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HOW PERCEIVED RISK AFFECTS ONLINE  
PURCHASE INTENTION :  
CONSUMER'S PERSPECTIVE

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## **Abstract**

This research concentrates on exploring the online consumers' concerns and perceived risk regarding online shopping. Perceived risk is a key aspect in electronic commerce and the factors of perceived risk such as: financial risk, performance risk, time-loss risk, psychological risk and source risk have a strong effect on the purchase intention of the online consumers. This study shows that there is a negative effect of consumers' perceived risk on their purchase intention; moreover, computer knowledge has been identified as a moderating factor affecting this relationship.

**Key Words:** Perceived Risk, Purchase Intention, Online Consumer

## **Résumé**

Cette recherche se concentre sur l'exploration de préoccupations des consommateurs sur internet et du risque perçu par rapport aux achats en ligne. Le risque perçu est un aspect clé pour le commerce électronique et des facteurs du risque perçu comme le risque financier, la performance risque, le risque de perte de temps, le risque psychologique, et le risque concernant la source ont un effet important sur l'intention d'achat en ligne des consommateurs. Cette étude montre qu'il y a un effet négatif du risque perçu par les consommateurs sur leur intention d'achat ; de plus, les connaissances informatiques ont été identifiées comme un facteur modérateur qui affecte cette relation.

**Mots clés:** Perception des risques, Intention d'achat, Des consommateurs en ligne

# 1 Introduction

E-commerce can be categorized into two groups regarding the parties involved in the transaction: “business-to-business (B2B) and business-to-consumer (B2C)” (Koyuncu and Bhattacharya, 2004); the current study will focus on the second one. This implies that wherever we are making any online transaction, there is a being that the consumer is transacting with, for example, the online seller; and the medium on which the transaction is taking place, for example, the internet.

Internet has grown considerably during the past decade, “particularly with respect to its use as a tool for: communication; entertainment; marketplace exchange” (Miyazaki and Fernandez, 2001). E-commerce firms are making online sales offerings which have the potential of radically changing the consumer’s purchase behaviour regarding goods and services (Turner et al., 2001). Many surveys have reported that most internet surfers are not making any online transaction because they are concerned about internet security (Hassan et al., 2006). The customers making online transaction have apprehension about passing along their credit card numbers and other confidential information on the internet. A consumer’s risk profile (risk-neutral or risk-averse) would affect his shopping behavior online: “risk neutral consumers are more likely than risk-averse consumers to consummate a purchase transaction when faced with buying a product (or service) with uncertain outcomes or possible loss” (Kahneman et al., 1982; Gupta et al., 2004). We can say that risk-averse consumers are not likely to shop online, or are likely to delay the online shopping choice. Internet fraud is one of the factors causing a growing concern among the consumers. It has been reported that “online shoppers tend to be more risk takers than non-online shoppers” (Donthu and Garcia, 1999; Hassan et al., 2006).

There is another aspect of internet use; i.e., the “impersonal nature of the internet” which raises a threat to humans’ social needs of “being in touch” (Cole and Cole, 1998). Putting the same in other words means that “a high internet use is associated to weaker social ties and social isolation” (Cole and Cole, 1998; Dolliver, 2000; Sanders et al., 2000).

The shoppers perceiving the online shopping as a highly risky decision are less likely to shop online (Hassan et al., 2006). Hence, a measure of risk perception as a predictor of online shopping is very crucial not only to researchers but also to managers. We can make an attempt to know the factors affecting risk involved in online purchase as this will help better eliminate these apprehensions.

There are a large number of consumers who refuse to transact business online because of their concerns about security; ironically the cause of those concerns is not well understood. We have a few experimental studies which have examined “average consumers’ perceptions of the security of web sites in the course of conducting business with a site” (Turner et al., 2001). The marketing studies provide data on customers’ opinions and preferences but do not present customers’ actual behavior while they make a transaction on line.

It is understandable that different individuals would have different levels of risk acceptance or aversion —“an internet ‘savvy’ person would be less risk-averse than a ‘novice’ in the area of internet surfing” (Bhatnagar et al., 2000). This implies that the risk factor affecting the choice making is moderated by individual demographic factors as suggested by this study that consumers’ computer knowledge acts as a moderating factor between the perceived risk and the purchase intention.

### ***1.1 Purpose of the study***

The objective of this paper is to identify the key factors effecting consumers’ online purchase intentions. As has been briefly discussed, previous studies have identified perceived risk as a key factor in customers’ participation in e-commerce, while others have highlighted the role of perceived risk as an antecedent to willingness to be profiled online. This research examines the relationship between perceived risk and the consumers’ purchase intentions; further it explores the direct effects of different dimensions of perceived risk on the purchase intention, leading to better understanding of a customer’s concerns in the online environment.

