusions as well as implications with a wide scope of applications both for research and practice.

CHAPTER 4

DATA ANALYSIS

Introduction

This chapter describes the data collection for the final phase of the study, the procedures that were adopted in ensuring the accurate recording and transferring of data, the extent to which data was missing, and demographics and associated descriptive statistics. An account is provided concerning the examination of relationships between demographical variables and independent-dependent constructs. Afterwards, procedures of Exploratory Factor Analysis and Confirmatory Factor Analysis are described, the approach used in assessment of construct validity is explained, and validation of the structural models is presented. The last section of the chapter explains the results and provides a synopsis of the findings.

Response Rate

A total of 411 surveys were distributed to the participants, including both graduate and undergraduate students, during their class sessions in fall of 2009. They were instructed about the survey, and were also informed about the approximate time required to complete the survey. All of the 411 surveys were collected by the researcher; out of which five surveys were discarded owing to excessive omissions. This left the total number of usable surveys to 406. Non response bias was not an issue in this study because the surveys were collected immediately by the researcher and the participants did not have to mail them electronically or through regular mail.

Data Integrity Checks

Data transfer accuracy. To ensure the accuracy with which the data was transferred from the surveys to excel spreadsheets and finally to SPSS, every 10^{th} observation was inspected visually and data values were matched among the actual survey, Excel spreadsheets and SPSS data files.

Data values accuracy. The range for all the variables (except for non-quantifiable, that is, string variables) included in the demographics, computer-internet literacy, and independent-dependent-cultural variables sections were calculated (Appendix G, Table 12). This calculation provided the maximum and minimum values for each of the variables. These values were compared with the values assigned to these variables during the data coding process. This exercise helped to identify, if any, a value that was out of the specified range and may have resulted in recording an observation with error.

Missing data. Missing data can become quite problematic depending on the magnitude of missing values. In addition to magnitude, the pattern present in the missing data can also pose challenges for a researcher. For instance, if the missing data is more than 10% for a question and has a systematic pattern of occurrence then it warrants a remedy (Hair et al., 2006). The missing data in this study was less than 2.5% for all of the questions except PUS4 (Appendix G, Table 13). In the case of PUS4, the missing data was equal to 18%. This missing data occurred due to a mistake relating to omission of this question in some of the surveys. The missing values in these observations were replaced with the mean values.

Demographics

General demographics. A number of questions in the demographics and computer-internet literacy sections provided information regarding different characteristics of the sample. The analysis of the data revealed that out of 406 participants, 140 (34.5%) were male and 266 (65.5%) were females; 308 (75.9%) were undergraduates, whereas 98 (24.1%) were graduate students. In terms of nationality, 324 (79.8%) were Americans and 82 (20.2%) were international students. The sample represented fairly well the majors offered as well as the colleges-schools present at the university (Table 14). The average age of the participants was 24 years (after rounding to the nearest decimal place, Table 14) and the majority of participants were in the age group of 17-22 (238, 58.6%). The aforementioned characteristics represented well the population of the university. According to university statistics, females accounted for 63.6% and males for 36.65%, whereas undergraduates represented 66.6% and graduates 33.34% of the student population. There were a total of 519 international students (Fall 2009), which accounted for 8.22% of student population. The mean age of undergraduate students was 22.8 years and 34.1 years for graduate students. The majority of the student population (42.8%) was in the age group of 20-24 years ("Office of Institutional Research," 2009).

Table 14

Demographics		*Frequency (%)*
Gender		
Male		140 (34.5%)
Female		266 (65.5%)
Nationality		
American		324 (79.8%)
International		82 (20.2%)
-Chinese	28 (34.14%)	
-Korean	11 (13.41%)	
-Saudis	5 (6.09%)	
-Others	38[1](46.34%)	
Degree Level		
Undergraduate		308 (75.9%)
Graduate		98 (24.1%)
Colleges/Schools Represented		
School of Library & Information Management		86 (22.2%)
School of Business		115 (29.7%)
College of Liberal Arts & Sciences		95 (24.6%)
Teachers College		90 (23.3%)
Age		
17-22 years		238 (58.6%)
23-30 years		114 (28.1%)
Over 30		48 (11.8%)
Missing		6 (1.5%)

Note. 1 = This category included participants from countries having less than five students.

Computer-Internet literacy and use. Several questions were asked to assess the extent to which subjects had computer and Internet knowledge to examine the important drivers of Web use, to analyze the important reasons for online buying and selling, and to measure the possible future user of the Web for buying and/or selling. The majority of respondents, 209 (51.5%), described "entertainment" as the most common objective that drives their Internet use followed by the "academic objective" (134, 33.0%). However, the majority of participant did not consider selling online as the main purpose of using the Internet (255, 62.8%). Convenience of use was ranked as the most important reason of using the Web for actual buying/selling (183, 45.1% for buying; 191, 47.0% for selling). Price (150, 36.9%), quality of information (49, 12.1%), quantity of information (48, 11.8%), and organization of information (27, 6.7%) were ranked second, third, fourth and fifth respectively as the most important reasons for the actual Web buying. However, in case of actual selling, quantity of information (50, 12.3%) was ranked third, quality of information (31, 7.6%) fourth, and organization of information (25, 6.2%) as the fifth most important reason for using the Web for online selling. Respondents considered "information security" after "lack of need" as the most important reason that can hinder or may already hindered their use of the Web for buying (103, 25.4%) and selling (87, 21.4%). When asked about their current and prospective use of the Web for buying and/or selling, the majority of respondents (236, 58.1%) stated that they are or will be using the Web for buying, whereas in the case of using the Web for selling, few respondents (7, 1.7%) exhibited such inclination (Table 15).

Table 15

Descriptive Statistics relating to the Internet and the Web Use

Purpose of Internet Use	
Mostly Used For	Frequency (%)
--Entertainment	209 (51.5%)[1]
--Academic	134 (33.0%)
--Navigating/Surfing	59 (14.5%)
Most Important Reason of Using the Web for Actual Buying	
--Convenience of Use	183 (45.1%)
--Price	150 (36.9%)
--Quality of Information	49 (12.1%)
--Quantity of Information	48 (11.8%)
Most Important Reason of Using the Web for Actual Selling	
--Convenience of Use	191 (47.0%)
--Price	84 (20.7%)
--Quality of Information	31 (7.6%)
--Quantity of Information	50 (12.3%)
Most Important Reason of not Using the Web for Actual Buying	
--No Need	116 (28.6%)
--Information Security	103 (25.4%)
--Information Privacy	50 (12.3%)
Most Important Reason of not Using the Web for Actual Selling	
--No Need	194 (47.8%)
--Information Security	87 (21.4%)
--Lack of Knowledge about selling on the Web	63 (15.5%)

Table 15 (continued)

Descriptive Statistics relating to the Internet and the Web Use

Current and Prospective Use of the Web for	
--Buying	236 (58.1%)
--Selling	7 (1.7%)
--Buying and Selling	22 (5.4%)
--Neither	137 (33.7%)

Note. 1 = This percentage was calculated within each category, that is entertainment, academic, navigating/surfing and then was rank ordered. For example, 209 participants considered entertainment as the most important purpose of Internet use, whereas 134 participants considered academic as the most important purpose followed by navigating/surfing.

Examination of relationships among demographical variables and between demographical and independent-dependent constructs. Demographical variables produce the information that describes the varied characteristics of the sample population. Some of these variables, presumably, should be very closely related to each other and therefore should provide a picture of the sample that can help the researcher to understand the underlying trends—the trends that exist in a population due to the presence of certain demographical characteristics. These characteristics lead to certain other characteristics; thus, producing a certain kind of behavior which in turn becomes the domain of that population. With this view in mind, different inferential statistical tests were done on the demographical data. The tests included: χ^2 tests, *t*-tests, ANOVA, and bivariate-correlations. The tests were performed on the variables logically seemed to be related to each other. For example, the relationship between computer knowledge and computer use; Internet knowledge and Internet use; nationality and cultural values.

Information relating to these tests is provided in Tables 16, 17, and 18. Chi-square χ^2-tests were performed on gender and nationality (Table 16), whereas *t*-tests were used to examine the differences in various independent and dependent constructs on the basis of gender and nationality (Table 17). Gender was chosen as a variable of interest because it has been shown in the research that difference in gender plays a role in leading to certain kind of behaviors. Venkatesh et al. (2003) regarded age, gender, and experience as the variables that impact the behavior toward information technology. Gender has also been found to influence the criterion used to make a decision regarding the use of a technology (Venkatesh & Morris, 2000).

Table 16

χ^2-tests on Gender and Nationality (within Demographic Variables)

	Gender	Nationality
Reason of the Web Use for Actual Buying (Convenience)	$\chi^2(5) = 9.505, p = .091$	$\chi^2(5) = 26.687, p = .000^{**}$
Reason of Web Use for Actual Buying (Peer Pressure)	$\chi^2(5) = 12.719, p = .026^{*}$	$\chi^2(5) = 42.145, p = .000$
Reason of Web Use for Actual Selling (Convenience)	$\chi^2(5) = 2.806, p = .730$	$\chi^2(5) = 7.724, p = .172$
Reason of Web Use for Actual Selling (Peer Pressure)	$\chi^2(5) = 10.753, p = .057$	$\chi^2(5) = 33.770, p = .000^{**}$
Lack of Web Use for Actual Buying (Information Security)	$\chi^2(4) = .477, p = .334$	$\chi^2(4) = 1.642, p = .801$
Lack of Web Use for Actual Buying (Information Privacy)	$\chi^2(4) = 4.854, p = .303$	$\chi^2(4) = 1.594, p = .810$
Lack of Web Use for Actual Selling (Information Security)	$\chi^2(4) = 1.707, p = .789$	$\chi^2(4) = 4.501, p = .342$
Lack of Web Use for Actual Selling (Information Privacy)	$\chi^2(5) = 7.027, p = .134$	$\chi^2(4) = 20.631, p = .000^{**}$

Note. $^{*}p < .05$, $^{**}p < .01$.

Table 17

t-tests on Gender and Nationality (versus Independent & Dependent Constructs)

Constructs	Gender	Nationality
Personal Innovativeness	$t(402) = 2.621, p = .009$**	$t(402) = .187, p = .852$
	M_f[1] = 3.04 (.91), M_m[2] = 2.79 (.87)[3]	M_a = 2.96 (.93), M_i = 2.94 (.76)
Perceived Ease of Use B[4]	$t(401) = 3.446, p = .001$**	$t(401) = .754, p = .451$
	M_f = 3.34 (.67), M_m = 3.61 (.76)	M_a = 3.45 (.70), M_i = 3.38 (.75)
Perceived Ease of Use S[5]	$t(402) = 2.276, p = .024$*	$t(402) = 1.428, p = .154$
	M_f = 3.06 (.86), M_m = 3.29 (.97)	M_a = 3.17 (.88), M_i = 3.01 (.98)
Perceived Usefulness B	$t(406) = 1.898, p = .058$	$t(406) = .195, p = .846$
	M_f = 3.54 (.86), M_m = 3.71 (.83)	M_a = 3.61 (.86), M_i = 3.58 (.81)
Perceived Usefulness S	$t(394) = 2.140, p = .033$*	$t(394) = .519$, p = .605
	M_f = 2.95 (.83), M_m = 3.16 (.92)	M_a = 3.01 (.85), M_i = 3.07 (.94)
In[6].Privacy-Security B	$t(405) = 2.393, p = .017$*	$t(405) = .392, p = .695$
	M_f = 3.87 (.87), M_m = 3.65 (.87)	M_a = 3.79 (.88), M_i = 3.83 (.85)
In. Privacy-Security S	$t(401) = 2.034, p = .043$*	$t(401) = 1.359, p = .175$
	M_f = 3.73 (.84), M_m = 3.55 (.82)	M_a = 3.64 (.84), M_i = 3.78 (.83)
Behavioral Intention B	$t(405) = 1.632, p = .104$	$t(405) = .847, p = .397$
	M_f = 3.39 (1.03), M_m = 3.56 (.97)	M_a = 3.43 (1.02), M_i = 3.54 (.94)
Behavioral Intention S	$t(402) = 2.382, p = .018$*	$t(401) = 4.110, p = .000$**
	M_f = 2.32 (.90), M_m = 2.5 (1.03)	M_a = 2.31 (.93), M_i = 2.79 (.93)
Collectivism	$t(400) = 2.305, p = .022$*	$t(400) = .886, p = .376$
	M_f = 2.98 (.81), M_m = 3.18 (.86)	M_a = 3.03 (.82), M_i = 3.13 (.86)
Uncertainty Avoidance	$t(400) = 1.582, p = .114$	$t(400) = 2.165, p = .031$*
	M_f = 4.08 (.60), M_m = 3.97 (.71)	M_a = 4.07 (.64), M_i = 3.90 (.66)
Masculinity	$t(398) = .713, p = .476$	$t(398) = 3.031, p = .003$**
	M_f = 3.55 (.81), M_m = 3.61 (.77)	M_a = 3.52 (.82), M_i = 3.78 (.66)

Note. 1 = Female; 2 = Male; 3 = Standard Deviation; 4 = Intention to Buy Online; 5 = Intention to Sell Online; 6 = Information. *$p < .05$, **$p < .01$.

Table 18

ANOVA tests of Computer Knowledge and Internet Knowledge

	Computer Knowledge	Internet Knowledge
Computer Use	$F(4, 391) = 11.516, p = .000$**	___
Internet Use	___	$F(4, 395) = 6.056, p = .000$**
No of items bought	$F(4, 396) = 3.288, p = .011$*	$F(4, 395) = 2.294, p = .059$
No of items sold	$F(4, 390) = 1.363, p = .246$	$F(4, 389) = .950, p = .435$
Personal Innovativeness	$F(4, 397) = 13.446, p = .000$**	$F(4, 396) = 17.227, p = .000$**
Perceived Ease of Use (Intended Buying)	$F(4, 396) = 6.847, p = .000$**	$F(4, 395) = 9.243, p = .000$**
Perceived Ease of Use (Intended Selling)	$F(4, 397) = 2.715, p = .030$*	$F(4, 396) = 3.923, p = .004$**
Perceived Usefulness (Intended Buying)	$F(4, 401) = 7.523, p = .000$**	$F(4, 400) = 9.183, p = .000$**
Perceived Usefulness (Intended Selling)	$F(4, 389) = 3.303, p = .011$*	$F(4, 388) = 3.334, p = .011$*
Privacy-Security (Intended Buying)	$F(4, 400) = 1.042, p = .385$	$F(4, 399) = 2.422, p = .048$*
Privacy-Security (Intended Selling)	$F(4, 396) = 1.219, p = .302$	$F(4, 395) = 2.179, p = .071$
Behavioral Intention B[1]	$F(4, 400) = 4.995, p = .001$**	$F(4, 399) = 4.791, p = .001$**
Behavioral Intention S[2]	$F(4, 397) = .798, p = .527$	$F(4, 396) = .604, p = .660$

Note. 1 = Buying; 2 = Selling. *$p < .05$, **$p < .01$.

In this study, gender was found to be of an important influence. For instance, a significant difference was found between male and female subjects in the use of the Web for buying due to peer pressure $\chi^2(5) = 12.719, p = .026$ (Table 16). Significant differences were also found in terms of personal innovativeness $t(402) = 2.621, p = .009$, perceived usefulness-intention to sell online $t(394) = 2.140, p = .033$, and behavioral intention selling $t(402) = 2.382, p = .018$. Significant differences were also observed in terms of perceived ease of use and information privacy-security. These differences were noteworthy in both intention to buy online and intention to sell online: perceived ease of use-intention to buy online $t(401) = 3.446, p = .001$ and in intention to sell online $t(402) = 2.276, p = .024$; information privacy-security-intention to buy online $t(405) = 2.393, p = .017$ and in intention to sell online $t(401) = 2.034, p = .043$. A discussion on the preceding is provided in chapter 5 (demographics section). In reference to cultural constructs, the only significant difference was in relation to collectivism $t(400) = 2.305, p = .022$. Males were found to be more collectivistic ($M = 3.18$) compared with females ($M = 2.98$).

The second variable of interest was nationality. The sample included 324 American and 82 international students (Table 14). Nationality is an important attribute, depending on the time a person has spent in his/her home country, because it shapes the value system of an individual and thus the behavioral responses to matters of life. A culture is encapsulated in a nation, and can provide a rough approximation of some of the behavioral tendencies that the people from that nationality may exhibit. Referring to culture, a significant difference was found between American and international subjects on two of the cultural dimensions: uncertainty avoidance $t(400) = 2.165, p = .031$ and

masculinity $t(398) = 3.031, p = .003$ (Table 17). American students were found to be more concerned about uncertainty ($M = 4.07$) compared with the international students ($M = 3.9$). As far as masculinity was concerned, international students had a higher masculine orientation ($M = 3.78$) compared with the American students ($M = 3.52$). Interestingly no other significant difference was found between American and international subjects on any of the other constructs. Two demographic variables (lack of the Web use for buying and selling and the reason for using the Web use for buying and selling) were selected to be examined in terms of the differences, if any, exhibited by the responses of American and international subjects. Significant differences were found in terms of use of the Web for actual buying due to convenience $\chi^2(5) = 26.687, p = .000$; use of the Web for actual buying $\chi^2(5) = 42.145, p = .000$, and actual selling due to peer pressure $\chi^2(5) = 33.77, p = .000$. For instance, more American students (50.2%) considered convenience as the most important reason to use the Web for actual buying, whereas (33.3%) international students placed such an importance on convenience. More international students (14.1%) considered peer pressure an important reason for using the Web for actual buying compared to American students (3.4%). The other significant difference was in terms of the lack of use of the Web for actual selling due to information privacy concern $\chi^2(4) = 20.631, p = .000$ (Table 16). More international students (30.3%) regarded information privacy as the most important reason for them not using the Web for actual selling, whereas such an orientation was exhibited by a fewer (10 %) American students.

