

Literature Based Analysis of Risk Perception of Consumers in E-Commerce: A Study of Online Buying Behavior

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Abstract--Although electronic commerce (e-commerce) is expanding, online sales account for only a small percentage of the total retail sales. Of the factors that affect online consumers' purchasing intentions, one is perceived risk. Therefore, in order to minimize it, understanding of online consumers' risk perceptions and attitudes is needed. It is difficult to understand and predict people's reactions to risk posed by online hazards. Therefore, this research initiative studies online risk perceptions of consumers through literature survey.

Keywords---E-commerce, perceived risk, risk perceptions, online hazards

I. INTRODUCTION

INTERNET usage and electronic commerce (e-commerce) have been rapidly growing in the last few years and continue to grow. Corritore, Marble, Weidenbeck, Kracher, and Chandran (2005) stated that about 70 million users are using the Internet for various purposes daily in the United States. About 80% of households in North America and Northern Europe are expected to have broadband online access by 2010 (Hammond, 2001). According to Forrester Research, U.S. online retail sales are growing at an annual growth rate of 14% (Forrester Research US Ecommerce Forecast: Online Retail Sales to Reach \$329 Billion by 2010, 2005). Choi, Lee C., Lee H., and Subramani (2004) estimated that U.S. online retail sales will approach the \$105 billion dollars mark by 2007. Research US Ecommerce Forecast: Online Retail Sales to Reach \$329 Billion by 2010, 2005).

Choi, Lee C., Lee H., and Subramani (2004) estimated that U.S. online retail sales will approach the \$105 billion dollars mark by 2007. Forrester Research expects U.S. online retail sales to reach \$230 billion by 2008 and \$329 billion by 2010 (Forrester Research US Ecommerce Forecast: Online Retail Sales to Reach \$329 Billion by 2010, 2005; Johnson, Delhagen, & Yuen, 2003; Johnson, Leaver, & Yuen, 2004). However, online sales account for only a small percentage of the total retail sales. In fact, Su (2003) reported on the International Council of Shopping Centers' forecast that online sales in United States will account for only 5.3% of retail sales by 2010. Forecasts by Forester Research are slightly higher: 8% by 2007 and 13% by 2010 (Forrester Research US Ecommerce Forecast: Online Retail Sales to Reach \$329 Billion by 2010, 2005; Kim, Lee, K., Lee, D., Ferrin, & Rao, 2003). It is important to note that although many analysts such as Fraumeni (2001) and Occhipinti (2006) see great increases of e-commerce activity overtime, online sales cannot possibly represent 100% of total retail sales (Timiraos, 2006). In addition, discussions regarding potential portions of online sales are vague: Presently, there are no estimated limits to what the portion of online sales should be. There are many challenges that must be overcome, if online shopping is to reach its full potential. Bosworth (2006) stated, "consumers' increased wariness is costing online businesses billions of dollars in lost revenue" (p. 1). Bosworth (2006) further noted that online businesses lose \$3.8 billion in revenue annually, due to a lack of confidence on the part of consumers in current security measures provided for ecommerce.

There have been numerous studies of identifying factors that affect consumer behaviors (Chan & Limayem, 2005; Chi, Lin, & Tang, 2005; Dillon & Reif, 2006; Doolin, Dillon, & Corner, 2005; Shergill & Chen, 2005). Prior researchers have attempted to identify factors that influence traditional consumer behavior and which also may relate to consumer decision making and behavior in an online shopping environment (So, Wong, & Sculli, 2005).

Chi et al. (2005) reviewed several studies that identified different influences on the formation of beliefs regarding the usefulness, ease of use, innovativeness, and security. Chi et al. further noted, "Given the belief recurrence in theoretical models of consumer behavioral intentions towards online

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purchases, additional work is necessary to integrate these theories and compare the differences from a gender perspective" (p. 417). While trust is an important antecedent to the acceptance of online shopping, it has remained a very difficult concept to measure and define. The definition of trust has frequently varied from study to study. One definition has been dominant, thus trust as stated by Koufaris and Hampton-Sosa (2002a) is defined as: the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party, (p. 1) The initial formation of trust is dependent upon several antecedents including consumers' perceptions of web site quality and structural assurances (Wakefield, Stocks & Wilder, 2004). Risk perception is another antecedent to online shopping that is frequently included in e-commerce studies. There are several risks that the consumer could encounter when engaging in online commerce including personal risk, economic risk, and privacy risk (Wakefield et al., 2004).

