

The Influence of Risk Perception in Online Purchasing Behavior: Examination of an Early-Stage Online Market

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Abstract

The study investigates the influence of Saudi Arabian consumers' perceived risk in online shopping on the process of e-commerce adoption. The Technology Acceptance Model (TAM) (Davis, 1989), is taken as a reference framework for this study to predict attitudes towards internet shopping and online purchase intentions in an early stage market. Six types of perceived risk dimensions were investigated including; financial, social, performance, time, psychological, and privacy risks. Data were obtained from 320 Saudi Arabian internet users. Results in general suggest that consumers' perceived risk has a strong negative effect on consumer's attitude and intention to shop in the internet. Consumers perceived privacy and psychological risks as the most significant risk factors affecting internet shopping, followed closely by performance and financial risks.

Key Words: Risk Perception; Internet Shopping; E-Commerce; Saudi Arabia; Consumer Behavior.

Introduction

The introduction of the internet as a shopping channel offered a new opportunity for both manufacturers and retailers to reach potential consumers in a more efficient way. Yet, it represents a challenge for retailers to understand online consumer behavior and adjust marketing strategies accordingly. Using the internet as a shopping channel has witnessed a rapid growth during the past decade. Despite this steady growth, online sales are still accounts for a small percentage (7%) of total consumer sales (Forrester report, 2010).

Previous literature indicated that consumers' perceived risk during online purchasing influences their intention of doing so (O'cass, 2001; Shih, 2004; Salisbury et al., 2001; O'cass and Fenech, 2003; Park, Lee, and Ahn, 2004; Pavlou, 2003; and Van der Heijden, Verhagen, and Creemer, 2003). Before purchasing a product, a consumer typically considers the various risks associated with the purchase. In this perspective, this study will attempt to investigate the influence of consumers' perceived risk in online shopping on attitude and intention towards e-commerce adoption in Saudi Arabia. Specifically, the perceived risk will be investigated as a multidimensional concept, where investigating it as a one-dimensional perspective is the predominant in internet literature. It helps in explaining not only do consumers face risk during online shopping, but explains the kind of risks consumers face when shopping online.

Direct marketing literature concluded that consumers associated a higher level of risk during none-store purchase than store purchase decisions (Akaah and Korgaonkar, 1988; Fenech and O'cass, 2001; Shih, 2004; Salisbury et al., 2001; O'cass and Fenech, 2003; Park, Lee, and Ahn, 2004; Pavlou, 2003). Since internet shopping is a new and innovative way of direct marketing, what information do we have about risks consumers perceive during online shopping? Hence, the Technology Acceptance Model (TAM)

(Davis, 1989), and an Extended E-commerce Acceptance Model (Herrero Crespo, Bosque, and Salmones Sanchez, 2009) including constructs of perceived risk, were used as a reference framework for this study.

The Technology Acceptance Model

The technology Acceptance Model (TAM) developed by Davis (1989) were adopted from the Theory of Reasoned Action (Ajzen and Fishbien, 1980) which is designed to explain human behaviors in general. In accordance with this theory, the TAM proposes that the use of computers is determined by behavioral intention, which measures individual's intention to perform a specific behavior. The TAM proposes two specific beliefs; perceived ease of use and perceived usefulness, which determine individual's intention to use a technology. It assumes that perceived usefulness will be influenced by the perceived ease of use of the technology. Similarly, the perceived ease of use influences both, attitude towards the technology and perceived usefulness of it. The model represents the most widely applied theoretical framework in information systems in general and in internet marketing in particular (Lee, Kozar, and Larsen, 2003). The theory addresses attention to the investigation of beliefs that influences individual's attitude and intention (Davis, Bagozzi, and Warshaw, 19989). It has received extensive empirical support through validations, applications, and replications. Moreover, it has demonstrated to be a useful theoretical model in explaining and understanding user behavior in technology implementation. Specifically, studies investigating internet shopping adoption supports the main relationships proposed on it (Salisbury et al. 2001; Fenech and Fenech and O'Cass 2001; O'Cass and Fenech 2003, Herrero Crespo et al. 2009; Shih 2004).