Analysis of Variance (ANOVA) is a statistical procedure that is used to examine the variance in a variable (having two or more categories) owing to the presence of

another variable. Two such variables, computer knowledge and Internet knowledge, were selected to examine the nature of variance in relation to several demographic variables and independent-dependent constructs. Computer and Internet knowledge were chosen based on a rational that as people become more knowledgeable, their behavior reflects that acquisition.

Computer knowledge was found to be significantly influencing computer use, $F(4, 391) = 11.516, p = .000$. As computer knowledge increased so did computer use. Additionally, significant positive effects of computer knowledge on the number of items bought, $F(4, 396) = 3.288, p = .011$; personal innovativeness, $F(4, 397) = 13.446, p = .000$; perceived ease of use-intention to buy online, $F(4, 396) = 6.847, p = .000$, and perceived ease of use-intention to sell online, $F(4, 397) = 2.715, p = .030$; perceived usefulness-intention to buy online, $F(4, 401) = 7.523, p = .000$, and perceived usefulness-intention to sell online, $F(4, 389) = 3.303, p = .011$; and behavioral intention buying, $F(4, 400) = 4.995, p = .001$ were found (Table 18). Internet use, personal innovativeness, perceived ease of use in both intention to buy online and intention to sell online, perceived usefulness in both intention to buy online and intention to sell online, information privacy-security in intention to buy online, and behavioral intention buying were found to be having variance at different levels of Internet knowledge (Table 18). For example, the more a person had Internet knowledge, the more favorable was her/his perception about the ease of use of the Web for intended buying, $F(4, 395) = 9.243, p = .000$, and intended selling, $F(4, 396) = 3.923, p = .004$, a trend similar to the preceding was also found in perceived usefulness- intention to buy online, $F(4, 400) = 9.183, p = .000$, and intention to sell online, $F(4, 388) = 3.334, p = .011$. The extent to which a

person had Internet knowledge also seemed to influence the use of the Internet, $F(4, 395) = 6.056, p = .000$; however, no such influence of Internet knowledge was found on the number of items bought, $F(4, 395) = 2.294, p = .059$ and sold, $F(4, 389) = .950, p = .435$ (Table 18).

A correlation analysis was also done to see the existence as well as the strength of correlations among some demographic variables (see Table 19). Age had a significant relationship with the use of Internet for entertainment ($r = .370, p = .000$); however, there was not a significant relationship between age and purchase of health products ($r = .041$, $p = .412$) or entertainment products ($r = .070, p = .163$). Computer use had a significant relationship with the number of items bought ($r = .123, p = .015$) and an insignificant one with the number of items sold ($r = -.032, p = .532$).

Table 19

Correlations

	Computer Knowledge	Internet Knowledge	Age	Computer Use	Internet Use
Computer Use	-.319**[1]				
Internet Use		-.219**[1]			
Internet Use (Ent[a])			.370**		
Buying (HP[b])			.041		
Buying (EP[c])			.071		
Use of Web (more for B[d] than S[e])				.100*	.005
Use of Web for (B, S, Both, Neither)				-.105*	-.060
No of items Bought				.123*	.084
No of items Sold				-.032	-.029

Note. 1 = negative correlation due to reverse coding; *a* = entertainment; *b* = health products; *c* = entertainment products; *d* = buying; *e* = selling. *$p < .05$, **$p < .01$.

Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was done using SPSS™ 18.0. All the independent constructs, except cultural constructs, were analyzed together. Additionally, the dependent constructs were also analyzed together. Altogether, three separate factor analyses were done. Separate EFAs were done owing to two reasons: one was to analyze those constructs together that were related to each other and the second was to avoid potential sample size restrictions. Though the sample was enough if one adheres to the lower criteria of Nunnally (1978), which is seven observations per variable, it was not enough to meet the upper criterion of having ten observations per variable. Initial factor analyses are presented in Tables 20, 21, 22, and 23 along with the initial reliabilities (Table 24). All of the factor analyses were done using the 'Varimax' rotation method and factor loadings (the magnitude of correlation or covariance between an item and a construct) less than .4 were suppressed. Detailed statistics pertaining to the factor analyses are presented in Table 28.

As can be seen in Table 20, the initial factor matrix for the intention to adopt online buying model, certain items cross-loaded, e.g., SEB1, PEUB1, and then there were items e.g., SEB2, PEUB3, PEUB1, that did not load on the factors that these items ought to represent. This factor structure explained 63.123% of the variance with a sampling adequacy value of .859 (Table 28). The initial factor matrix for the intention to adopt online selling model is presented in Table 21. This matrix also has items that cross-load. For instance, SES2, PEUS2, and PEUS1. Item PI3 was loading on factor 4. This factor matrix explained 58.996% of variance and has a sampling adequacy value of .833 (Table 28).

Table 20

Initial Rotated Factor Matrix for the Intention to Adopt Online Buying Model

Scale	Factors				
	1	2	3	4	5
PUB3	.814				
PUB2	.790				
PUB5	.781				
PUB4	.682				
PUB1	.669				
PI5		.815			
PI1		.749			
PI7		.701			
PI4		.699			
PI2		.609			
PI6		.428			
PRB2			.901		
PPRB1			.896		
SEBS			.808		
SEB2				.700	
SEB1			.406	.657	
PEUB3				.638	
PEUB1	.436			.574	
PEUB2					.834
PEUB4					.724

Table 21

Initial Rotated Factor Matrix for the Intention to Adopt Online Selling Model

Scale	Factors			
	1	2	3	4
PUS3	.848			
PUS2	.831			
PUS5	.778			
PUS1	.707			
PUS4	.666			
SES2	.508		.402	
PI5		.798		
PI1		.746		
PI7		.737		
PI4		.729		
PI6		.539		
PRS2			.881	
PRS1			.854	
SES1			.716	
SEBS			.691	
PI3				-.643
PEUS2	.526			.626
PEUS1	.541			.612
PEUS3				.489

Table 22

Initial Rotated Factor Matrix of Cultural Constructs

Scale	Factors			
	1	2	3	4
UAI3	.772			
UAI2	.758			
UAI1	.754			
MAS1	.748			
MAS2	.609			
MAS6	.549			
IDV4		.797		
IDV5		.786		
IDV3		.754		
IDV6		.571		
MAS4			.796	
MAS3			.779	
MAS5			.775	
IDV1				.871
IDV2				.860

Table 23

Rotated Factor Matrix of Behavioral Intention (Buying and Selling)

Scale	Factors	
	1	2
BIS2	.903	
BIS1	.884	
BIS3	.862	
BIB1		.917
BIB3		.874
BIB2		.852

Table 24

Initial Reliabilities of Constructs

Construct	Cronbach's Alpha (α)	Number of Items	Problematic Items
PI (Buying)	.800	6	___
PI (Selling)	.749	6	3 (corrected item total-correlation .229)
PEUB	.704	4	___
PEUS	.723	3	___
PUB	.853	5	___
PUS	.864	5	___
PRSB	.749	5	32 (corrected item-total correlation .223)
PRSS	.783	5	___
BIB	.874	3	___
BIS	.876	3	___
IDV	.788	6	___
UAI	.804	3	___
MAS	.735	6	___

Regarding cultural variables, the factor matrix presented a structure of four dimensions (Table 22). Two observations were noteworthy: one was the loadings of MAS1, MAS2, and MAS6 (items representing masculinity/femininity) with the items representing uncertainty avoidance, and the other was the creation of a distinct factor by two items, IDV1 and IDV2, measuring individualism/collectivism. The variance explained by this factor structure was 63.379% along with a sampling adequacy value of .793 (Table 28). The dependent construct of behavioral intention was represented by clean factor loadings in case of both intention to adopt online buying and intention to adopt online selling (Table 23). This factor matrix explained 80.472% of the variance and has a sampling adequacy value of .720 (Table 28).

The reliabilities of all of the scales were calculated (Table 24). The dual nature of some of the cultural dimensions, e.g., individualism/collectivism and masculinity/femininity, may have not been completely distinguishably measured by some of the scale items and thus resulted in cross-loadings (Table 22). To have clean factor loadings, items were dropped one by one. The items were dropped not only on empirical basis but also due consideration was given to retain the content validity. Several factor matrices were run and the final matrices representing independent and cultural constructs were obtained (Tables 25, 26, & 27).

After dropping problematic items, a clean factor structure emerged for the intention to adopt online buying model (Table 25). An important element was the loading of PEUB1 on the factor representing perceived usefulness. This item (PEUB1) was not eliminated despite its loading on factor1 because doing so resulted in a negative Cronbach alpha. This factor matrix explained 60.23% of the variance and has a sampling

Table 25

Final Rotated Factor Matrix of the Intention to adopt Online Buying Model

Scale	Factors			
	1	2	3	4
PUB2	.818			
PUB3	.813			
PUB5	.766			
PUB4	.709			
PUB1	.655			
PEUB1	.601			
PI5		.818		
PI1		.753		
PI7		.708		
PI4		.700		
PI2		.609		
PI6		.435		
PRB1			.865	
PRB2			.855	
SEBS			.826	
SEB1			.593	
PEUB2				.841
PEUB4				.723

Table 26

Final Rotated Factor Matrix for the Intention to Adopt Online Selling Model

Scale	Factors			
	1	2	3	4
PUS2	.840			
PUS3	.830			
PUS5	.772			
PUS1	.739			
PUS4	.644			
PI5		.810		
PI7		.756		
PI1		.751		
PI4		.725		
PI6		.532		
PRS2			.889	
PRS1			.867	
SEBS			.710	
SES1			.692	
PEUS2				.762
PEUS1	.428			.728
PEUS3				.640

Table 27

Final Rotated Factor Matrix of Cultural Constructs

Scale	Factors		
	1	2	3
IDV3	.823		
IDV4	.818		
IDV5	.789		
IDV6	.548		
UAI2		.847	
UAI1		.845	
UAI3		.777	
MAS4			.817
MAS3			.804
MAS5			.766

Table 28

Factor Analyses Statistics

Factor Analyses-Statistics	IOBM[1]	IOSM[2]	ICC[3]	BIBS[4]	FOBM[5]	FOSM[6]	FCC[7]
Extraction Method	PCA[8]	PCA	PCA	PCA	PCA	PCA	PCA
Rotation Method	Varimax	Varimax	Varimax	Varimax	Varimax	Varimax	Varimax
Determinant of-Correlation Matrix	.000>.00001	.000>.00001	.005>.00001	.029>.0000	.001>.00001	.001>.00001	.042>.00001
KMO[9]	.859	.833	.793	.720	.856	.823	.749
Bartlett's Test-of Sphericity	$p < .000$	$p < .000$	$p < .000$	$p < .000$	$p < .000$	$p < .000$	$p < .000$
Variance Explained	63.123%	58.996%	63.379%	80.472%	60.230%	62.630%	66.380%
Non-Redundant-Residuals	60 (31.0%)	9 (34.0%)	45 (42.0%)	8 (53.0%)	49 (32.0%)	34 (25.0%)	22 (48.0%)

Note. 1= Initial Online Buying Model (Table 5.1); 2 = Initial Online Selling Model (Table 5.2); 3 = Initial Cultural Constructs' Factor Matrix (Table 5.3); 4 = Behavioral Intention Buying and Selling (Table 5.4); 5 = Final Online Buying Model (Table 5.5); 6 = Final Online Selling Model (Table 5.6); 7 = Final Cultural Constructs' Factor Matrix (Table 5.8); 8 = Principal Component Analysis; 9 = Kaiser-Meyer-Olkin Measure of Sampling Adequacy.

adequacy value of .856 (Table 28). The factor matrix, except of PEUB1, of the intention to adopt online buying model presented a clean loading structure. In case of the intention to adopt online selling model (Table 26), item PEUS1 had a cross-loading. This item was not dropped because doing so resulted in negative Cronbach alpha. The online selling matrix was obtained by forcing four components. This matrix explained 62.63% of the variance and has a sampling adequacy value of .823 (Table 28).

The final matrix of cultural constructs (Table 27) presented a quite clean factor structure. Three factors emerged and items measuring each construct loaded distinctly on their respective factors. Two items were dropped from individualism/collectivism and three from masculinity/femininity scales. The factor matrix of cultural constructs explained 66.38% of the variance and has a sampling adequacy value of .749 (Table 28). The final reliabilities along with the number of items in each scale are presented in Table 29. All the scales met the reliability criterion, set by Nunnally (1978), to have a Cronbach alpha of .70 or above.

The analysis, above, prepared the grounds for the next phase of the study, which included the assessment of the measurement and theoretical models using confirmatory factor analysis and covariance-based structural equation modeling respectively.

Table 29

Final Reliabilities of Constructs

Construct	Cronbach's Alpha (α)	Number of Items (Total)	Problematic Items
PIB (Buying)	.800	1, 2, 4, 5, 6, 7 **(6)**	___
PIS (Selling)	.782	1, 4, 5, 6, 7 **(5)**	___
PEUB	.704	8, 10, 13 **(3)**	8
PUB	.853	15, 17, 19, 21, 23 **(5)**	___
PEUS	.723	9, 12, 14 **(3)**	___
PUS	.864	16, 18, 20, 22, 24 **(5)**	___
PRSB	.802	25, 27, 29, 31 **(4)**	___
PRSS	.812	26, 28, 30, 31 **(4)**	___
BIB	.874	34, 36, 38 **(3)**	___
BIS	.876	35, 37, 39 **(3)**	___
IDV	.759	42, 43, 44, 45 **(4)**	___
UAI	.804	46, 47, 48 **(3)**	___
MAS	.736	51, 52, 53 **(3)**	___

The analysis of the descriptive statistics (Table 30) provided important information about the orientation of the sample in terms of the constructs of this study. Regarding cultural constructs, the sample was collectivistic to some extent (M_{IDV} = 3.07, Table 30), inclined to have certainty (M_{UAI} = 4.04, Table 30), and oriented towards masculinity (M_{MAS} = 3.57, Table 30). As far as the independent and dependent constructs were concerned, the sample exhibited some traits that were pertinent to either online buying or online selling and then there were other traits that were common to both buying and selling. For example, the sample probably would not use much of personal innovativeness in terms of online buying and selling (M_{PIB} = 2.82, M_{PIS} = 2.82, Table 30). However, the participants perceived both online buying and selling as easy to use though online buying was perceived easier to use as compared with selling (M_{PEUB} = 3.43, M_{PEUS} = 3.08, Table 30). Similarly, both online buying and selling were perceived by the subjects to be useful though they considered online buying to be more useful than online selling (M_{PUB} = 3.50, M_{PUS} = 2.99, Table 30). Information privacy-security were considered quite important impediments in terms of the use of online buying and selling (M_{PRSB} = 3.84; M_{PRSS} = 3.68, Table 30). Regarding potential future use, the sample exhibited a stronger intention to use online buying as compared with online selling (M_{BIB} = 3.45, M_{BIS} = 2.41, Table 30).

Table 30

Descriptive Statistics of the Constructs (as represented in Final Factor Matrices)

Constructs	N	Range	Min[f]	Max[g]	Mean		Std. Dev[j]	Variance
					Stat[h]	Std. Err[i]		
PIB	398	4.00	1.00	5.00	2.8224	.03943	.78666	.619
PEUB	401	4.00	1.00	5.00	3.4364	.03579	.71679	.514
PUB	405	4.00	1.00	5.00	3.5007	.03872	.77926	.607
PRSB	405	4.00	1.00	5.00	3.8414	.03867	.77814	.605
BIB	405	4.00	1.00	5.00	3.4560	.05034	1.01314	1.026
PIS	399	4.00	1.00	5.00	2.8206	.04065	.81190	.659
PEUS	399	4.00	1.00	5.00	3.0860	.03777	.75437	.569
PUS	324	4.00	1.00	5.00	2.9938	.04593	.82677	.684
PRSS	400	4.00	1.00	5.00	3.6806	.03956	.79118	.626
BIS	402	4.00	1.00	5.00	2.4154	.04773	.95690	.916
IDV	400	4.00	1.00	5.00	3.0775	.03811	.76228	.581
UAI	400	4.00	1.00	5.00	4.0442	.03251	.65017	.423
MAS	398	4.00	1.00	5.00	3.5762	.03994	.79684	.635

Note. *f* = minimum; *g* = maximum; *h* = Statistics; *i* = Standard Error; *j* = Standard Deviation.

Confirmatory Factor Analysis

Application of statistical approaches like Structural Equation Modeling (SEM) requires the use of Confirmatory Factor Analysis (CFA) to test the measurement theory. Once the measurement theory is tested then the structural model can be tested using an appropriate SEM approach. Below is a brief introduction of Exploratory Factor Analysis (EFA), CFA, and salient features of CFA as well as its application in the current study.