II. PERCEIVED RISK

Perceived risk is one of the factors affecting online consumers' purchasing intentions. In fact, Bhatnagar, Misra, and Rao (2000), Featherman and Wells (2004), and Kanungo and Jain (2004) noted the negative relationship between perceived risk and purchasing intentions. Chang (2003) saw the perceived risk of engaging in an online transaction as a major barrier to the online shopping adoption. Corbitt and Van Canh (2005) and Miyazaki and Fernandez (2001) claimed that consumer risk perceptions block the growth of e-commerce. Corbitt and Van Canh stated that more than 50% of online users do not purchase online due to high perceived risk. Reduction of online consumers' risk perceptions is critical in order to attract new customers and retain existing ones (Jarvenpaa & Tractinsky, 1999; Verhagen & Tan, 2004; Verhagen, Tan, & Meents, 2004). In fact, Verhagen et al. (2004) reported that perceptions of trust and risk account for 49% of online purchasing decisions. Therefore, understanding of online consumers' risk perceptions and attitudes is desperately needed. People mentally organize information, attitudes, and images about an environment in so-called "cognitive maps." Cognitive maps help people to understand the environment (Kitchin, 1994). Although cognitive maps vary from person to person, a common cognitive map for the entire targeted population may be uncovered by utilizing a sample that represents the target audience. The problem is that no cognitive maps of people's e-commerce-related risk perceptions and attitudes have been captured yet. As a consequence, it is difficult to understand and predict people's reactions to risk posed by online hazards. Therefore, a research study of e-commerce-related risk perceptions that aimed to uncover a cognitive map of people's online risk perceptions and attitudes was conducted. The developed cognitive map would aid researchers to understand and predict consumers' responses to risks posed by online hazards. Cognitive maps are produced using the psychometric paradigm (Marris, Langford, Saunderson, & O'Riordan, 1997; Slovic, 1987). Rohrmann (1999) emphasized that the

psychometric approach is popular in a risk perception research worldwide.

III. DIMENSIONS OF PERCEIVED RISK IN PRODUCT PURCHASE IN E-COMMERCE SETTINGS

The following are the major dimensions of consumers' perceived risk that are carved out of the literature review:

TABLE I
DIMENSIONS OF PERCEIVED RISK AFFECTING ONLINE PURCHASE

Variable		Related Literature
Economic risk/ Financial Risk	The potential monetary outlay associated with the initial purchase price as well as the subsequent maintenance cost of the product, and the potential financial loss due to fraud	(Cunningham S. , 1967) (Stone & Grønhaug, 1993) Bhatnagar et al. (2000) (Crespo, del, Bosque, & Sanchez, 2009)
Privacy risk	Potential loss of control over personal information, when the information is used without permission.	(Cunningham S. , 1967)
Time risk	Potential loss of time associated with making a bad purchasing decision by wasting time researching, shopping, or have to replace the unexpected goods.	(Cunningham S. , 1967) (Stone & Grønhaug, 1993) (Crespo, del, Bosque, & Sanchez, 2009)
Performance Risk	The Performance Risk category included skill level, frequency of searching, and frequency of browsing variables.	Andrade (2000)
Product and Services Risk	The PRP was defined as the overall amount of uncertainty and/or anxiety perceived by a consumer in an online purchase of a product or service. There were five types of PRP: functional loss, financial loss, time loss, opportunity loss, and overall perceived risk with product or service.	Ahn et al. (2001)
Online Transaction Risk	A possible transaction risk a consumer faces with while engaged in an electronic commerce activity. There were four types of PRT: privacy, security (authentication), non-repudiation, and overall perceived risk of an online transaction.	Ahn et al. (2001)
Health risk	Potential loss of health because of prolonged use of computer will cause fatigue or visually impaired pressure on one's heart, or buying counterfeit products which is harmful to one's health.	(Pavlou & Featherman, 2003)

Quality risk	The possibility of the product malfunctioning and not performing as it was designed and advertised and therefore failing to deliver the desired benefits	(Cunningham, Gerlach, M.D.Harper, & Young, 2005)
Delivery risk	Potential loss of delivery associated with goods lost, goods damaged and sent to the wrong place after shopping.	(Yu, Dong, & Liu, 2007)
After-sale risk	Potential loss of after-sales associated with products problems, commercial disputes, and service guarantee.	(Yu, Dong, & Liu, 2007)
Social risk	Potential loss of status in one's social group as a result of adopting a product or service, looking foolish or unpopular.	(Cunningham S., 1967) (Stone & Grønhaug, 1993) (Crespo, del, Bosque, & Sanchez, 2009)
Purchasing Behavior	The possibility of consumer behavior to doubt, give up, cut down spending, cut down frequency, and to put off one's purchasing because of perceived risks.	(Zhang, Tan, Xu, & Tan, 2012)

IV. RELEVANCE AND SIGNIFICANCE

Limayem and Khalifa (2000) emphasized that an online shopping is completely different from a traditional shopping. Therefore, it is vital to understand online consumers' behavior. In addition, factors affecting purchasing decision need to be carefully studied. Featherman and Wells (2004) noted that understanding of perceived risk is the key to success for electronic commerce. In fact, Belanger and Carter (2005), Cheung and Lee (2000), Corritore et al. (2005), and Jarvenpaa and Tractinsky (1999) studied perceived risk as part of a trust construct. Featherman and Pavlou (2002) and Kanungo and Jain (2004) studied perceived risk in the context of a technology acceptance model. Teo and Young (2003) studied perceived risk as part of the consumer decision model. Featherman and Wells (2004) and Featherman, Valacich, and Wells (2006) studied the impact of artificiality on perceived risk. Ha (2002) studied the effect of consumer information processing on consumers' perception of risks during the pre-purchase stage. Kim and Prabhakar (2000) studied the role of trust and risk in e-banking.

McKnight, Kacmar, and Choudhury (2003) studied the impact of trust and distrust on perceived risk. Miyazaki and Fernandez (2001) studied perceived risk related to privacy and security and its effect on the shopping activity. Salam, Rao, and Pegels (2003) studied factors that reduce risk perceptions. Verhagen and Tan (2004) studied effects of trust and risk on purchasing activity in a C2C environment. This paper, however, studied risk per se in B2C environment.

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