Online shopping in Saudi Arabia

The internet was introduced in Saudi Arabia in 1998. During 2001, there were one million users and around 9.6 million users in the beginning of 2009 with a 35% annual growth and 38% usage among the population, while usage among the rest of the world is 28.7% (World Internet User Statistics report, 2010). The total annual online sale in Saudi Arabia has increased throughout the years \$278 million during 2002, \$556 million during 2005 and \$800 million during 2009. This sales figure in 2009 is accounted for %20 of total electronic trade in the country, which estimated at 15 billion Saudi riyals, with an average S.R. 400 per transaction (Alriyadh, July 7th, 2010). The Saudi population is a predominantly young and computer savvy generation, and internet penetration is on the rise which creates higher demand for internet usage and maybe more online purchases. Moreover, the Saudi Arabian market is considered the largest in the Middle East, with forecasted average annual private consumption growth at 7.9% between 2011 and 2014 (Business Monitor International, 2010). Although there is a good body of research regarding online shopping in general in developed countries, there is still shortage in research regarding developing countries.

Earlier research regarding information technology adoption has showed that social and cultural aspects may cause significant resistance to adopt new technology (Abdul-Gader, 1999). However, along with the above mentioned statistics, globalization, and increasing technology consumption in developing countries, there is a need to better understand e-commerce adoption and specifically risk perception of internet shopping in developing countries.

Perceived Risk

The concept of risk perception is defined by Dawling and Staelin (1994) as "the consumer's perception of the uncertainty and adverse consequences of buying a product or service" (p. 119). Hence, risk perception can be considered as a belief about the potential uncertain negative outcomes of a behavior and the consequence attributed to that loss. Researchers have investigated consumers' perceived risk while purchasing through multiple retail channels like, telephone shopping (Cox and Rich, 1967), direct marketing (Akaah and Korgaonkar, 1988), catalogue shopping (Eastlick and Feinberg, 1999), and online

shopping (O'cass, 2001; Shih, 2004; Salisburry et al., 2001; O'cass and Fenech, 2003; Park, Lee, and Ahn, 2004; Pavlou, 2003; Van der Heijden, Verhagen, and Creemer, 2003).

Risk perception has been introduced in consumer behavior and marketing literature in early 60's (Bauer, 1960), and in the context of online shopping research with the introduction of residential internet in early 1990's (Jarvanpaa and Todd, 1997; Jarvenpaa and Tractinsky 1999; and Mitchell, 1999). Research indicated that perceived risk in online shopping has a negative effect on e-commerce adoption (Heijen, Verhagenm, and Creemers, 2003: Park, Lee, and Ahn 2004), attitude towards online shopping (O'cass 2001, Shih 2004, Heijen, et al., 2003) and intention to adopt online shopping (Joines, Scherer, and Scheufele 2003; Korgaonkar and Wolin, 1999; Salisburry, Pearson, and Miller, 2001). Although previous research shows that consumers perceive benefits of the internet (Salisbury et al. 2001; O'cass and Fenech 2003; Park, Lee, and Ahn 2004; Shih 2004), they at the same time perceive risk when shopping in non-store format (Jarvenpaa and Todd (1997) and Featherman and Pavlou (2003). Using the above model and the reviewed literature the following hypotheses were formulated:

H1: Perceived risk in e-commerce negatively influences attitude to shop online.

H2: Perceived risk in e-commerce negatively influences intention to shop online.

H3: Perceived risk in e-commerce negatively influences perceived usefulness to shop online.

H3: Perceived risk in e-commerce negatively influences perceived ease of use to shop online.

Since the concept of perceived risk introduced in the marketing literature, several dimensions of risk have been identified. The most established risk dimensions include, financial risk, performance risk, psychological risk, social risk, time risk, and privacy risk (Forsythe and Shi, 2003; Forsythe, Liu, Shannon, and Gardener, 2006, Bhatnagar, Misra, and Rao, 2000) . Definition for each risk dimension and the most important studies related to the subject matter are shown in table 1.

Table 1. Definition of the main perceived risk dimensions in marketing literature.

Dimension	Definition	Research
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 (1967), Roselius (1971), Jacoby and Kaplan (1972), Peter and Ryan (1976), Ingene and Hughes (1985), Stone and Gronhaug (1993)
Performance 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 (1967), Jacoby and Kaplan (1972), Peter and Ryan (1976), Ingene and Hughes (1985), Stone and Gronhaug (1993)
Psychological Risk	Potential loss of self-esteem (ego loss) from the frustration of not achieving a buying goal	Cunningham (1967), Roselius (1971), Jacoby and Kaplan (1972), Peter and Ryan (1976), Stone and Gronhaug (1993)
Social Risk	Potential loss of status in one's social group as result of adopting a product or service, looking foolish or untrendy	Cunningham (1967), Jacoby and Kaplan (1972), Peter and Ryan (1976), Ingene and Hughes (1985), Stone and Gronhaug (1993)
Time Risk	Potential loss of time associated with making a bad purchasing decision by wasting time researching and making the purchase, only to have to replace it if it does not perform to expectations	Cunningham (1967), Roselius (1971), Peter and Ryan (1976), Ingene and Hughes (1985), Stone and Gronhaug (1993)
Privacy Risk	Potential loss of control over personal information, Such as when information about you is used without your knowledge or permission	Jarvenpaa and Todd (1997), Featherman and Pavlou (2003)