Exploratory Factor Analysis (EFA) is an important tool to explore the data and to inform the researcher about the number of dimensions or factors in which a data should be represented, whereas CFA tests the underlying theory that has been used to develop a measurement model (Hair et al., 2006). A researcher has to specify the number of factors as well as the relationship between the variables and variates (constructs) before applying CFA; a requirement that is not existent in the case of EFA. CFA then matches the specification of factors with the reality (i.e., the actual collected data), and by doing that CFA provides the information to either validate or reject the theory that has been used to develop the measurement model. The use of CFA also enables a researcher to examine the construct validity, a composition of convergent, discriminant, nomological, and face validity (Hair et al.). To test the measurement theory of the proposed model and to examine the construct validity, CFA was done using LISREL^{TM} 8.80.

There are certain guidelines (as provided in Hair et al., 2006) that can be helpful in using CFA and thus have been applied in this study. To assess the overall validity of the measurement model, the researcher has to assess (a) overall fit of the model, and (b) construct validity. Overall fit of the model can be assessed using certain key fit statistics provided in most of SEM softwares such as Chi-square χ^2 statistic, Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA). As far as construct

validity is concerned, significant information is also provided to assess convergent, discriminannt, and nomological validity.

Overall fit of the model. To assess the overall fit of the measurement model the key fit statistics were calculated. All of the fit statistics discussed below are provided in Table 31. The overall χ^2 for the intention to adopt online buying model was 176.34 with 80 degrees of freedom. The *p*-value associated with this result was 0.0000. The RMSEA value was 0.055, which was below the recommended value of 0.10 (Hair et al., 2006). The CFI for the buying model was 0.98, which was above the recommended value of 0.90 (Hair et al., 2006).

The overall χ^2 for the intention to adopt online selling model was 122.12 with 67 degrees of freedom. The *p*-value associated with this result was 0.00005. The RMSEA value was 0.045, which was below the recommended value of 0.10 (Hair et al., 2006). The CFI for the selling model was 0.99, which was above the recommended value of 0.90 (Hair et al., 2006).

Basing on the above analysis it can be suggested that measurement models exhibited a reasonable level of fit. The next step was to analyze the construct validity.

Table 31

Fit Statistics of the Measurement Models

			Fit Statistics					
Measurement Models	χ^2	df	RMSEA	CFI	NFI	NNFI	GFI	AGFI
Intention to Adopt Online Buying Model	176.34	80	0.055	0.98	0.97	0.98	0.95	0.92
Intention to Adopt Online Selling Model	122.12	67	0.045	0.99	0.97	0.98	0.96	0.94

Construct validity. "Construct validity is the extent to which a set of measured items actually reflects the theoretical latent constructs those items are designed to measure" (Hair et al., 2006, p. 776). It deals with the accuracy of measurement. Construct validity is made up of four important components (Hair et al.). Hair et al. considers reliability (internal consistency of operationalization) as part of the convergent validity; however, Bagozzi (1980) presented "reliability" as a distinct measure of construct validity and also included "theoretical meaningfulness of concepts" as a measure of construct validity. Use of either approach toward construct validity does not limit the analysis in any way. In the current study, convergent validity is ascertained according to the schema of Hair et al. and a brief discussion on the theoretical meaningfulness of concepts is also provided, thus accommodating both approaches.

Convergent validity. Convergent validity has been described in chapter 3. It denotes the extent to which items representing a construct share a variance in common. There are some ways to estimate the convergent validity. Hair et al. (2006) suggested the use of the following three measures to assess the convergent validity. The information relating to these measures is provided in Tables 32 & 33.

Table 32

Convergent Validity-Intention to Adopt Online Buying Model

Measurement Model Buying	Convergent Validity Statistics		
	Factor Loadings	Average Variance Extracted (AVE)	Construct Reliability
Construct			
Personal Innovativeness			
PI1	0.69		
PI5	0.79	0.52	0.76
PI7	0.68		
Perceived Ease of Use			
PEUB1	0.66		
PEUB2	0.53	0.35	0.62
PEUB4	0.58		
Perceived Usefulness			
PUB2	0.80		
PUB3	0.83	0.62	0.83
PUB5	0.74		
Privacy-Security			
PRB1	0.91		
PRB2	0.89	0.69	0.87
SEBS	0.69		
Behavioral Intention			
BIB1	0.90		
BIB2	0.84	0.70	0.87
BIB3	0.77		

Table 33

Convergent Validity-Intention to Adopt Online Selling Model

Measurement Model Selling	Convergent Validity Statistics		
	Factor Loadings	Average Variance Extracted (AVE)	Construct Reliability
Construct			
Personal Innovativeness			
PI1	0.70		
PI5	0.79	0.52	0.76
PI7	0.68		
Perceived Ease of Use			
PEUS1	0.89	0.75	0.86
PEUS2	0.85		
Perceived Usefulness			
PUB2	0.84		
PUB3	0.88	0.67	0.72
PUB5	0.74		
Privacy-Security			
PRSS1	0.83		
PRSS2	0.97	0.64	0.83
SEBS	0.54		
Behavioral Intention			
BIS1	0.89		
BIS2	0.87	0.71	0.87
BIS3	0.76		

Factor loadings. Factor loadings represent the magnitude of correlation or covariance between an item and a construct. Higher loading shows that items have a stronger relationship with a construct and are thus converging at a common point. A rule of thumb is that standardized loading estimates should be 0.5 or higher, and ideally 0.7 or higher (Hair et al., 2006).The standardized factor loadings for all the items were greater than 0.5, threshold level, in the buying, selling, and cultural models. A majority of items loaded above the recommended level of 0.7.

Variance extracted. According to Fornell and Larcker (1981) the average percentage of variance extracted (VE) among a set of construct items shows convergence. A 'VE' of 0.5 or higher indicates adequate convergence. The AVE for all of the constructs is listed in Tables 32 and 33. All the AVE values, except for the constructs of PEUB (0.35), were above the 0.5.

Reliability. There are different measures of reliability; however, coefficient alpha remains a commonly used reliability measure. Within the context of SEM a slightly different construct reliability is calculated from the squared sum of factor loadings (λ_i^2) for each construct and the sum of error variance terms for a construct (δ_i^2) (Hair et al., 2006). A reliability value of 0.7 or higher suggests good reliability; however, a value between 0.6 and 0.7 can be acceptable depending on the quality of the other indicators of construct validity (Hair et al.). High reliability represents internal consistency; that is, the items are representing the same latent construct. The reliability values for all of the constructs were calculated. The reliability values for all the constructs, except that of PEUB (0.62), were above 0.7, representing adequate construct reliability (see Tables 32 and 33).

In view of the three measures, that is, factor loadings, average variance extracted, and construct reliabilities, it can be stated that the measurement models have exhibited satisfactory convergent validity.

Discriminant validity. According to Hair et al. (2006), discriminant validity can be ascertained by comparing the variance-extracted estimates for each factor with the squared inter-construct correlations associated with that factor. The variance-extracted estimates should be more than the inter-construct correlations. This comparison was done in all the measurement models. Only in case of PEUB the AVE was less than the squared inter-construct correlations. The AVE of PEUB was 0.35, whereas squared inter-construct correlation between PEUB and PUB was 0.548. The values of AVE versus squared inter-construct correlations are provided in the Table 34 and 35.

Table 34

Discriminant Validity-Intention to Adopt Online Buying Model

Measurement Model-Buying	PI	Squared Correlations along with AVE in [] PEUB	PUB	PRSB
PEUB	0.221[1] [0.52; 0.35]	___	___	___
PUB	0.212 [0.52; 0.63]	0.548 [0.35; 0.63]	___	___
PRSB	0.04 [0.52; 0.70]	0.078 [0.35; 0.70]	0.032 [0.63; 0.70]	___
BIB	0.240 [0.52; 0.70]	0.436 [0.35; 0.70]	0.578 [0.63; 0.70]	0.04 [0.70; 0.70]

Note. 1 = Squared inter-construct correlations.

Table 35

Discriminant Validity-Intention to Adopt Online Selling Model

Measurement Model-Selling	Squared Correlations along with AVE in [] PI	PEUS	PUS	PRSS
PEUS	0.057 [0.52; 0.75]	___	___	___
PUS	0.102 [0.52; 0.67]	0.435 [0.75; 0.67]	___	___
PRSS	0.014 [0.52; 0.64]	0.006 [0.75; 0.64]	0.001 [0.67; 0.64]	___
BIS	0.096 [0.52; 0.71]	0.25 [0.75; 0.71]	0.435 [0.67; 0.71]	0.004 [0.64; 0.71]

Nomological validity. To assess the nomological validity, one can start from examining the correlation matrix. The correlation among constructs, the one that was predicted within the theoretical network, validates the theoretical base of the measurement model. Besides this examination, it is important to analyze the structural model to assess the magnitude of coefficients, their significance, and direction to ascertain the nomological validity. Elaboration on this information will be done in chapter 5.

The correlation matrixes of constructs (Tables 36 & 37), both in the intention to adopt online buying and intention to adopt online selling measurement models, were examined. The construct of personal innovativeness in this study was measuring lack of innovativeness and was predicted to have a negative correlation with the behavioral intention both in the buying and selling models. The correlation of personal innovativeness with the behavioral intention was negative in both of the models. Perceived usefulness and perceived ease of use both had negative correlation with personal innovativeness in the selling and buying models. Lack of innovativeness may hinder a person's ability to clearly view the prospective benefits that can arise by using a new technology and therefore a person who is reluctant to try a new thing may not evaluate positively a new practice. This is a plausible explanation of the negative correlation between personal innovativeness and the constructs of perceived ease of use and perceived usefulness. The constructs of information privacy-security and personal innovativeness had positive relationship, perceived usefulness had a positive correlation with perceived ease of use, information privacy-security had a negative relationship (in the intention to adopt online buying model) and a positive relationship (in the intention to

Table 36

Correlation Matrix-Intention to Adopt Online Buying Model

	PI	PUB	PEUB	PRSB	BIB
PI	1.00				
PUB	-0.46	1.00			
PEUB	-0.47	0.74	1.00		
PRSSB	0.20	-0.18	-0.28	1.00	
BIB	-0.49	0.76	0.66	-0.20	1.00

Table 37

Correlation Matrix-Intention to Adopt Online Selling Model

	PI	PUS	PEUS	PRSS	BIS
PI	1.00				
PUB	-0.32	1.00			
PEUB	-0.24	0.66	1.00		
PRSSB	0.12	0.03	0.08	1.00	
BIS	-0.31	0.66	0.50	0.06	1.00

adopt online selling model) with behavioral intention. The positive relationship between information privacy-security and behavioral intention in the intention to adopt online selling model was not in the predicted direction. Perceived ease of use and perceived usefulness both had negative correlation with information privacy-security in the buying model. The correlation matrixes of both models revealed a pattern that was consistent (with the exception of the relationship between information privacy-security and behavioral intention-selling model, and the relationships of both perceived ease of use and perceived usefulness with information privacy-security-buying model) with the established theoretical stream in the literature as well as the predicted relationships within this study. A detailed discussion on the relationships among constructs and the extent to which they exhibited the nomological validity will be presented in the chapter 5.

Face validity. There is no empirical test to establish the observational meaningfulness of concepts (face validity). According to Srite (2000) the confidence in face validity of the instrument used in a study can be increased by using the scales that have been previously validated. In the current study the scales were used that were validated in the literature; for example, the scale of personal innovativeness was validated by (Citrin et al., 2000), perceived ease of use and perceived usefulness by (McCloskey, 2003/2004)), information privacy-security by (McCloskey; George, 2000), behavioral intention by (Srite & Karahanna, 2006; Akour et al., 2006), individualism/collectivism by (Srite & Karahanna), uncertainty avoidance by (Srite & Karahanna; Akour et al.), and masculinity/femininity by (Akour et al.). Some items were re-worded to increase the relevance with the context of the present study and were then examined using reliability and validity procedures to assess their overall validity. The items that were used in the final analysis are provided below (Table 38).

Table 38

Items Used in the Final Analysis

Constructs (capitalized) along with items
PERSONAL INNOVATIVENESS BUYING
1) In general, I am among the last of my friends to visit a company's new Web site when it appears on the Web
5) In general, I am the last in my circle of friends to know of any retail Web site
7) I know about new retail Web sites before most other people in my circle do
PERSONAL INNOVATIVENESS SELLING
1) In general, I am among the last of my friends to visit a company's new Web site when it appears on the Web
5) In general, I am the last in my circle of friends to know of any retail Web site
7) I know about new retail Web sites before most other people in my circle do
PERCEIVED EASE OF USE BUYING
8) It is easy to purchase items over the Web
10) Payments or delivery problems can be easily rectified with a Web vendor
13) Questions and problems can be easily addressed when making purchases over the Web
PERCEIVED EASE OF USE SELLING
9) It is easy to sell items over the Web
12) Selling on the Web is easy to do

Table 38 (continued)

Items Used in the Final Analysis

Constructs (capitalized) along with items
PERCEIVED USEFULNESS BUYING
17) Buying on the Web saves me time
19) Buying things over the Web is more convenient
23) Buying on the Web makes my life easier
PERCEIEVED USEFULNESS SELLING
18) Selling on the Web saves me time
20) Selling things over the Web is more convenient
24) Selling on the Web makes my life easier
INFORMATION PRIVACY-SECURITY BUYING
25) I worry about providing personal information when purchasing items over the Web
27) I worry about providing financial information when purchasing items over the Web
31) I am concerned about the security of the Web
INFORMATION PRIVACY-SECURITY SELLING
26) I worry about providing personal information when selling items over the Web
28) I worry about providing financial information when selling items over the Web
31) I am concerned about the security of the Web
BEHAVIORAL INTENTION BUYING
34) I intend to use the Web for buying
36) I intend to use the Web frequently for buying

Table 38 (continued)

Items Used in the Final Analysis

Constructs (capitalized) along with items
38) Given that I have access to the Web, it is more likely I would use it for buying
BEHAVIORAL INTENTION SELLING
35) I intent to use the Web for selling
37) I intend to use the Web frequently for selling
39) Given that I have access to the Web, it is more likely I would use it for selling
COLLECTIVISM
42) Group success is more important than individual success
43) Being loyal to a group is more important than individual gain
44) Individual rewards are not as important as group welfare
UNCERTAINTY AVOIDANCE
46) Rules and regulations are important because they inform workers what the organization expects of them
47) Order and structure are very important in a work environment
48) In a situation in which other peers evaluate me, I feel that clear and explicit guidelines should be used
MASCULINITY
51) It is important for me to work in a prestigious and successful organization
52) It is important for me to have a job that has an opportunity for high earnings
53) It is important that I outperform my classmates in school

Model Testing

Hair et el. (2006) stated that the testing of the theoretical model within SEM focuses on two issues:

(1) The overall and relative model fit

(2) The size, direction, and significance of the structural parameter estimates depicted with one-headed arrows on a path diagram

Though the examination of moderating influence of cultural constructs is subsumed in the above mentioned two points, it was important to briefly describe the approach used in creating interaction terms. As far as the moderating influence of cultural constructs is concerned, items with the highest loadings representing cultural and independent constructs were centered by deducting the score of each item from its mean value. Afterwards, the centered items were multiplied together to create interaction terms and were subsequently used in analyzing the moderating influence of cultural constructs. The following steps were taken to assess the overall and relative model fit of buying and selling models. Below is the description of that process beginning with the buying-model.

The overall and relative model fit. The loading estimates of all the measurement items were examined to ensure that they have not changed substantially from the CFA model. The loadings of all items, except three, changed and the maximum change was .02. The overall buying-model χ^2 was 178.65 with 82 degrees of freedom ($p < .05$), and the RMSEA was 0.054, whereas the CFI was 0.98 (Table, 39). These diagnostics suggested that the buying model provided a good overall fit. The overall selling-model χ^2 was 131.84 with 69 degrees of freedom ($p < .05$), and the RMSEA was 0.047, whereas

the CFI was 0.98 (Table, 39). These diagnostics suggested that the selling model provided a good overall fit.

Size, direction, and significance of the structural parameter estimates. The next step, after the examination of model fit statistics, was to analyze the individual parameters. Their size, direction, and significance all had to be examined. In case of the buying model, all of the structural paths, except one, were significant. The insignificant path was between PRSS and BIB; the coefficient value was -0.02 with a *t*-value of -0.58. Although the estimate was in the predicted direction, it did not support the hypothesis. The coefficients of paths from perceived usefulness, perceived ease of use, and personal innovativeness to behavioral intention had values of 0.56 ($p<.01$), 0.17 ($p< .10$), and -0.15 ($p<.01$) respectively. The coefficient of the path from perceived ease of use to perceived usefulness was 0.76 ($p<.01$). Besides examining the preceding, other fit statistics were also analyzed. For instance, the SRMR increased to 0.044 from 0.042, a value associated with good fit. The difference in fit between the theoretical model and the CFA model was also calculated. The resulting $\Delta \chi^2$ was 2.31 with 2 degrees of freedom. The difference in degrees of freedom was due to the fact that all but two of the possible structural paths were estimated. The insignificant $\Delta \chi^2$ suggested that the fit of the model may not improve by estimating another structural path.

Regarding intention to adopt online selling model, all but three item loadings changed and the maximum change was .01. The overall selling-model χ^2 was 131.84 with 69 degrees of freedom ($p < .05$). The RMSEA was 0.047, whereas the CFI was 0.98. These diagnostics suggested that selling-model provided a good overall fit. Additionally, the individual parameters were analyzed. All of the structural paths, except that between

PRSS and BIS, were significant and in the predicted direction. The coefficient value of the path between PRSS and BIS was 0.05 with a *t*-value of 1.10. This estimate was neither significant nor in the predicted direction. The coefficients of paths from perceived usefulness, perceived ease of use, and personal innovativeness to behavioral intention had values of 0.56 ($p<.01$), 0.10 ($p< .10$), and -0.13 ($p<.01$) respectively. The path coefficient between perceived ease of use and perceived usefulness had a value of 0.66 ($p<.01$). Other statistics, e.g., SRMR and $\Delta \chi^2$ were also examined. For example, the SRMR increased to 0.049 from 0.039, a value still associated with good fit. The difference in fit was examined by calculating $\Delta \chi^2$. The $\Delta \chi^2$ was 9.72 with 2 degrees of freedom. The difference in degrees of freedom was due to estimation of all structural paths except two. The insignificant $\Delta \chi^2$ suggested that the fit of the model may not improve by estimating another structural path.

Table 39

Theoretical Model Fit Statistics

Theoretical Models	Fit Statistics					
	χ^2	df	RMSEA	CFI	SRMR	$\Delta\chi^2$
Intention to Adopt Online Buying Model	178.65	82	0.054	0.98	0.044	2.31
Intention to Adopt Online Selling Model	131.84	69	0.047	0.98	0.049	9.72

Presentation of Results

All the hypotheses along with level of support, coefficient values, and *t*-values are provided in Table 40. As far as the hypotheses pertaining to the direct impact of independent constructs on the dependent construct were concerned, the influence of perceived usefulness (H_{1a}, H_{1b}, *p*-level .01) level), perceived ease of use (H_{2a}, H_{2b} at .10 level), and personal innovativeness (H_{3a}, H_{3b}, *p*-level .05) on behavioral intention were significant in both the intention to adopt online buying and intention to adopt online selling models. Information privacy-security concerns (H_{4a}) did not have a significant influence on behavioral intention in the intention to adopt online buying model; however, this influence was significant in the intention to adopt online selling model at *p*-level of .10 (H_{4b}). The relationship between information privacy-security and behavioral intention, in the buying model, was in the predicted direction yet not significant. The mediating role of perceived usefulness (H_{2c}, H_{2d}) was also supported in both models. The overall R^2 value for the buying model was 0.61 and 0.45 for the selling model. That is, in case of the intention to adopt online buying model, 61% of the variation in behavioral intention to buy online was explained by the exogenous and mediating constructs, whereas 45% of such variation was explained in the selling model.

Regarding the moderating influence of cultural constructs, uncertainty avoidance did have a significant influence on the relationship between personal innovativeness and intention to buy online (H_{5a}, *p*-level .05) but not on the relationship between personal innovativeness and intention to sell online (H_{5b}). Individualism/collectivism was found to significantly influence the relationship between personal innovativeness and behavioral intention to buy online (H_{6a}, *p*-level .05), whereas no such influence was found

Table 40

Hypotheses and Level of Support

Hypotheses	Level of Support	Coefficient (*t*-value)
H_{1a}: Perceived usefulness will have a positive influence on intention to buy online.	Supported	.56 (5.78**)
H_{1b}: Perceived usefulness will have a positive influence on intention to sell online.	Supported	.55 (7.90**)
H_{2a}: Perceived ease of use will have a positive influence on intention to buy online.	Supported	.20 (1.72[1])
H_{2b}: Perceived ease of use will have a positive influence on intention to sell online.	Supported	.12 (1.46[1])
H_{2c}: Perceived ease of use will positively affect perceived usefulness in online buying.	Supported	.77 (12.25**)
H_{2d}: Perceived ease of use will positively affect perceived usefulness in online selling.	Supported	.66 (12.15**)
H_{3a}: Personal Innovativeness will have a positive influence on intention to buy online.	Supported	-.16 (2.65**)
H_{3b}: Personal Innovativeness will have a positive influence on intention to sell online.	Supported	-.13 (2.44**)
H_{4a}: Information privacy-security concerns will have a negative influence on user intention to buy online.	Not Supported (Directional-Support)	-.02 N.S.
H_{4b}: Information privacy-security concerns will have a negative influence on user intention to sell online.	Not Supported	.06 (1.31[1])
H_{5a}: The relationship between intention to buy online and personal innovativeness will be moderated by uncertainty avoidance such that the relationship will be stronger for the individuals with a lower level of uncertainty avoidance.	Supported	.09 (1.65*)

Table 40 (continued)

Hypotheses and Level of Support

Hypotheses	Level of Support	Coefficient (*t*-value)
H_{5b}: The relationship between intention to sell online and personal innovativeness will be moderated by uncertainty avoidance such that the relationship will be stronger for the individuals with a lower level of uncertainty avoidance.	Not Supported	-.06 N.S.
H_{6a}: The relationship between intention to buy online and personal innovativeness will be moderated by collectivism such that the relationship is weaker for the individuals with a high level of collectivism.	Supported	-.10 (1.95*)
H_{6b}: The relationship between intention to sell online and personal innovativeness will be moderated by collectivism such that the relationship is weaker for the individuals with a high level of collectivism.	Not Supported	-.03 N.S.
H_{7a}: The relationship between intention to buy online and information privacy-security concern will be moderated by collectivism such that the relationship is weaker for the individuals with a high level of collectivism.	Not Supported	.01 N.S.
H_{7b}: The relationship between intention to sell online and information privacy-security concern will be moderated by collectivism such that the relationship is weaker for the individuals with a high level of collectivism.	Supported	.06 (1.28[1])
H_{8a}: The relationship between intention to buy online and personal innovativeness will be moderated by masculinity such that the relationship is stronger for the individuals with a high level of masculinity.	Not Supported	.02 N.S.
H_{8b}: The relationship between intention to sell online and personal innovativeness will be moderated by masculinity such that the relationship is stronger for the individuals with a high level of masculinity.	Not Supported	-.03 N.S.

Table 40 (continued)

Hypotheses and Level of Support

Hypotheses	Level of Support	Coefficient (*t*-value)
H_{9a}: The relationship between intention to buy online and perceived usefulness will be moderated by masculinity such that the relationship is stronger for the individuals with a high level of masculinity.	Supported	.12 (2.11*)
H_{9b}: The relationship between intention to sell online and perceived usefulness will be moderated by masculinity such that the relationship is stronger for the individuals with a high level of masculinity.	Supported	.08 (1.51^{1})
H_{10a}: The relationship between intention to buy online and perceived ease of use will be moderated by masculinity such that the relationship is weaker for the individuals with a high level of masculinity.	Supported	-.17 (2.68**)
H_{10b}: The relationship between intention to sell online and perceived ease of use will be moderated by masculinity such that the relationship is weaker for the individuals with a high level of masculinity.	Not Supported	-.02 N.S.

Note. ** = significant at *p*-level .01; * = significant at *p*-level .05; 1 = significant at *p*-level .10; N.S. = not significant.

in the case of intention to sell online (H_{6b}). The influence of individualism/collectivism on the relationship between information privacy-security and intention was not significant in the intention to adopt online buying model (H_{7a}) but was significant in the intention to adopt online selling model at *p*-level of .10 (H_{7b}). It was hypothesized that masculinity/femininity will moderate the relationship between personal innovativeness and intention to buy and sell online. This influence was neither significant in the intention to adopt online buying model (H_{8a}) nor in the intention to adopt online selling model (H_{8b}). The moderating influence of masculinity/femininity on the relationship between perceived usefulness and intention to buy online was significant at *p*-level .05 (H_{9a}), and was significant at *p*-level .10 (H_{9b}) in the case of intention to sell online. The last set of hypotheses pertaining to the moderating influence of masculinity/femininity on the relationship between perceived ease of use and intention to buy and sell online was significant in the intention to adopt online buying model (H_{10a}, p-level .01) and non-significant in the intention to adopt online selling model (H_{10b}).

Summary

The procedures relevant to the analysis of data were discussed with special reference to data coding, data integrity checks, treatment of missing data, and demographics. Analysis of measurement models with the use of exploratory factor analysis was then described. Afterward, the application of structural equation modeling (SEM) to validate the proposed measurement and structural models was presented. Procedures pertaining to the examination of validity and reliability, as prescribed within the SEM approach, were laid out. The next chapter presents the discussion of results, contributions and limitations of this study along with suggestions for future research.

Chapter 5

DISCUSSION, CONTRIBUTIONS, AND FUTURE DIRECTIONS

Introduction

This chapter discusses the results of analysis in greater detail, explains the limitations, and presents the theoretical and practical contributions of this study. Finally, some future research threads are discussed.

Discussion

Constructs Having Direct Influence

Personal innovativeness (PI). Personal innovativeness signifies one's willingness to adopt a new technology/practice. It represents the orientation that includes but is not limited to risk taking, decision making independent of the other's judgment, and learning about new alternatives. Personal innovativeness was predicted to have positive impact on the intention to buy and sell online, and this impact was found to be significant in both models (Figures 6 & 7). The coefficient value of personal innovativeness in both models was slightly different (-0.16 in buying and -0.13 in selling) and significant at *p*-value of .01. The negative coefficients were due to the nature of coding, that is, the scale of personal innovativeness measured the lack of innovativeness. The significance of personal innovativeness in both models presumably showed that innovativeness is applicable to both intention to buy online and intention to sell online even though the actual use of the Web for selling was very minimal in the sample population (Table 15). The preceding speaks, perhaps, to the relevance of personal innovativeness in the adoption of a technology. An innovative person may like to adopt a new technology even if s/he has never used it before.

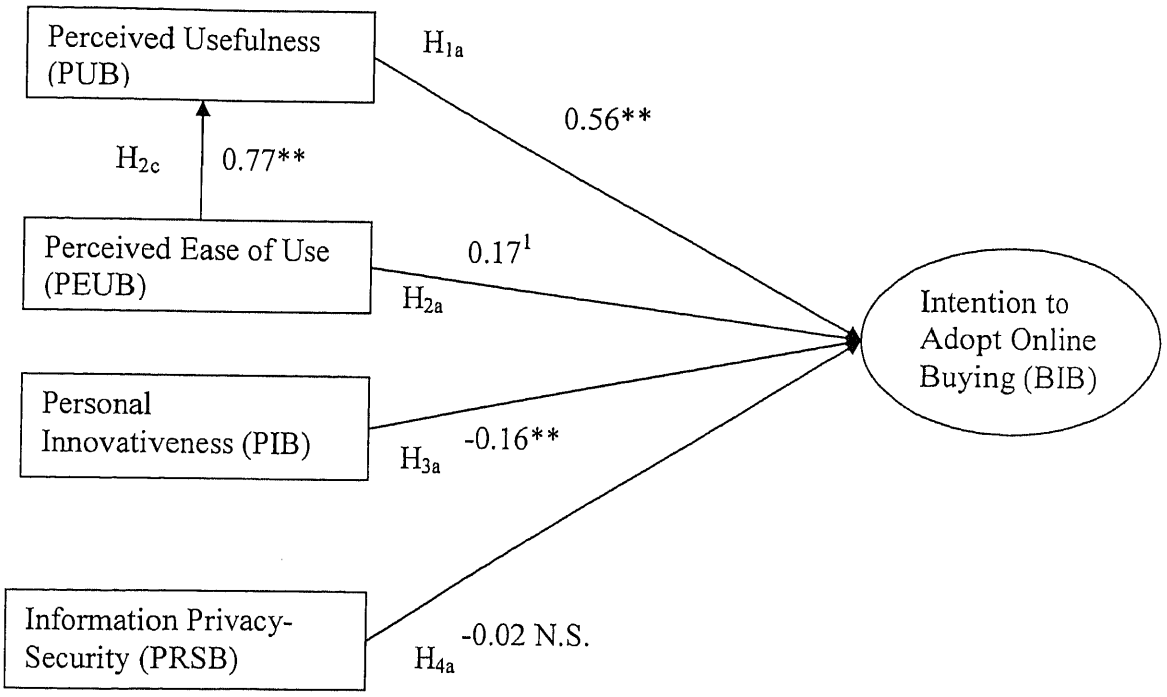

Figure 6. Structural model-Intention to adopt online buying. *Note*. ** = significant at *p*-level .01; * = significant at *p*-level .05; 1 = significant at *p*-level .10; N.S. = not significant.

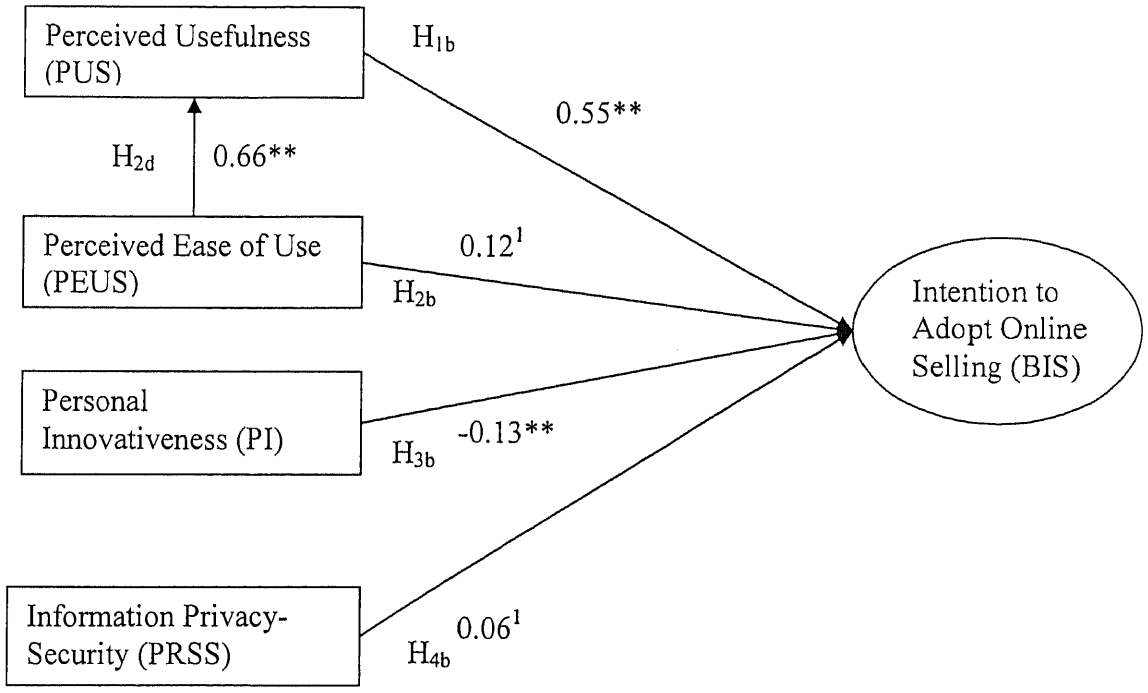

Figure 7. Structural model-Intention to adopt online selling. *Note.* ** = significant at *p*-level .01; * = significant at *p*-level .05; 1 = significant at *p*-level .10; N.S. = not significant.

In the current study, most of the subjects were not using the Web for selling but there was still an important relationship existing between personal innovativeness and intention to buy and sell online. This significant relationship has also validated the findings of other studies and showed the nomological validity of the theoretical foundation of this study. As far as previous research is concerned, Goldsmith (2000) noted that personal innovativeness explains the intention of online buyers and Park and Jun (2003) found that personal innovativeness impacts online buying intention for the subjects belonging to both Korea and the U.S.A; however, they did not find any interaction between nationality and innovativeness.

The moderating influence of cultural constructs on the relationship between personal innovativeness and behavioral intention was another important facet. It was hypothesized that the three cultural constructs (Individualism/Collectivism, Uncertainty Avoidance & Masculinity/Femininity) will have a moderating influence on the relationship between personal innovativeness and behavioral intention. Individualism/Collectivism (IDV) denotes the importance placed on personal versus collective goals. People with individualistic cultural values give more importance to personal skills and goals (Steenkamp et al., 1999), whereas innovative individuals usually make a choice independently—a trait that conceptually links innovativeness with individualism. Steenkamp et al. analyzed the relationship between Personal innovativeness and the cultural values of individualism/collectivism, uncertainty avoidance, and masculinity/femininity. The moderating relationship of individualism with personal innovativeness and behavioral intention was found to be significant; more specifically, they noted that the degree of individualism leaves a positive impact on

innovativeness. The subjects in the current study had demonstrated moderately collectivistic as well as personal innovative orientations (M_{IDV} = 3.06, M_{PI} = 2.96, Table 41). The predicted moderating relationship was significant at .05 *p*-level with a path coefficient of -.10 and *t*-value 1.95 (Figure 8); this moderating impact was, however, not significant in the intention to adopt online selling model (Figure 9). Despite this insignificance, the reduction in the path coefficient between personal innovativeness and behavioral intention-selling from -.13 (structural model Figure 7) to -.03 (Figure 9) represented support for a moderating impact of collectivism. As it was proposed that collectivism will negatively influence (reduce the strength of relationship between personal innovativeness and behavioral intention) the relationship between personal innovativeness and behavioral intention, therefore, it can be argued that a reduction in the path coefficient depicted the presence of the moderating impact, though not a significant one.

This said, however, a question remains: why was the moderating impact significant in the intention to adopt online buying model and not in intention to adopt online selling model? A plausible explanation for this finding can be that the strength of relationship between personal innovativeness and behavioral intention in the intention to adopt online buying model (path coefficient -.16, *t*-value 2.65) was greater than that of in the intention to adopt online selling model (path coefficient -.13, *t*-value 2.44). Collectivism did moderate the relationship, but owing to different nature of relationship between the personal innovativeness and behavioral intention (intention to adopt online buying model and intention to adopt online selling model), however differently in both models.