Adapted from Featherman and Pavlou (2003).

Privacy risk has been added to e-marketing literature as an additional dimension (Jarvenpaa and Todd, 1997, and Forsythe and Shi, 2003). Privacy risk is the potential loss of control over personal information, such as invasion of privacy. Consumers perceive privacy risk during online shopping where they have to provide personal and credit card information to online retailers. Jarvenpaa and Todd (1997) is one of few studies that examined the influence of perceived risk from a multidirectional perspective. Findings of the study indicated the influence of economic, social, performance, physical, and privacy risks on attitudes towards online shopping. In addition to the previous study, Forsythe and Shi (2003), found that the effect of performance, time, and financial risks affect the purchase frequency of online shopping. Similarly, Crespo, Bosque, and Salamonés (2009), concluded that economic and performance risk dimensions have a greater influence than social and time dimensions on e-commerce adoption. Nathan (2008) investigated factors affecting e-commerce in Saudi Arabia along with consumers from other Arab countries. The study finds that Perceived Risk and Trust are mediated by consumers' Knowledge. Arab consumers were found unique in their e-commerce adoption behaviour in this sense. Their perceived Risk Perception leads to better understanding of the e-commerce system. No other research was found regarding the influence of perceived risk on online shopping adoption in Saudi Arabia. Thus, this research attempted to fill-up the gap in this area of study.

Using the above model and the reviewed literature, the following hypotheses were formulated:

H5a: The overall perceived risk in shopping online is determined by the social risk associated with it.

H5b: The overall perceived risk in shopping online is determined by the financial risk associated with it.

H5c: The overall perceived risk in shopping online is determined by the performance risk associated with it.

H5d: The overall perceived risk in shopping online is determined by the psychological risk associated with it.

H5e: The overall perceived risk in shopping online is determined by the time risk associated with it.

H5f: The overall perceived risk in shopping online is determined by the privacy risk associated with it.

This study attempts to extend the body of research on perceived risk in Internet shopping from the perspective of consumers in a developing country, namely, Saudi Arabia. It attempts to expand the knowledge gaps related to the theoretical understanding regarding the influence of cultural differences on consumer behavior regarding perceived risk in online shopping. In addition, this study investigates further the difference on perceived risk between online shoppers and none shoppers.

Method

Survey instrument

To identify the types of risk perceived by Internet users when considering an online purchase and online patronage behaviors, a survey instrument was developed. The dimensions included in the theoretical framework (TAM) for this study was measured using a multi-attribute scales (Davis, et al., 1989). The questionnaire includes five sections. The first section measures consumers' attitude toward e-commerce which is adopted from Taylor and Todd (1995). The next section measures intention to purchase via internet using a single item following the suggestion of Morgan and Hunt (1994). It is measured by a weighted average of responses to three statements. Items measuring ease of use and perceived usefulness in online shopping were adopted from Taylor and Todd (1995) and Van der Heijden et al., (2003). Risk perception was measured in terms of eighteen item scale measuring six perceived risk constructs including; financial, social, performance, time, psychological, and privacy risks, which was adopted from Garner (1986), Jarvenpaa and Todd (1997), and Featherman and Pavlou (2003). Responses for all five sections were obtained in a seven-point Likert scale, anchored at the ends with terms "totally disagree" and "totally agree". The last section includes respondent's demographic information as-well-as information regarding internet usage and online shopping. Items were measured using ordinal and nominal scales.

The questionnaire first was constructed in English. A translation and back-translation method (Brislin, 1986) was used in this study. A professional translator translated the questionnaire into Arabic. Then, two bilingual university professors translated the Arabic-written questionnaire into English again. The first and second versions of the questionnaire were compared and few changes were done accordingly. A pilot study was conducted with 20 respondents to insure validity of the instrument, and then minor changes were made accordingly. Subsequently, the questionnaire was posted online through the e-services of one of the largest universities in Saudi Arabia, and then a message explaining the purpose of the survey as-well-as the questionnaire link was sent to a random sample of 1200 students via SMS and e-mail messages. Respondents were asked to complete a self administered web-based questionnaire. The survey was posted online starting from November 23, 2011 to December 30, 2011. A total of 320 surveys were completed and used for further data analysis. A brief description of the respondents is presented in table 2.

Table 2. Descriptive statistics of respondents' characteristics (n = 320).

Demographics	Frequency	%	Usage Patterns	Frequency	%
Gender			Duration of usage		
Male	146	45.6	Less than 1 year	8	2.5
Female	173	54.1	1 – 2 years	25	7.8
Age			2 – 5 years	82	25.7
17 or less	3	.94	More than 5 years	98	30.7
18 – 19	171	51.5	More than 8 years	106	33.2
20 – 21	58	18.1	Searched a product		
22 – 23	31	9.6	Yes	226	70.6
24 and over	56	17.5	No	93	29.1
Household income			Purchased a product		
Under \$10,000	7	2.2	Yes	85	27.8
\$10,001 to < \$20,000	17	5.3	No	235	72.1
\$20,000 to < \$35,000	12	3.8			
\$35,000 to < \$50,000	15	4.6			
\$50,000 to < \$75,000	39	12.1			
\$75,000 to < \$100,000	58	18.1			
\$100,000 or more	172	47.7			

Results

Internal consistency was calculated using Cronbach's alpha. Table 2 shows the descriptive statistics for the constructs and the reliability (Cronbach's alpha) of the scales. The cronbach reliability coefficient of the measured variables was within the acceptable range (Table 3).

Table 3. Descriptive Statistics and reliability Indices for Constructs.

Construct	Mean	S.D.	Alpha
Intention	3.76	1.26	.92
Attitude	4.19	1.93	.91
Perceived usefulness	4.28	1.85	.83
Perceived ease of use	4.24	1.36	.78
Perceived risk	4.29	1.34	.91

The main independent variable chosen for this study is the overall perceived risk. The effect of the overall perceived risk during online shopping on perceived usefulness, perceived ease of use, attitude and intentions towards online shopping was tested using structural equation model. The influence of perceived risk was hypothesized to have a negative influence on perceived usefulness, perceived ease of use,

consumers' attitude, and intention to shop on the internet. An early estimation of the structural equation model by the robust method indicated that H3 is not significant. Thus, no relevant effect of the overall perceived risk on the perceived ease of use of the internet is seen. Accordingly, a re-specification of the structural equation model was made by removing the mentioned relationship. Results indicated a strong negative relationship between the overall perceived risk and consumers' perceived usefulness of online shopping, attitude towards online shopping and intention to shop online ($P < .01$ level or lower), which supports H1, H2 and H4. The study further tested the multidimensional characteristics of risk associated with internet shopping. Results indicated that all six dimensions in the model has a significant factor loading, with privacy and psychological risks dimensions have the most effect, followed closely by performance and financial dimensions. Thus, H4a – H4f are supported ($P < .01$ level or lower). The structural model estimation indicated that the model fits with no constraints, ($\chi^2 = 131.2$, BBNFI = 0.911, BBNNFI = 0.902, CFI 0.921= , IFI =0.921 , RMCEA = 0.072). Overall, the R^2 coefficient values show a sufficient level of variance explanation for dependant variables ($R^2 = .423, .361$) for attitude and intention respectively, on perceived risk, as they are above the acceptable values for social science research (Gliem and Gliem, 2003). Though, the low value for the perceived usefulness ($R^2 = .017$) signify the need to consider other explanatory variables, since it coincides with previous findings by Herrero Crespo, Boque, and Garcia (2009). Table 4 shows the results of estimation and hypothesis testing.

Table 4. Hypothesis Testing Results.