Table 41
Descriptive Statistics-Constructs' Mean Values

Construct	Mean
Personal Innovativeness (PI)	2.96
Perceived Ease of Use-Intention to Buy Online (PEUB)	3.43
Perceived Usefulness-Intention to Buy Online (PUB)	3.6
Information Privacy-Security Intention to Buy Online (PRSB)	3.8
Behavioral Intention Buying (BIB)	3.45
Perceived Ease of Use-Intention to Sell Online (PEUS)	3.14
Perceived Usefulness-Intention to Sell Online (PUS)	3.02
Information Privacy-Security Intention to Sell Online (PRSS)	3.67
Behavioral Intention Selling (BIS)	2.41
Individualism/Collectivism (IDV)	3.05
Uncertainty Avoidance (UAI)	4.04
Masculinity/Femininity (MAS)	3.57

Note. The scale of items making up each of the constructs was between 1-5.

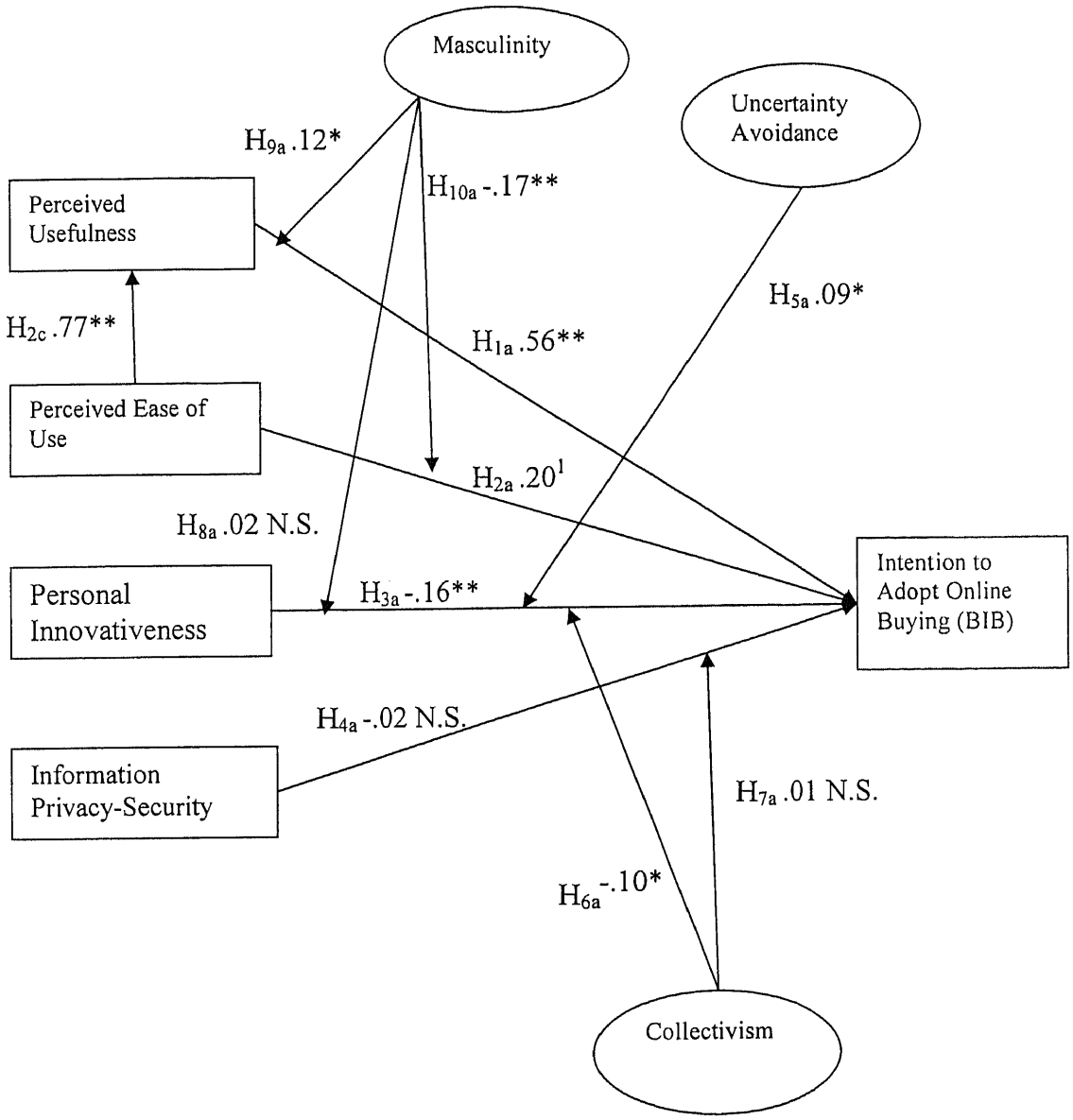

Figure 8. Structural model along with moderating cultural constructs-Intention to adopt online buying. *Note*. ** = significant at *p*-level .01; * = significant at *p*-level .05; 1 = significant at *p*-level .10; N.S. = not significant.

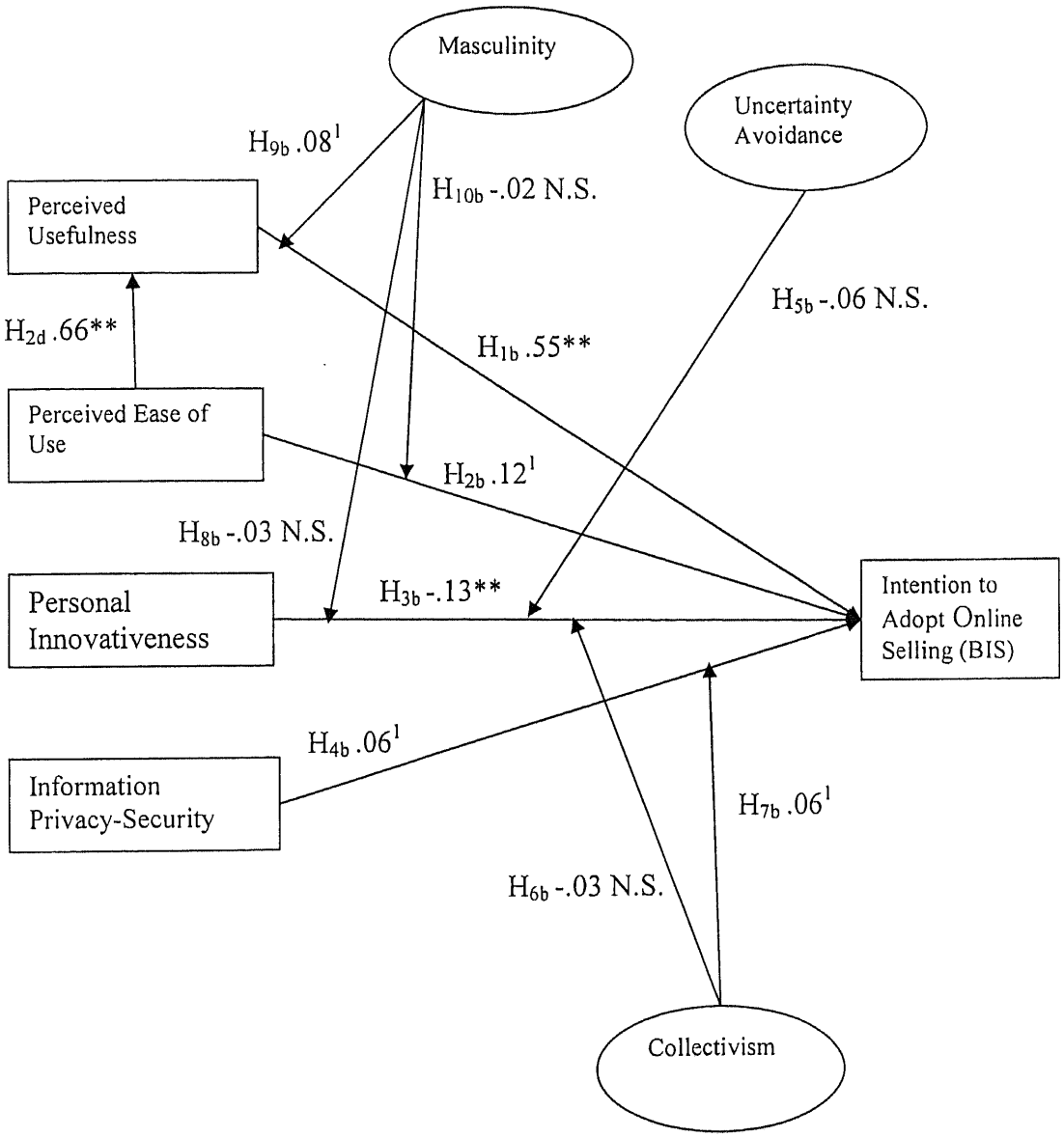

Figure 9. Structural model along with moderating cultural constructs-Intention to adopt online selling. *Note.* ** = significant at *p*-level .01; * = significant at *p*-level .05; 1 = significant at *p*-level .10; N.S. = not significant.

Another possible reason, somewhat connected to the preceding, can be the nature of the dependent construct itself; it can be the case that as participants had already perceived (maybe because of using) online buying more in alignment with their everyday life practices, so the cultural value of collectivism influenced significantly the relationship between personal innovativeness and behavioral intention. Online selling was perceived (perhaps due to lack of use or exposure) not in alignment of everyday life practices and thus the effect of cultural values was not significant. Yet another reason can be the very nature of buying and selling. As different processes (e.g., nature of information and money flows) are involved in buying compared with selling, it can be suggested that these differences may have resulted in a differing moderating effect of collectivism. The preceding reasons and/or explanations need further examination, and associated substantiation so a more concrete stance can be taken regarding the moderating impact of collectivism. This stance can shed light on the moderating role of collectivism, particularly, in a situation where two different but related practices are involved such as the situation present in this study having online buying and selling as two separate dependent constructs with associated independent, mediating, and moderating constructs.

According to Kale and Barnes (1992), cultures with high uncertainty avoidance show a resistance to change. Adoption of online buying and selling can be an important change for many people and having an aversion to uncertainty, which is usually associated with the adoption of any new practice, can hinder the adoption. It was thus predicted that uncertainty avoidance will negatively moderate the relationship between personal innovativeness and behavioral intention. The sample was oriented towards

certainty ($M = 4.04$, Table 41), i.e., high in uncertainty avoidance and with moderate personal innovativeness ($M = 2.96$, Table 41). A significant influence of uncertainty avoidance on the relationship between personal innovativeness and behavioral intention at p-level of .05 was found; the path coefficient was .09 with a t-value of 1.65 (Figure, 8). The path coefficient changed from -.16 (t-value 2.65) to .09 (t-value 1.65). The change in the sign of path coefficient represented the negative impact of uncertainty avoidance. No such significance was found in case of the intention to adopt online selling model where the path coefficient was -.06 with a t-value of .95. However, the change in the path coefficient was in the predicted direction. That is, uncertainty avoidance negatively moderated the relationship between personal innovativeness and behavioral intention. The difference in impact (only in terms of magnitude) of uncertainty avoidance on the relationship between personal innovativeness and behavioral intention in buying and selling models may have emerged due to differing conditions surrounding the dependent construct, specifically, the phenomenon of buying versus selling. Perhaps perception toward intention to sell online was being shaped by factors different from intention to buy online, factors that presumably resulted in the relationship between personal innovativeness and behavioral intention having a difference in magnitude as well as in terms of the moderating influence of uncertainty avoidance. There can be an influence of another construct, such as subjective norm[3], on online buying—an influence that was not presumably present in the case of online selling as most of the participants were not exposed to selling in their everyday life.

[3] "Person's perception that most people who are important to him think he should or should not perform the behavior in question" (Fishbein & Ajzen, 1975, p. 302).

Another predicted moderating impact was of masculinity on the relationship between personal innovativeness and behavioral intention. Masculine orientation is manifested through the inclination towards the acquisition of new products and technologies (e.g., Steenkamp et al., 1999), and this acquisition also demonstrates achievement to the individual (Yeniyurt & Townsend, 2003). The subjects in this study displayed an overall masculine orientation ($M = 3.57$, Table 41). The moderating impact of masculinity was not significant in either of the models (Figures 8 & 9). An interesting matter was that the path coefficient (between personal innovativeness and behavioral intention) in the intention to adopt online buying model was positive (.02, *t*-value .41, Figure 8) and negative in the intention to adopt online selling model (-.03, *t*-value .78, Figure 9). Despite having different and non-significant path coefficients, it can be stated that masculinity did have an impact as suggested by the change in the magnitude and direction of the coefficients. However, the preceding assertion needs further examination in future studies. This finding may have resulted due to the nature of the methodology used in analyzing the moderating impact of culture and/or weakness in the operationalization of the cultural construct of masculinity.

Perceived ease of use (PEU). The role of perceived ease of use is quite contested but despite the controversy about its role, its importance in the adoption process cannot be downplayed. Perceived ease of use shows the perception of a person about the extent to which use of a particular technology will be free of effort (Davis, 1989). It is related to the ideas of ease of use, ease of learning, and flexibility (Gefen & Straub, 2000), the concepts that are associated directly with the technology or practice in question. According to Gefen and Straub this is a noteworthy point because the direct (close)

association of perceived ease of use with the technology itself necessitates that a researcher distinguish between the task and the technology used to accomplish the task. It is this conception that, according to Gefen and Straub, has led to conflicting findings relating to perceived ease of use in adoption research. That is, if a research examined the adoption of a technology (e.g., effectiveness of searching information on a specific Web site) that was an end in itself (task was embedded in the technology) then most probably perceived ease of use emerged as a significant determinant of adoption (or intent to adopt). However, the case in which the task was not embedded in the technology (e.g., buying and selling online) then perceived ease of use, owing to its intrinsic nature, may not appear as an important predictor of the intention to use.

To delve more on the above, a brief discussion is presented about some of the research studies that used perceived ease of use as one of the predictors of intention to adopt a technology. For example, a study by Rose and Straub (1998) investigated personal computer (PC) utilization in the Arab World. The primary purpose of the study was to identify the factors the influence the utilization of the PC. It can be argued that in the study of Rose and Straub PC utilization represented a task that was embedded within the technology (PC) and hence ease of use should have a significant impact on the utilization that it had—a line of reasoning supported by Gefen and Straub's (2000) thesis. Karahanna, Straub, and Chervany (1999) investigated the pre-adoption and post-adoption beliefs of potential adopters and users in relation to a new technology. They found that there were differences in terms of the set of factors that influenced each category, i.e., potential adopters and users. For instance, in the case of potential adopters normative pressures played a key role in influencing the intention to adopt, whereas attitude played

the same role in the case of users. As the adoption and continued use of a technology (Windows 3.0) was the prime concern of this study (making the technology as an end rather than a means); therefore, perceived ease of use should have had a significant impact on adoption and use of technology. Karahanna et al. found the effect of perceived ease of use to be significant in the potential adopters' category but not for users. Though the impact was significant in one category, nonetheless, the study exhibited a case in which the technology was an end and not a means.

In the current study, perceived ease of use was not significant either in the intention top adopt online selling model or intention to adopt online buying model at *p*-level of .05; however, it was significant at .10 *p*-level (Figures 6 & 7). A possible explanation for this insignificant impact can be given in the light of what has been presented above. That is, online buying and selling represent a task that is not embedded in the Web-which is the technology in question. The Web is used as a means to buy or sell something so the outcome (intention to adopt online buying and selling) is distinct from the Web itself. Another plausible explanation can be a possible deficiency in theoretical meaningfulness of this construct emerging while operationalizing this construct. Nevertheless, the first explanation seems to be more in line with the theoretical reasoning derived from the past studies as well as the empirical evidence gathered from the current study.

Regarding cultural factors, it was hypothesized that masculinity will moderate the relationship between perceived ease of use and behavioral intention. The cultural trait of masculinity represents the disposition towards earnings, recognition, advancement, and challenge (Hofstede, 1997). Perceived ease of use shows the orientations towards ease,

care, and relations: all that relate it to the opposite of masculinity, which is femininity, a trait that places value on relations, cooperation, and ease. In view of the foregoing, it can be suggested that masculinity will have a negative relationship with perceived ease of use and may also reduce the strength of the relationship, if present, between perceived ease of use and behavioral intention.

The analyses of the structural models (Figures 8 & 9) showed partial support for the above-mentioned thesis. The path coefficient between perceived ease of use and behavioral intention changed from .20 to -.17 in the intention to adopt online buying model (sig. *p*-level .01, Figure 8), and from .12 to -.02 in the intention to adopt online selling model (n.sig. Figure 9). The changes in the path coefficients, that is, from positive to negative probably showed support for the above-discussed argument. Masculinity had a negative impact on the relationship between perceived ease of use and behavioral intention, though it was significant only in the buying model. Nonetheless, basing on the findings, it can be stated that an inclination toward the acquisition of material things and status (a masculine tendency) can reduce the influence of a perception based on the importance of ease, relations, and care (as the case in perceived ease of use).

Perceived usefulness (PU). Perceived usefulness represents the perception of an individual pertaining to the benefit that can be gained by adopting a new practice. However, the perceived benefit need not to be strictly related to the practice in question. More specifically, perceived usefulness of a practice is formed by keeping in view the factors that are related to some other facets of an individual's life and s/he considers the adoption of current practice as adding value to those other facets (see e.g., Gefen & Straub, 2000). Perceived usefulness was found to have a significant positive influence on

behavioral intention both in the buying and selling models. The value of path coefficients in intention to adopt online buying model was 0.56 and in the intention to adopt online selling model was 0.55 (significant at *p*-level of .01). An important point to consider was that the majority of the participants in this study were not using the Web for selling (see Table 15) but still its usefulness, which may have an impact on some other facets of life, played an important role in shaping the intention to adopt online selling. In the case of intention to adopt online buying, however, the participants may have experienced its usefulness by using it. In the case of those who did not experience it, they probably still considered it important and beneficial for their life, thereby leading to a favorable intention toward buying. These findings were consistent with the findings of numerous research studies of the past. Gefen et al. (2003) posited that perceived usefulness, perceived ease of use and trust, and other constructs will have an influence on the intention to purchase online. The subjects were experienced repeat online shoppers and perceived usefulness emerged as the most significant direct predictor of intended use.

In another research study, McCloskey (2006) examined the role of ease of use, usefulness, and trust in electronic commerce usage. She found that perceived usefulness together with trust had a noteworthy influence on usage, whereas perceived ease of use had an impact on both perceived usefulness and trust but not on electronic commerce usage. Having the findings pertaining to perceived usefulness in line with the findings of other research studies strengthened the nomological validity of the theoretical framework of this study as well as of the network of hypothesized relationships as presented in both models-buying and selling.

It was hypothesized that the cultural trait of masculinity will moderate the relationship between perceived usefulness and behavioral intention. This position found support in the intention to adopt online buying model (sig. *p*-level .05), whereas in the intention to adopt online selling model was supported at *p*-level of .10. The path coefficients between perceived usefulness and behavioral intention had the following values: .12 (buying model) and .08 (selling model). Masculine orientation develops an affinity toward advancement and achievement (e.g., Hofstede, 1997; Steenkamp et al., 1999), whereas perceived usefulness indicates perception concerning the importance of a technology/practice in enhancing performance (Davis, 1989) and advancement (Srite & Karahanna, 2006). The presence of a moderating affect of masculinity did support the reasoning postulating a connection between perceived usefulness and masculinity and also strengthened the nomological validity of the theoretical framework of this study.

Information privacy-security. Information privacy-security captures the users' concern regarding access to personal information as well as their perception pertaining to the mechanisms in place to safeguard the information from intrusions. Information privacy-security has been and is becoming a very important research topic. Though numerous studies have analyzed it, there is still a lack of a coherent theoretical and operational framework that could be used to examine the role of information privacy-security in shaping individual behavior.

It was proposed in this study that information privacy-security concern will have a negative impact on the behavioral intention of users. This hypothesis did not find support in either of the models; in the intention to adopt online buying model the coefficient was in the predicted direction (Figure 6), but in the intention to adopt online selling model it

was not though it was significant at the *p*-level of .10 (Figure 7). Lack of a significant effect of information privacy-security has been noted in other studies, too. For example, McCloskey (2003/2004) stated that despite having a mention of privacy-security concerns in the literature, as an impediment to electronic commerce adoption, these concerns (in her study) did not appear to have a noteworthy influence on electronic commerce participation.

In a study by Miyazaki and Fernandez (2001), information privacy and security concerns were proposed to be negatively influencing online purchase rate. They found that though privacy was an important concern it still did not have a significant impact on the online purchase rate, whereas system security (a dimension of security in their study) had a significant impact.

In the context of aforementioned studies as well as the findings of this study, some plausible explanations can be given: though the participants considered the concern of information privacy-security important enough that it appeared in the predicted direction (intention to adopt online buying model), however this concern was still not as deeply rooted among the participants that could make it a restraining factor as far as intention to buy online is concerned. Another possible reason can be the sample itself, that is, as the sample was a student population with majority of them (58.6%) between 17-22 years (Table 14) they may even not have considered the concern of information privacy-security in way that a population more mature in age may have considered it. In terms of intention to adopt online selling model, the coefficient was significant (*p*-level .10) but not in the predicted direction. Perhaps, owing to the non-use of selling (see Table 15), the participants did not view the information privacy-security in the same way as

they did in the case of buying: a statement that needs further examination in future research. It can be the case that people perceive the same factors relating to a phenomenon in a way dependent on either the present use of the phenomenon or its prospective use. Most of the participants in this study were not planning to use the Web for selling in the future (Table 15) and perhaps this disposition toward selling have led them not to view information privacy-security concern in a way that was the case in buying. Another reason of having this nature of findings can be the instability of the measuring scale itself, that is, the scale failed to measure the information privacy-security concern in a consistent manner. Despite having a set of findings that went against predictions, I believe that they have opened some interesting avenues for future research.

For instance, it would be worthwhile to see whether a construct behaves differently depending on the dispositions of people toward another, related construct. Also, a closer examination of the operational measures of information privacy-security concerns is needed to ascertain their validity, which could sustain itself beyond the confines of one or two studies.

From a cultural perspective, the dimension of individualism/collectivism has pertinence to information privacy-security. People having an individualistic orientation rely on fewer associations to shape their identity; in other words the identity is closer to ones own self rather than the self of others as can be the case for individuals with collectivistic orientation. This continuum of individualism/collectivism can leave an impact on the perceptions of people regarding information privacy-security concern and its relationship with another construct, which was behavioral intention to buy and sell online in this study.

It was hypothesized that the relationship between information privacy-security concern and intention to buy and sell online will be significantly weaker in the presence of collectivistic values, a stance that did not find support in either of the models. The sample displayed a moderately collectivistic orientation ($M = 3.06$, Table 41) and a high concern for information privacy-security in the cases of both the intention to adopt online buying model and the intention to adopt online selling model ($M_{buying} = 3.8$, $M_{selling} = 3.6$, Table 41). Having a collectivistic orientation suggested that the negative relationship of information privacy-security concern with intention to buy and sell online should be positive—a position that was found to be present both in buying and selling but without a significance (in the intention to adopt online selling model it was significant at p-level .10). The coefficient of information privacy-security was .01 in the intention to adopt online buying model and .06 in the intention to adopt online selling model (Figures 8 & 9). The coefficient values were different in both models but quite similar to the ones in the models without the moderators (Figures 6 & 7). The notable fact was the change of coefficient sign in the case of the intention to adopt online buying model, representing, perhaps, a moderating impact of collectivistic values. This change did not appear in the case of the intention to adopt online selling model; this could have happened either due to the issues associated with the dimension of information privacy-security that are discussed above. Regarding the intention to adopt online selling model, it is difficult to state with confidence anything more about the moderating impact of culture, a finding that requires future investigation to have a better understanding of the moderating impact of individualism/collectivism.

Construct Having Mediating Influence

Perceived usefulness (PU). Mediators convey the influence of one factor toward another. To mediate, it is important that a mediator has a relationship with both, that is, one whose influence is being mediated and the other to whom it is being mediated. The role of perceived usefulness as a mediator needs to be first examined by studying perceived ease of use, as it is perceived ease of use whose influence is being mediated. Davis, Bagozzi, and Warshaw (1989) compared the theory of reasoned action (TRA) and the technology acceptance model (TAM), and analyzed the constructs of TRA and TAM. They wrote that perceived ease of use will influence the behavior through self-efficacy and instrumentality. The easier a system to use, greater will be the self-efficacy or sense of control over the use of a system. This feeling will directly impact the user's intention to use a system. Instrumentality, on the other hand, represents the role that the use of a system has in enhancing the performance. Davis et al. (1989) were of the opinion that instrumentality, which originates from perceived ease of use, will impact the intention through perceived usefulness. As perceived usefulness depicts the effectiveness of a technology in increasing the overall performance of a worker, along with potential benefits that may not relate directly to the task at hand, instrumentality arising from the perception of ease of use should travel through usefulness. This assertion was supported through various studies (e.g., Chin & Gopal, 1995; Pagani, 2004; Venkatesh & Davis, 1994), and corroborated further in the current study.

The mediating role of perceived usefulness was significant in both models, though the coefficient of path from perceived ease of use to perceived usefulness was higher in value (0.77) in the intention to adopt online buying model compared to that of the selling

model (0.66) (Figures 6 & 7). These path coefficients were significant at p-level of .01 with corresponding t-values of 12.24 and 12.05 for buying and selling models respectively.

Keeping in view the very low use of the Web for selling in this study (Table 15), the preceding finding was quite interesting. Though the majority of participants did not use or plan to use the Web for selling, still the perception of its ease of use significantly impacted the perception of usefulness. It can be the case that the instrumentality of using the Web for selling was considered important in increasing the collective effectiveness of Web buying and selling for other Web related or everyday life activities. In line of the discussion on the mediating role of perceived usefulness, as presented in Davis et al. (1989), it can be asserted that even if the direct effect of ease of use was not noteworthy on intention , its influence in the form of instrumentality can impact perceived usefulness and thus the intention. This finding possibly speaks to the two-dimensional influence of perceived ease of use as presented by Davis et al. The significance of structural paths joining perceived ease of use and perceived usefulness has added strength to the nomological validity of the theoretical framework of this study; furthermore, emergence of the significant mediating role of perceived usefulness has also increased the validity of its role as a mediator which has also been validated in various other studies (e.g., Gefen, 1997; Moore & Benbasat, 1991; Venkatesh, 1999).

Demographic Variables

Demographics are the characteristics that can be used to describe, identify, and classify a population. Use of demographic variables enable a researcher to form sub-groups within a target population and then to analyze the impact of these variables in

greater depth. One of the research questions in this study was to examine the relationship of demographic factors with the constructs, both predictors and criterion. To fulfill this purpose, information pertaining to numerous demographics was gathered. For instance, data relating to age, gender, nationality, computer knowledge, Internet knowledge etc. was examined to identify trends, if any.

Gender was found to be acting differently in terms of personal innovativeness, perceived ease of use, perceived usefulness (selling model), information privacy-security concern, behavioral intention (selling model), and individualism/collectivism (Table 17). Males were found to be having more innovative orientation towards online buying and selling ($M_{male} = 2.79$) compared with females ($M_{female} = 3.04$); likewise males perceived both online buying and selling easier to use ($M_{buying} = 3.61$, $M_{selling} = 3.29$) compared with females ($M_{buying} = 3.34$, $M_{selling} = 3.06$). Females seemed to be more concerned about information privacy-security ($M_{buying} = 3.87$, $M_{selling} = 3.73$) compared with males ($M_{buying} = 3.65$, $M_{selling} = 3.55$). In terms of reasons to use the Web for buying, convenience was regarded differently by females as compared with males (Table 16). Males considered convenience as a more important reason to use the Web for buying compared with females ($M_{males} = 2.18$, $M_{females} = 1.87$).

Nationality, another variable, was quite important within the context of this study. In the current study, cultural values were measured at the individual level and national level country scores were not used; therefore, it was important to use nationality to examine differences in the participants' cultural values. This was important as based on that examination, the validity of the claim that national level cultural values cannot be used to predict the individual level behavior could have been tested. Interestingly, no

significant difference was found between American and international students on the cultural dimensions of uncertainty avoidance and masculinity, while there was a significant difference on collectivism (Table 17). This finding showed plausibly that it is not necessary that individuals belonging to a certain country may exhibit the cultural orientation of that country—a thought that has been expressed elsewhere, too (e.g., McCoy et al., 2005). Another possible reason for not having any difference can be the sample; that is, there were 324 Americans compared to 82 international students, the international students further included participants from 14 different countries. This diversity of participants within the international sample may have muddled the cultural values and therefore no difference emerged. Rettie (2002) noted that people can assume multiple identities while using the Internet; suggesting that the Internet allows a user to act in a virtual environment differently than the face-to-face. He also stated that there is an emerging culture that is specific to the Internet. In view of Rettie's arguments, it can be posited that as the subjects were asked about an Internet-related technology (Web), the disposition of the subjects toward that technology was almost homogenous, thereby showing no difference between American and international students.

Computer knowledge and Internet knowledge were the other two variables that were studied for their influence. Having more knowledge of a certain technology or practice should, logically, increase the probability of using that technology provided that the user evaluated it positively. Li et al. (1999) proposed that the knowledge of a channel (which was the Web in their study) would increase the prospects of its use—an assertion that was supported when tested empirically. Computer knowledge and Internet knowledge both were found to significantly influence computer use and the Internet use,

respectively (Table 18). From a logical standpoint of view, more knowledge of a technology should also affect the perceptions that are related to some other dimensions of that technology. For example, more knowledge of the Web should develop a positive evaluation of its usefulness, ease of use, and actual usage. The perceptions of ease of use and usefulness did have a significant variance once computer and Internet knowledge were considered (Table 18). More favorable perceptions were present at the higher levels of knowledge, a finding that was also true in the case of personal innovativeness. A noteworthy role of knowledge is important from a theoretical as well as a practical perspective. This finding asks for a careful consideration of participants' knowledge when drawing inferences about the research questions and of the pivotal role of knowledge in developing a favorable attitude towards a practice and/or technology.

Contributions

Contribution to research. The contributions of this study to research can be found from two disciplinary lenses: one is of Library and Information Science and the other is of Information Systems. This demarcation was considered necessary in order to link the findings to the theoretical streams that are relevant to each of the above mentioned disciplines. Library and Information Science (LIS) is concerned with the interaction among bibliographic records, users, and intermediaries (Hjørland, 2003). However to achieve this objective a librarian/information professional should have a clear understanding of the organized information (bibliographic records) and then the user.

Library and information science (LIS). Based on the purpose of LIS as postulated by Hjørland, it can be argued that studies examining the user, intermediary, and bibliographic records (UIB), either in conjunction to each other or in isolation, should be of great value. These studies will increase our understanding of the nature of the UIB interaction itself and of the elements that are involved in it. Elaborating a bit further, studies analyzing user behavior (e.g., information behavior, adoption behavior- with a particular emphasis on the factors that either inhibit or foster the adoption of a technology/practice), intermediary (e.g., librarian, catalogue, book shelves, the Web and so on), and bibliographic records (classification systems and the resulting organization of information) will enhance our understanding of the UIB interaction at a higher level of analysis along with a holistic view of the interrelationship among the three constituents of UIB interaction. The studies of such a nature can and may take place over a long period of time, thus building a strong foundation for the theory dealing with human information behavior, in particular, and library and information science, in general. Having said that and providing the context, it is reasonable to state that the current study has specifically contributed to two facets of UIB interaction. By studying the behavioral intention, the current study has brought to fore the information regarding the behavior and its relationship with some of the factors that impinge on it to give it a certain shape when the behavioral disposition is evoked in the context of a certain task, which was intention to adopt online buying and selling in the current case. Within certain parameters, that is, having a similar kind of sample and setting as set forth by the context of this study, it can be stated that a user's behavior receives influence from factors that can be unique to ones personality. For example, personal innovativeness, perceived ease of use (pertinent to the

present task or matter at hand), and perceived usefulness (related to the present task as well as its relationship with other life matters). From a user's behavior standpoint, behavior takes a certain shape in a given context having influences from both personal and situational factors.

Another important dimension of UIB is the intermediary. The intermediary can be any entity, whether human or artificial, that facilitates the interaction between the bibliographic records and the user. Thus a librarian, card catalogue, book shelf, and Web all are intermediaries. The current study evaluated the use of the Web for buying and selling. Users were asked whether they would like to use the Web for buying and selling, thus making the Web an intermediary between the user and the task (buying and selling). However, the Web, on the other hand, also serves as a card catalogue because the information is organized on the Web and the Web pages containing that information are indexed so that a user can access the information. Therefore, like a card catalogue, the Web enables a user to identify the location of needed information (relevant Web page) and to access it. Having explored the factors that can hinder or facilitate the use of the Web for performing a certain task (e.g., buying and selling) can aid in understanding its use for the tasks that are quite pivotal in libraries and other information organizations; for example, searching for particular book/periodical/media items, seeking information on a topic, or simply browsing using the Web. Keeping in view the different nature of tasks, it is quite possible that the efficacy of the Web in performing these tasks will be different from the one found in this study. In an increasingly virtualized environment, libraries and information organizations are using the Web to disseminate information about their services, to provide access to information resources, and to organize their collections.

Knowledge of the factors that can increase the usability of the Web, for example through ease of use and usefulness, can help in designing the Web that will be user friendly on one hand and an effective disseminator-organizer-marketer on the other.

Information systems. Information Systems (IS) has charged itself with the objective of designing systems that can serve the information needs of users. Commenting on the nature of IS as a discipline, Gregor (2006) noted that this discipline is at the intersection of knowledge about artifacts and knowledge of human behavior—an assertion that speaks to the importance of connecting the artificial, social, and natural worlds. This kind of connection helps to design information systems that are sensitive to subtleties of human behavior and properties of contextual environment in which a system is going to be installed. Once a system is designed to serve user information needs, the realization of a system's objective depends on its adoption and subsequent use.

The Web is a kind of information system that helps a user to create, disseminate, and store information. According to Ranganathan and Ganapathy (2002), the Web is a storehouse of information, suggesting that it performs some of the functions of an IS. However, the Web's ability to perform its function rests on its adoption. Apart from the inherent characteristics of an IS, there are other personal, organizational, and cultural factors that also influence the adoption of an IS.