Hypothesis	Causal Relationship	β	S.E. ¹	P	Results
H1	Risk → Attitude	-.272	.056	.000	Supported
H2	Risk → Intention	-.206	.037	.000	Supported
H3	Risk → PU	-.233	.037	.000	Supported
H4	Risk → PEOU	-.017	.070	.423	Rejected
H5a	Risk → Social Risk	.685	.036	.003	Supported
H5b	Risk → Financial Risk	.810	.052	.000	Supported
H5c	Risk → Performance Risk	.813	.048	.000	Supported
H5d	Risk → Psychological Risk	.872	.047	.000	Supported
H5e	Risk → Time Risk	.761	.043	.001	Supported
H5f	Risk → Privacy Risk	.879	.044	.000	Supported

1) Standard error of β

For further analysis, the difference between internet buyers and non-buyers was tested regarding perceived risk for the six different dimensions (Table 5). Results of the t-test obtained show that there are significant differences between groups in the weight of all six risk dimensions regarding internet shopping. The weight of privacy and psychological aspects in the perceived risk in internet shopping is higher for consumers with previous experience in internet shopping ($P = .000$).

Table 5. Mean Differences between Internet Buyers and Non-buyers.

	Total Respondents (N=320)	Internet buyers (N= 85)	Non-buyers (N=235)	t	Sig
	Mean	Mean	Mean		
Overall Risk	4.292	3.656	4.490	-5.277	.000
Privacy Risk	4.430	3.514	4.702	-5.480	.000
Psychological Risk	4.288	3.300	4.540	-5.091	.000
Time Risk	4.198	3.792	4.380	-3.267	.001
Social Risk	3.348	2.709	3.536	-4.186	.000
Performance Risk	4.656	4.244	4.810	-2.980	.003
Financial risk	4.830	4.376	4.974	-3.040	.003

Discussion

Past research indicated that internet shopping decisions are inherently more risky than brick and mortar shopping decisions (O'Cass 2001, Shih 2004; Heijen, et al., 2003; and Herrero Crespo, Boque, and Garcia, 2009). Yet many researchers have not explored how perceived risk dimensions may operate separately to influence such decisions and what kinds of risk dimensions play a significant role in the influence of e-commerce adoption. This study examines factors influencing consumers' acceptance of e-commerce that were proposed in the TAM with perceived risk as an additional construct. The influence of six underlying risk dimensions; financial, performance, social, time, psychological, and privacy, were examined. Finally, the mean differences between online buyers and non-buyers in the perceived six risk dimensions were examined.

Results in general suggest that consumers' perceived risk has a strong negative effect on consumer's attitude and intention to shop in the internet. Results of the study also provides evidence that consumers' perceived risk reduces consumers' intention to purchase online. These research findings coincide with scholars' arguments that the perceived risk in online shopping has a negative effect on attitude towards online shopping (O'Cass 2001, Shih 2004, and Heijen, et al., 2003) and intention to adopt online shopping (Joines, Scherer, and Scheufele 2003; Korgaonkar and Wolin, 1999; and Salisbury, Pearson, and Miller, 2001).

Finally, for both samples; internet buyers and none buyers, the perceived risk multidimensional characteristics is recognized by all six dimensions; economic, performance, social, time, psychological, and privacy. Saudi Arabian consumers perceived high risk in all six risk dimensions. This observable fact can be explained by Hofstede's (1980) cultural differences theory, where uncertainty avoidance is one of the most predominant characteristics of people living in this region. Cultures high in uncertainty avoidance avoid risk-taking because of fear of loss or failure (Bontempo, Bottom, and Weber, 1997).

Though, Saudi Arabian consumers perceived privacy and psychological risk as the most significant risk factors affecting internet shopping, followed closely by performance and financial risks. Moreover, internet buyers and non-buyers showed significant mean differences in all six constructs with the highest mean difference observed in privacy and psychological risks. The non-buyer sample perceived higher risk in all six risk dimensions than the sample with previous experience in e-commerce.

This research findings shed light on Saudi consumers perceived risk in online shopping as-well-as what type of risks are perceived the highest among them. Managerially, this research provides marketers with the importance of consumer's risk perception as-well-as types of risk Saudi consumers face when shopping online. Upon results of this study, marketers can customize risk-reduction strategies associated with the Internet shopping environment.

For marketers, awareness of the attributes of risk perception is important because consumers' perceived risk level becomes a crucial factor in Internet purchasing. Marketers must know which risk-reduction strategy is important to Saudi consumers in the Internet to reduce their concerns more specifically. The information presented here provides Internet marketers with a picture of the target market for Internet sites and the relationship between perceived risks and patronage behavior.

This study has some limitations that should be considered. First, the use of a convenient sample of college students might not be representative of the general population. College students tend to be more cosmopolitan, tech-savvy, and more educated than the population at large. Finally, this study might be limited by not using a specific product category instead of shopping for different product categories in general. Future research could contribute more in examining types and product attributes influence on consumers' decision to shop on the internet.

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