In the virtual environment, the Web plays a pivotal role in facilitating and completing various tasks, e.g., buying, selling, information seeking and searching. Online buying and selling is one of the tasks that is accomplished using the Web. In view of the importance of Web adoption, the research on online buying and selling has extensively focused on this issue. During these explorations, as noted by Cheung et al. (2005),

scholars have used factors that were related to personality, medium, product/service, environment, and merchant/intermediary to examine their impact on intention/adoption. Despite having a plethora of studies on online buying and selling, the research on it is considered to be fragmentary along with contradictory findings (Cheung et al., 2005; Monsuwé et al., 2004). One of the factors contributing to this state is the lack of a theoretical framework, that is, a framework including such a store of concepts, which could link all the involved concepts to the intention/adoption in a clear manner. Witness to this is the role of culture in the online buying and selling adoption research. The role of culture in the adoption of online buying and selling is not yet clear because culture was conceptualized at the national level and subsequently this level was considered to be influencing the individual's adoption of online buying and selling. This approach resulted in the lack of a theoretical link between individual cultural values and the adoption of online buying and selling (e.g., Srite, 2000).

The present study has used the well-established theoretical streams of diffusion of innovations and technology acceptance model to develop models that could represent, partly, the factors that influence the intention to adopt online buying and selling. This theoretical framework may prove to be a good foundation for future research on online buying and selling, as it has integrated the concepts from diverse, yet relevant, traditions; an effort considered by Douglas, Morrin, and Craig (1994) to be of value in constructing a valid theoretical framework.

Additionally, cultural values were conceptualized at an individual level and thence a set of statements were developed that provided plausible theoretical links between the intention to adopt online buying and selling and individual-level cultural

values. This study has thus made a two-fold theoretical contribution to IS. One is the development of a more concerted model to study online buying and selling, and the second is to theoretically link cultural values with the adoption of online buying and selling in particular and the adoption process in general.

Contribution to practice.

Library and information science (LIS). A founding principle of library and information science practice is to satisfy the user's information needs. To achieve this objective, collections are developed, reference services are provided, and other products/services as necessary are offered. In the post-Web era, access to collections (including information about their placement and access if available online) is provided using Web sites. The reference staff, on the other hand, is increasingly serving users not strictly in terms of satisfying information needs but also facilitating the user's whole experience while they are either at the library or accessing its catalogues electronically from a distant place. As users are using the Web for accessing the information resources of a library, assessment of ease of use and usefulness of the library's Web site is quite important. In the current study, perceived usefulness's role in the adoption of the Web was noteworthy, suggesting that having an assessment of a Web site's usefulness (from a user's point of view) can help in determining the extent to which the Web site will satisfy the user's information needs. Besides that, the usefulness of a Web site can even be promoted so that its use can be increased. Though ease of use was not as significant as required by conventional statistical principles, its role in increasing the use of the Web or another technology cannot be ignored. It is therefore suggested that both ease of use and usefulness of the Web in a library setting should be assessed and then promoted to

increase its use to access library collections and other online information resources. In doing so, it would be worthwhile to consider the differences in the roles of perceived ease of use and usefulness that can emerge depending on the use of the Web as a means or an end (as discussed in the section titled constructs having direct influence). Extending this line of reason a bit further, it will be important to state that usefulness of the library's collections should be promoted to increase the likelihood of use. On the other hand, ease of use of the library's services, e.g., interlibrary loan, Web site and so on should be showcased. Finally, while offering services and resources, segmentation of the user population can be done on the basis of pre-assessed demographic, personal, and possibly cultural traits to enhance the effectiveness of the library/information organization's services in meeting users' information needs.

Information systems. Design of an information system is of such an important nature that it must be carefully crafted to increase the chances of creating what is needed and also having a system accepted by a user community. Then design phase has to include the elements that are relevant to the purpose of a system and its prospects of adoption. The afore-mentioned considerations also apply to Web sites. The ubiquitous use of Web sites, as an information system or an interface between a system and a user, to serve diverse needs of users makes it important to consider the design phase very carefully and take into consideration a system-user perspective.

The present study has placed an enormous importance on the adoption of online buying and selling using the Web. In doing so, it occurred that factors relating to the design of a Web site, e.g., ease of its use, visible information privacy-security features, along with in-built information privacy-security mechanisms, play an important role in its

use. Usefulness, in this study, was not directly related to the design of a Web site. However, keeping in view its influence on the everyday life activities, it can be stated that consideration of usefulness of a system in meeting the immediate and non immediate task can be of great value at the design stage. From an adoption point of view, a well-integrated mechanism should be in-built in a system to protect information privacy-security. The information about this mechanism should be displayed visibly on the Web site. Consideration of ease of use, usefulness, and information privacy-security, among other, factors at the design stage can be helpful in developing an information system that will be welcomed by a user population.

Pre-tests (alpha and beta) of an information system can help in assessing its effectiveness in achieving the objective and analyzing the users views about using that system. Depending on the characteristics of a system as well as the user population, pre-tests can be very challenging and sometimes even difficult to do. This study has found (like many previous studies) that people having innovativeness are quite receptive to the idea of using a new technology/practice and also in its adoption. In the case where it would be difficult to perform pre-tests it can be helpful to identify a user population with innovativeness. This can help to do the pre-test and also to have users' views about the system.

Limitations

Limitations of a study inform a reader about the parameters within which the findings should be understood and interpreted. This helps a reader to clearly see the context and scope of a study. To achieve this purpose, limitations of this study were laid out. Findings of a study are usually of great interest, as they can help both in theory and

application. However, to do so, the sphere of generalizability should be ascertained clearly, which involves paying careful attention to sample characteristics and the behavior of constructs in the study.

Population characteristics determine the extent of generalizability. In the current study, the target population was a student body at a mid-western university, representing certain demographical and cultural values. It is quite possible that if the same phenomenon (online buying and selling) is studied in a different population (e.g., working professionals or housewives) a different set of behaviors may emerge. Therefore, it is cautioned that the findings of this study are not generalizable to every set of population, which is one of the limitations of this study.

International students were an important part of the sample. There were students from 14 different countries as well as 324 Americans. In consideration of the large number of countries represented through international students, it can be quite possible that responses regarding cultural values may have led to a mixed-up view about the individual cultural orientation of the international students. This is not strictly a limitation but rather a stance that cautions the reader about a population characteristic that may have played a significant role in shaping the final analysis.

Another limitation was the muddled role of information privacy-security. A majority of the participants (see Table 15) considered it an important concern; however, its role in the structural model remained unclear. Though there was a directional support for its postulated role in the intention to adopt online buying model it was not significant; on the other hand, information privacy-security was found to have a significant influence (p-level .10) in the intention to adopt online selling model but this influence was not in

the predicted direction. This may have appeared either due to the lack of theoretical correspondence between the scale of information privacy-security and the concept of information privacy-security or due to the characteristics of the sample population—a finding that needs further examination in future research.

Suggestions for Future Research

The suggestions below developed while analyzing the data, writing results, looking back at the literature, observing research questions in the light of findings, and then drawing conclusions. These suggestions speak to some of the riddles found in the data and also to theoretical underpinnings developed in this study and discussed in the literature.

1. Validity of a model and the resulting findings greatly rest on a re-test done in a setting similar to the original study. To assess the validity of the model and ensuing findings, it is therefore proposed that it should be re-tested with a different population but having a setting similar to this study.
2. The nature of a task can affect the behavioral disposition of the users—a matter that needs further examination. It is suggested that a task quite different from buying and selling should be made a focal point of study, and then the adoption of the Web for accomplishing this task should be examined. A possible task can be matchmaking or socializing using the Web.
3. It has been argued (e.g., Rettie, 2002) that the Internet has its own culture, and it is thus plausible that people may use two different set of values while interacting in-person compared with interacting online. To have a

better understanding of the role of cultural values in shaping intentions, the behavioral dispositions of people should be evaluated in relation to a task performed in two different settings. That is, a study including a comparison of buying and selling online versus buying and selling in a traditional market can be of great value. It can help in finding the unique patterns, if any, present in the ways the cultural values exhibit their influence in buying online versus buying in a traditional market.

4. Analysis of cultural values with a population that has American and international students, but having international students from two or three countries. This kind of investigation may provide a better view of the role of national-level cultural values. It may help to have a clearer idea about the cultural disposition at the group level (American compared with international).
5. Information privacy-security was considered an important concern by the population; however, it did not appear to have a noteworthy impact on intention. In view of the importance of information privacy-security as depicted in this study and the literature, it is worthwhile to undertake research that includes both the theoretical examinational of the construct of information privacy-security and development of a reliable measurement scale.
6. The Web is already in use at libraries for seeking/searching for information. It would be interesting to use some or all of the constructs used in the current research and the cultural values proposed in this study

to examine information seeking/searching behavior. Studies of this nature may help to enhance our understanding about human information behavior.

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Appendix A: Survey

Survey

Section I: Demographics

In this section, I am interested in the demographic information about you. Please circle the option that best represents your answer.

1. Gender: a. Male b. Female

2. Age (please specify): _____

3. Nationality? a. American b. Other (please specify) ----------

4. Class Rank: a. Freshman b. Sophomore c. Junior d. Senior e. Graduate f. Other

5. Major (please specify): _____

6. You access Internet most of the time from which of the following places. (Please check **one**).

a. Home b. Work c. School d. Friend/relative e. Cafe f. Other ----------

Section II: Computer & Internet Literacy

In this section I am interested in the information about your computer and Internet literacy. Please circle the option that best represents your answer.

7. Your knowledge about computers is:

a. Excellent b. Very good c. Good d. Fair e. Poor

8. If you use the computer, including online (Internet) and offline, e.g., word processing, spreadsheets etc., on average how many **HOURS** do you spend using computers per day? _____(please specify)

9. Your knowledge about the Internet is:

a. Excellent b. Very good c. Good d. Fair e. Poor

10. If you use the Internet, on average how many **HOURS** do you spend using the Internet per day? _____ (please specify)

11. When you use the Internet, for which of the following purposes do you use it (please rank them, where **1** being mostly used for, **2** commonly used for, **3** less frequently, **4** rarely and so on)

a. Academic [ ] b. Entertainment [ ] c. Buying [ ] d. Selling [ ]
e. Navigating/Surfing [ ]

12. The main reason of using the Web for buying is (please rank them, where **1** being most important, **2** important, **3** less important, **4** least important, and so on)

a. Quantity of Information [ ] b. Quality of Information [ ] c. Organization of Information [ ]
d. Convenience of Use [ ] e. Peer Pressure [ ] f. Price [ ]

13. The main reason of using the Web for selling is (please rank them, where **1** being most important, **2** important, **3** less important, **4** least important, and so on)

a. Quantity of Information [ ] b. Quality of Information [ ] c. Organization of Information [ ]

d. Convenience of Use [ ] e. Peer Pressure [ ] f. Price [ ]

14. If you don't use the Web for buying, the main reason is (please rank them, where **1** being most important, **2** important, **3** less important, **4** least important and so on)

a. Information Security Concern [ ] b. Information Privacy Concern [ ] c. Lack of Knowledge of Web buying [ ] d. Too much Information [ ] e. No need [ ]

15. If you don't use the Web for selling, the main reason is (please rank them, where **1** being most important, **2** important, **3** less important, **4** least important and so on)

a. Information Security Concern [ ] b. Information Privacy Concern [ ] c. Lack of Knowledge of Web selling [ ] d. Too much Information [ ] e. No need [ ]

16. I am or will be using the Web more for buying than for selling (please select one)

a. Strongly Disagree b. Disagree c. Neutral d. Agree e. Strongly agree

17. Do you think that you are or will be using the Web **more frequently** for (Select one only)

a. Buying b. Selling c. Buying and Selling d. Neither

18. On average, how many times you bought an item from the Web in last year (Please give a number)

19. On average, how many times you sold an item on the Web in last year (Please give a number)

20. What products do you usually buy from the Web?

Academic a. Strongly Disagree b. Disagree c. Neutral d. Agree e. Strongly agree

Health a. Strongly Disagree b. Disagree c. Neutral d. Agree e. Strongly agree

Entertainment/Travel a. Strongly Disagree b. Disagree c. Neutral d. Agree e. Strongly agree

Auto a. Strongly Disagree b. Disagree c. Neutral d. Agree e. Strongly agree

Others (Please specify)

21. What products do you usually sell on the Web?

Academic a. Strongly Disagree b. Disagree c. Neutral d. Agree e. Strongly agree

Health a. Strongly Disagree b. Disagree c. Neutral d. Agree e. Strongly agree

Entertainment/Travel a. Strongly Disagree b. Disagree c. Neutral d. Agree e. Strongly agree

Auto a. Strongly Disagree b. Disagree c. Neutral d. Agree e. Strongly agree

Others (Please specify)

Section III

(1) Strongly Disagree (SD). (2) Disagree (D). (3) Neutral (N). (4) Agree (A). (5) Strongly Agree (SA).

In this section, I am interested in the information about personal, technological, informational, and cultural factors that can influence the intention to use online buying/selling. Online buying/selling in this study is described as buying or selling of anything for personal use from Internet/Web/Online.

	SD	D	N	A	SA
1) In general, I am among the last of my friends to visit a company's new Web site when it appears on the Web	1	2	3	4	5
2) If I heard that a new retail site was available on the Web, I would not be interested in buying from it	1	2	3	4	5
3) If I heard that a new retail site was available on the Web, I would not be interested in selling on it	1	2	3	4	5
4) Compared to my friends, I seek out relatively little information over the Web	1	2	3	4	5
5) In general, I am the last in my circle of friends to know of any retail Web site	1	2	3	4	5
6) I will visit a new company's Web site even if I have not heard of it before	1	2	3	4	5
7) I know about new retail Web sites before most other people in my circle do	1	2	3	4	5
8) It is easy to purchase items over the Web	1	2	3	4	5
9) It is easy to sell items over the Web	1	2	3	4	5
10) Payments or delivery problems can be easily rectified with a Web vendor	1	2	3	4	5
11) Placing an order on the Web is easy to do	1	2	3	4	5
12) Selling on the Web is easy to do	1	2	3	4	5
13) Questions and problems can be easily addressed when making purchases over the Web	1	2	3	4	5

14) Questions and problems can be easily addressed when making sales over the Web

1 2 3 4 5

15) Buying products over the Web is easier for me than purchasing them from a store

1 2 3 4 5

16) Selling products over the Web is easier for me than selling personally

1 2 3 4 5

17) Buying on the Web saves me time 1 2 3 4 5

18) Selling on the Web saves me time 1 2 3 4 5

19) Buying things over the Web is more convenient 1 2 3 4 5

20) Selling things over the Web is more convenient 1 2 3 4 5

21) Buying on the Web is useful because products can be easily found and purchased

1 2 3 4 5

22) Selling on the Web is useful because products can be easily advertised and sold

1 2 3 4 5

23) Buying on the Web makes my life easier 1 2 3 4 5

24) Selling on the Web makes my life easier 1 2 3 4 5

25) I worry about providing personal information when purchasing items over the Web

1 2 3 4 5

26) I worry about providing personal information when selling items over the Web

1 2 3 4 5

27) I worry about providing financial information when purchasing items over the Web

1 2 3 4 5

28) I worry about providing financial information when selling items over the Web

1 2 3 4 5

29) I will not buy on the Web without a security statement 1 2 3 4 5

30) I will not sell on the Web without a security statement 1 2 3 4 5

31) I am concerned about the security of the Web 1 2 3 4 5

32) I buy from a Web site that has explicit security features, e.g., a lock sign, verisign stamp

1 2 3 4 5

33) I sell on a Web site that has explicit security features, e.g., a lock sign, verisign stamp

1 2 3 4 5

34) I intend to use the Web for buying 1 2 3 4 5

35) I intent to use the Web for selling 1 2 3 4 5

36) I intend to use the Web frequently for buying 1 2 3 4 5

37) I intend to use the Web frequently for selling 1 2 3 4 5

38) Given that I have access to the Web, it is more likely I would use it for buying

1 2 3 4 5

39) Given that I have access to the Web, it is more likely I would use it for selling

1 2 3 4 5

40) Being accepted as a member of a group is more important than having autonomy

1 2 3 4 5

41) Being accepted as a member of a group is more important than being independent

1 2 3 4 5

42) Group success is more important than individual success 1 2 3 4 5

43) Being loyal to a group is more important than individual gain

1 2 3 4 5

44) Individual rewards are not as important as group welfare 1 2 3 4 5

45) It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative 1 2 3 4 5

46) Rules and regulations are important because they inform workers what the organization expects of them

1 2 3 4 5

47) Order and structure are very important in a work environment

1 2 3 4 5

48) In a situation in which other peers evaluate me, I feel that clear and explicit guidelines should be used

1 2 3 4 5

49) It is important to help others on the job 1 2 3 4 5

50) It is important for me to have a job that provides an opportunity for advancement

1 2 3 4 5

51) It is important for me to work in a prestigious and successful organization

1 2 3 4 5

52) It is important for me to have a job that has an opportunity for high earnings

1 2 3 4 5

53) It is important that I outperform my classmates in school 1 2 3 4 5

54) It is important for me to work with classmates who cooperate well with one another

1 2 3 4 5

Appendix B: Application for Approval to use Human Subjects

For R&G Use Only Date approved _____	Approved by_____
Protocol No. _____ Full Review _____ Expedited Review _____	Exempted Review _____

Application for Approval to use Human Subjects

This application should be submitted, along with the Informed Consent Document and supplemental material, to the Institutional Review Board for Treatment of Human Subjects, Research and Grants Center, Plumb Hall 313F, Campus Box 4003.

This form must be typed. This form is available online at www.emporia.edu/research/docs/irbapp.doc.

1. Name of Principal Investigator(s) (Individual(s) administering the procedures):

   Waseem, Afzal

2. Departmental Affiliation: School of Library & Information Management

3. Person to whom notification should be sent: Waseem, Afzal

   Mailing Address: 1333 Merchant Street, Apartment No 305, Emporia, KS-66801

   Telephone: (620)757-0785 Email address: wafzal@emporia.edu

4. Title of Project: **Intention to Buy/Sell Online: A Model Depicting the Role of Individual, Technological, Informational Factors along with the Moderating Function of Cultural Traits.**

5. Funding Agency (if applicable): **N/A**

6. This is a: X dissertation ___thesis ___ class project ____other research Study

7. Time period for which you are requesting approval (maximum one year): from **July 2008** to **June 2009**. *If the research project extends past the end date requested, you will need to submit a request for a time extension or an annual update. This form is available at www.emporia.edu/research/docs/irbmod.doc.*

8. Project Purpose *(please be specific)*:

The purpose of current study is to empirically test a model that postulates a relationship between intention to buy/sell online (dependent variable) and various independent variables. This relationship will be tested with the use of a survey and approximately 15 minutes will be required to complete it.

9. Describe the proposed subjects: (*age, sex, race, expected number of participants, or other special characteristics, such as students in a specific class, etc.*)

Emporia State University Students

10. Describe how the subjects are to be selected. *If you are using archival information, you must submit documentation of authorization from applicable organization or entity.*

The Study Participants will be selected randomly.

11. Describe **in detail** the proposed procedures and benefit(s) of the project. This must be clear and detailed enough so that the IRB can assure that the University policy relative to research with human subjects is appropriately implemented. Any proposed experimental activities that are included in evaluation, research, development, demonstration, instruction, study, treatments, debriefing, questionnaires, and similar projects must be described here. **Copies of questionnaires, survey instruments, or tests should be attached.** (*Use additional page if necessary.*)

A survey will be used to collect the data. Instructions regarding the survey (its purpose) will be given before its administration. There is a possibility to change some of the items on survey depending on the initial responses of the subjects. However these potential changes will not change the purpose, the method, or the nature of the study.

Please find attached the Survey.

12. Will questionnaires, tests, or related research instruments not explained in question #11 be used?

_____ Yes __X__ No (*If yes, attach a copy to this application.*)

13. Will electrical or mechanical devices be applied to the subjects? _____Yes __X__ No (*If yes, attach a detailed description of the device(s) used and precautions and safeguards that will be taken.*)

14. Do the benefits of the research outweigh the risks to human subjects? _____ Yes ____ No (*If no, this information should be outlined here.*)

There are no risks at all.

15. Are there any possible emergencies which might arise in utilization of human subjects in this project?

_____ Yes __X__ No (*If yes, details of these emergencies should be provided here.*)

16. What provisions will you take for keeping research data private/secure? (*Be specific – refer to p. 3 of Guidelines.*)

All the data relating to the study will be kept strictly confidential. The researcher will keep the survey responses in safe custody. In addition the personal identification of any respondent will not be known owing to the nature of data collection method.

17. **Attach a copy of the informed consent document, as it will be used for your subjects.**

INVESTIGATOR'S ASSURANCE: I certify that the information provided in this request is complete and accurate. I understand that as Principal Investigator I have ultimate responsibility for the protection of the rights and welfare of human subjects and the ethical conduct of this research protocol. I agree to comply with all of ESU's policies and procedures, as well as with all applicable federal, state, and local laws regarding the protection of human subjects in research, including, but not limited to, the following:

- The project will be performed by qualified personnel according to the research protocol,
- I will maintain a copy of all questionnaires, survey instruments, interview questions, data collection instruments, and information sheets for human subjects,
- I will promptly request approval from ESU's IRB if any changes are made to the research protocol,
- I will report any adverse events that occur during the course of conducting the research to the IRB within 10 working days of the date of occurrence.

_____ _____

Signature of Principal Investigator Date

FACULTY ADVISOR'S/INSTRUCTOR'S ASSURANCE: By my signature on this research application, I certify that the student investigator is knowledgeable about the regulations and policies governing research with human subjects and has sufficient training and experience to conduct this particular study in accord with the approved protocol. In addition,

- I agree to meet with the student investigator on a regular basis to monitor study progress,
- Should problems arise during the course of this study, I agree to be available, personally, to supervise the principal investigator in solving them,
- I understand that as the faculty advisor/instructor on this project, I will be responsible for the performance of this research project.

_____ _____

Faculty advisor/instructor on project (if applicable) Date

Appendix C: Informed Consent Attached with the Survey

Informed Consent Attached with the Survey

Title: Intention to Buy and Sell Online: A Model Depicting the Role of Individual, Technological, Informational Factors along with the Moderating Function of Cultural Traits

Investigator: Waseem, Afzal

INFORMED CONSENT DOCUMENT

The School of **Library & Information Management** at Emporia State University supports the practice of protection for human subjects participating in research and related activities. The following information is provided so that you can decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time, and that if you do withdraw from the study, you will not be subjected to reprimand or any other form of reproach. Likewise, if you choose not to participate, you will not be subjected to reprimand or any other form of reproach.

The purpose of current study is to empirically test a model that postulates a relationship between intention to buy/sell online (dependent variable) and various independent variables. This relationship will be tested with the use of a survey and approximately 15 minutes will be required to complete it.

This study will provide a conceptual framework and empirical manifestation of a model that would be helpful in delineating and expanding the inventory of factors that either impact directly or indirectly the intention to buy/sell online. Keeping in view the multiplicity of the theories that have been employed in developing the model in this study, it is hoped that this study will provide new avenues of research within the specific context of Library & Information Science.

There is no risk at all in participating in this study. All the data collected will be kept confidential and the personal identification of any respondent will not be known in any case.

You are welcome to ask any questions about the study or any of the aspects related to the current research. You can contact the researcher at wafzal@emporia.edu or the chair of the dissertation committee, Dr. Gwen Alexander at galexan1@emporia.edu

Thank you in advance for your participation.

Waseem Afzal
Doctoral Student
wafzal@emporia.edu
School of Library & Information Management
Emporia State University
Emporia, Kansas.

"I have read the above statement and have been fully advised of the procedures to be used in this project. I understand that I will have the opportunity to ask questions about the study and the methods used at any time. I understand the potential risks involved and I assume them voluntarily. I likewise understand that I can withdraw from the study at any time without being subjected to reproach. I understand that by signing below, I am agreeing to participate in the study."

_____ _____

Subject Date

_____ _____

Parent or Guardian (if subject is a minor) Date

Appendix D: Items Used in the Final Analysis

Items Used in the Final Analysis

PERSONAL INNOVATIVENESS BUYING

1) In general, I am among the last of my friends to visit a company's new Web site when it appears on the Web

5) In general, I am the last in my circle of friends to know of any retail Web site

7) I know about new retail Web sites before most other people in my circle do

PERSONAL INNOVATIVENESS SELLING

1) In general, I am among the last of my friends to visit a company's new Web site when it appears on the Web

5) In general, I am the last in my circle of friends to know of any retail Web site

7) I know about new retail Web sites before most other people in my circle do

PERCEIVED EASE OF USE BUYING

8) It is easy to purchase items over the Web

10) Payments or delivery problems can be easily rectified with a Web vendor

13) Questions and problems can be easily addressed when making purchases over the Web

PERCEIVED EASE OF USE SELLING

9) It is easy to sell items over the Web

12) Selling on the Web is easy to do

PERCEIVED USEFULNESS BUYING

17) Buying on the Web saves me time

19) Buying things over the Web is more convenient

23) Buying on the Web makes my life easier

PERCEIEVED USEFULNESS SELLING

18) Selling on the Web saves me time

20) Selling things over the Web is more convenient

24) Selling on the Web makes my life easier

INFORMATION PRIVACY-SECURITY BUYING

25) I worry about providing personal information when purchasing items over the Web

27) I worry about providing financial information when purchasing items over the Web

31) I am concerned about the security of the Web

INFORMATION PRIVACY-SECURITY SELLING

26) I worry about providing personal information when selling items over the Web

28) I worry about providing financial information when selling items over the Web

31) I am concerned about the security of the Web

BEHAVIORAL INTENTION BUYING

34) I intend to use the Web for buying

36) I intend to use the Web frequently for buying

38) Given that I have access to the Web, it is more likely I would use it for buying

BEHAVIORAL INTENTION SELLING

35) I intent to use the Web for selling

37) I intend to use the Web frequently for selling

39) Given that I have access to the Web, it is more likely I would use it for selling

COLLECTIVISM

42) Group success is more important than individual success

43) Being loyal to a group is more important than individual gain

44) Individual rewards are not as important as group welfare

UNCERTAINTY AVOIDANCE

46) Rules and regulations are important because they inform workers what the organization expects of them

47) Order and structure are very important in a work environment

48) In a situation in which other peers evaluate me, I feel that clear and explicit guidelines should be used

MASCULINITY

51) It is important for me to work in a prestigious and successful organization

52) It is important for me to have a job that has an opportunity for high earnings

53) It is important that I outperform my classmates in school

Appendix E: Letter from ESU Institutional Review Board

EMPORIA STATE UNIVERSITY™

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620-341-5909 fax
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GRADUATE STUDIES AND RESEARCH
RESEARCH AND GRANTS CENTER
Campus Box 4003

August 12, 2008

Afzal Waseem
School of Library & Information Management
1333 Merchant Street, Apartment No. 305
Emporia, KS 66801

Dear Mr. Waseem:

Your application for approval to use human subjects, entitled "Intention to Buy/Sell Online: A Model Depicting the Role of Individual, Technological, Informational Factors along with the Moderating Function of Cultural Traits," has been reviewed. I am pleased to inform you that your application was approved and you may begin your research as outlined in your application materials.

The identification number for this research protocol is 09002 and it has been approved for the period July 2008 to June 2009.

If it is necessary to conduct research with subjects past this expiration date, it will be necessary to submit a request for a time extension. If the time period is longer than one year, you must submit an annual update. If there are any modifications to the original approved protocol, such as changes in survey instruments, changes in procedures, or changes to possible risks to subjects, you must submit a request for approval for modifications. The above requests should be submitted on the form Request for Time Extension, Annual Update, or Modification to Research Protocol. This form is available at www.emporia.edu/research/docs/irbmod.doc.

Requests for extensions should be submitted at least 30 days before the expiration date. Annual updates should be submitted within 30 days after each 12-month period. Modifications should be submitted as soon as it becomes evident that changes have occurred or will need to be made.

On behalf of the Institutional Review Board, I wish you success with your research project. If I can help you in any way, do not hesitate to contact me.

Sincerely,

Joella Mehrhof
Chair, Institutional Review Board

pf

Appendix F: Letter (extension) from ESU Institutional Review Board

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GRADUATE STUDIES AND RESEARCH
RESEARCH AND GRANTS CENTER
Campus Box 4003

July 28, 2009

Waseem Afzal
School of Library & Information Management
1333 Merchant Street, Apartment No 305
Emporia, KS 66801

Dear Mr. Afzal:

Your request for an extension of research protocol #09002 was approved and you may continue your research as outlined in your application materials. Your revised expiration date is 7/31/2010.

Please remember that if it is necessary to conduct research with subjects past this date, it will be necessary to submit a request for a time extension. If the time period is longer than one year, you must submit an annual update. If there are any modifications to the original approved protocol, such as changes in survey instruments, changes in procedures, or changes to possible risks to subjects, you must submit a request for approval for modifications.

Requests for extensions should be submitted at least 30 days before the expiration date. Annual updates should be submitted within 30 days after each 12-month period. Modifications should be submitted as soon as it becomes evident that changes have occurred or will need to be made.

I wish you continued success with your research project. If I can help you in any way, do not hesitate to contact me.

Sincerely,

Joella Mehrhof
Chair, Institutional Review Board

pf

Appendix G: Tables for Range and Missing Values

Table 12

Range of Values for the Variables

Variable	Minimum	Maximum
Gender	0	1
Nationality	0	1
Class Rank	0	6
Internet Access	0	18
Computer Knowledge	0	4
Internet Knowledge	0	4
Internet Use		
Academic	1	5
Entertainment	1	5
Buying	1	5
Selling	2	5
Navigating/Surfing	1	5
Reason of Web Use for Buying		
Quantity of Information	1	6
Quality of Information	1	6
Organization of Information	1	6
Convenience	1	6
Peer Pressure	1	6
Price	1	6
Reason of Web Use for Selling		
Quantity of Information	1	6
Quality of Information	1	6
Organization of Information	1	6
Convenience	1	6
Peer Pressure	1	6
Price	1	6
Lack of Web use for Buying		
Information Security	1	5
Information Privacy	1	5
Lack of Knowledge	1	6
Too much Information	1	5
No Need	1	5
Lack of Web use for Selling		
Information Security	1	5
Information Privacy	1	5
Lack of Knowledge	1	6
Too much Information	1	5

Table 12 (continued)

Range of Values for the Variables

Variable	Minimum	Maximum
No Need	1	5
Use of Web more for Buying than Selling	0	4
Use of Web more Frequently for	0	3
Buying of Products from Web		
Academic	0	4
Health	0	4
Entertainment/Travel	0	4
Auto	0	4
Selling of Products on Web		
Academic	0	4
Health	0	4
Entertainment/Travel	0	4
Auto	0	4
PI1	1	5
PI2	1	5
PI3	1	5
PI4	1	5
PI5	1	5
PI6	1	5
PI7	1	5
PEUB1	1	5
PEUS1	1	5
PEUB2	1	5
PEUB3	1	5
PEUS2	1	5
PEUB4	1	5
PEUS3	1	5
PUB1	1	5
PUS1	1	5
PUB2	1	5
PUS2	1	5
PUB3	1	5
PUS3	1	5
PUB4	1	5
PUS4	1	5
PUB5	1	5
PUS5	1	5
PRB1	1	5
PRS1	1	5
PRB2	1	5

Table 12 (continued)

Range of Values for the Variables

Variable	Minimum	Maximum
PRS2	1	5
SEB1	1	5
SES1	1	5
SEBS	1	5
SEB1	1	5
SES1	1	5
BIB1	1	5
BIS1	1	5
BIB2	1	5
BIS2	1	5
BIB3	1	5
BIS3	1	5
IDV1	1	5
IDV2	1	5
IDV3	1	5
IDV4	1	5
IDV5	1	5
IDV6	1	5
UAI1	1	5
UAI2	1	5
UAI3	1	5
MAS1	1	5
MAS2	1	5
MAS3	1	5
MAS4	1	5
MAS5	1	5
MAS6	1	5

Table 13

Missing Data

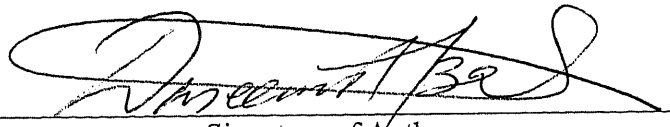
Variable	Total Responses	Missing	Percentage of the Missing Data
PI1	406	0	
PI2	405	1	0.24%
PI3	404	2	0.49%
PI4	405	1	0.24%
PI5	404	2	0.49%
PI6	402	4	0.98%
PI7	404	2	0.49%
PEUB1	405	1	0.24%
PEUS1	403	3	0.73%
PEUB2	402	4	0.98%
PEUB3	404	2	0.49%
PEUS2	405	1	0.24%
PEUB4	406	0	
PEUS3	403	3	0.73%
PUB1	406	0	
PUS1	404	2	0.49%
PUB2	406	0	
PUS2	403	3	0.73%
PUB3	406	0	
PUS3	402	4	0.98%
PUB4	405	1	0.24%
PUS4	333	73	18%
PUB5	406	0	
PUS5	399	7	1.7%
PRB1	406	0	
PRS1	404	2	0.49%
PRB2	406	0	
PRS2	403	3	0.73%
SEB1	406	0	
SES1	403	3	0.73%
SEBS	405	1	0.24%
SEB1	405	1	0.24%
SES1	397	9	2.21%
BIB1	405	1	0.24%
BIS1	405	1	0.24%
BIB2	406	0	
BIS2	403	3	0.73%
BIB3	406	0	
BIS3	404	2	0.49%
IDV1	402	4	0.98%
IDV2	405	1	0.24%
IDV3	404	2	0.49%

Table 13 (continued)

Missing Data

Variable	Total Responses	Missing	Percentage of the Missing Data
IDV4	405	1	0.24%
IDV5	402	4	0.98%
IDV6	406	0	____
UAI1	405	1	0.24%
UAI2	402	4	0.98%
UAI3	405	1	0.24%
MAS1	406	0	____
MAS2	406	0	____
MAS3	404	2	0.49%
MAS4	405	1	0.24%
MAS5	399	7	1.72%
MAS6	400	6	1.47%

I, Waseem Afzal, hereby submit this dissertation to Emporia State University as partial fulfillment of the requirements for a doctoral degree. I agree that the Library of the University may make it available for use in accordance with its regulations governing materials of this type. I further agree that quoting, photocopying, or other reproduction of this document is allowed for private study, scholarship (including teaching) and research purposes of a nonprofit nature. No copying which involves potential financial gain will be allowed without written permission of the author.



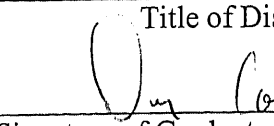
Signature of Author

2/10/2011

Date

The intention to buy and sell online: A model depicting the role of individual, technological, and informational factors along with the moderating function of cultural traits

Title of Dissertation



Signature of Graduate Office Staff Member

2-14-11

Date Received