A model has been proposed to examine relationship between perceived risk and purchase intentions. This model has been empirically tested to see how willingness to transact online is affected by these risk factors. The following questions are raised based upon the central theme of the study:

*“What are the factors of perceived risk that affect the customers’ willingness to purchase online?”*

*“Does the perceived risk have an effect on consumers’ purchase intention in the online environment?”*

*“Is there any direct relationship between the dimensions of perceived risk and the customers’ willingness to transact online?”*

The contribution made by this paper is filling the gap in existing research by taking “Computer Knowledge” as the moderating variable between consumer’s perceived risks and online purchase intention. Moreover, a few studies have been conducted regarding consumer’s perceived risks but they do not take into account these dimensions’ direct impacts on online purchase intention, which have been explored in this paper. The paper arrives at conclusions that will have several theoretical and managerial implications.

## **2 Theoretical background and hypotheses**

Perceived risk was originally introduced by Bauer as “a psychological, subjective construct to explain such phenomena as information seeking and brand loyalty” (Bauer, 1967). Perceived risk can be defined as a consumer's belief about “the potential uncertain negative outcomes” from the online transaction (Kim et al., 2008). Forsythe and Shi (2003) defined perceived risk in internet shopping as the subjectively determined expectation of loss by an internet shopper in contemplating a particular online purchase.

There are three reasons for studying consumer perceived risk: it has “an intuitive appeal” and help marketers “seeing the world through their customers’ eyes”; it can be used for “a wide array of marketing applications”; it better explains consumers’ behavior because “consumers are more often motivated to avoid mistakes than to maximize utility in purchasing decisions” (Mitchell, 1999; Hassan et al., 2006). It’s presumed that the changes in online retailer practices that are deemed to be consumer friendly will build confidence and reduce perceived risk in online shoppers as the shoppers encounter them via increased internet experiences (Miyazaki and Fernandez, 2001); whereas any negative online experience, may decrease consumer confidence resulting in avoidance of making online purchases.

The literature shows that perceived risk may have differing impact on consumers’ online shopping behavior, relative to familiarity and experience with online shopping. Research by (Hassan et al., 2006) indicates one segment of shoppers that perceive product and security risk as high for online shopping, this risk having a major impact on this group’s online shopping behavior. Literature shows that much of the consumer research supports the idea that “perceived risk affects consumers’ behavior across different cultures” (Lim, 2003). Table-I summarizes some of the major dimensions of perceived risk, identified by different researchers:

Table-I: Dimensions of perceived risk in online shopping found in literature

Author(s)	Dimensions of perceived risk
Roselius (1971)	Technology risk, vendor risk, consumer risk, product risk
Jacoby and Kaplan (1972)	Financial risk, performance risk, physical risk, psychological risk, social risk, time risk, and opportunity cost risk
Lim (2003)	Technology risk, vendor risk, consumer risk, product risk
Forsythe and Shi (2003)	Financial risk, product risk, performance risk, psychological risk, and time/ convenience loss risk
Bhatnagar, A. and S. Ghose (2004)	Security risk, product risk
Koyuncu and Bhattacharya (2004)	On demand side: credit-card fraud, release of private information, risk of non-delivery of goods after payment has been made, and lack of any guarantee of quality of goods and services purchased without visual inspection On the supply side: security risk
Hassan et al. (2006)	Financial risk, performance risk, time-loss risk, social risk, psychological risk, physical risk, source risk and privacy risk

A consumer, making an online transaction, may be reluctant to purchase on the web because the sense of risk may be far more as compared to the traditional mode of shopping, where he can touch, feel, and even try the product before finally purchasing it. While purchasing online, a consumer has to provide personal information and even confidential credit card information. After providing the necessary information, the consumer can only hope that the transaction will be processed completely, accurately and on time. This means that the consumers perceive risk in online transactions which influences their purchase decisions; the more risk they perceive, the less likely they will purchase (Lim, 2003). This leads to our first hypothesis:

***Hypothesis 1: A consumer's perceived risk of his/her online transaction negatively relates to his/her online purchase intention, the high risk leads to low online purchase.***

It's human nature that we have apprehensions about a thing as long as we don't have personal experience about it or have knowledge about it. At the later stage, when we get used to of it or develop knowledge about that it decreases our perceived risks about that thing. The consumers having internet experience show lower levels of perceived risk and fewer risk-related concerns regarding online purchase. Higher internet experience and the use of other remote purchasing methods are related to lower levels of perceived risk toward online shopping, this definitely boosts online purchase rates (Miyazaki and Fernandez, 2001). So the second hypothesis is:

***Hypothesis 2:*** *Computer knowledge of the consumer moderates the relationship between perceived risk in online shopping and the online purchase intention, the more the computer knowledge of the consumer, the lesser the perceived risk in online shopping.*

### ***2.1 Perceived Financial Risk***

Financial risk is defined as “a net loss of money to a customer” (Horton, 1976; Derbaix, 1983; Sweeney et al., 1999) and includes the possibility that “one’s credit card information may be misused” (Forsythe and Shi, 2003). It can be regarded as the concern over any financial loss caused by online shopping which may include: potential expenses of returning the product; the likelihood of any additional hidden cost; any financial loss because of the lack of protection of consumer’s credit card number; difficulty in getting money back (Hassan et al., 2006). This risk is not particularly on account of the money involved in the transaction but more because the consumer may suffer the risk of losing money via credit card fraud (Bhatnagar et al., 2000), this makes data entered on website as vulnerable. This justifies why thousands of surfers, every day, visit different web sites but very few of them actually make any purchase.

Financial risk, including opportunity cost and time, is related not to the product but to the marketing channel (the internet); for example the online transaction may be duplicated because of technological error or unintended double-click the purchase button (Kim et al., 2008); or “credit card details of individuals can be stolen when transactions occur over the internet” (Lim, 2003). A large number of studies show that consumers are quite apprehensive about communicating credit card information over the internet (Fram and Grady, 1997). The use of internet, for shopping, is still seen as a risky option and this risk outweighs the convenience that it offers. Perceived transaction risks exert a negative effect on willingness to purchase; when these risks increase, consumers becomes more reluctant to give his credit information over the internet (Liao and Cheung, 2001). So the next hypothesis is:

***Hypothesis 3a:*** *A consumer’s perceived financial risk of his/her online transaction negatively relates to his/her online purchase intention.*

### ***2.2 Perceived Performance Risk***

It refers to the uncertainty that the internet might not perform as desired and not deliver the benefits promised (Mitchell, 1999). This risk includes: the difficulty of ascertaining, from web pictures, the characteristics of the products (Hassan et al., 2006). This leads to a concern

that the product delivered may not be exactly the same as it appeared on the web site. Product performance risk is defined as “the loss incurred when a brand or product does not perform as expected” (Horton, 1976; Forsythe and Shi, 2003). While judging the quality of product/service online the consumers feel the lack of touching, feeling, and trying the product or service. The product color, shape may be different online and when he actually receives after purchasing it, resulting in increased product performance risk. So our hypothesis is:

***Hypothesis 3b:*** *A consumer’s perceived performance risk of his/her online transaction negatively relates to his/her online purchase intention.*

### **2.3 Perceived Time-loss Risk**

Time/convenience risk may refer to the loss of time and inconvenience the online shopper may face due to difficulty of navigation and/ or submitting order, finding appropriate web sites, or delays receiving products (Forsythe and Shi, 2003). The individuals prefer to buy less from the internet because the payments made through internet involve some risk and the delivery of items purchased from on-line takes longer time (Koyuncu and Bhattacharya, 2004). This risk alludes to the amount of time that is required to receive the product. The time-loss risk is related to: the time and effort lost in returning or exchanging the product; any technological problems such as a slow web site server; any technological difficulty encountered in browsing through the web site; time lost in waiting for the arrival of the product (Hassan et al., 2006). Moreover, potential delays or difficulties in receiving the products ordered are of a great concern to some online shoppers. This takes us to the next hypothesis:

***Hypothesis 3c:*** *A consumer’s perceived time-loss risk of his/her online transaction negatively relates to his/her online purchase intention.*

### **2.4 Perceived Psychological Risk**

Psychological risk may refer to “disappointment, frustration, and shame experienced if one’s personal information is disclosed” (Forsythe and Shi, 2003). Perceived psychological risk can be defined as “the possibility that individuals suffer mental stress because of their purchasing behavior” (Lim, 2003). Perceived psychological risk reflects concern about the psychological discomfort and tension that may arise because of making a transaction online (Hassan et al., 2006).

Consumers consider how much comfort with transactions over the internet they will get. Any frustration or displeasure of using e-commerce would be an important hurdle to consumer's online shopping. Companies dealing with business online should provide "easy-to-use" web sites to cut down problems linked to "the online shopping process for global consumers" (Choi and Geistfeld, 2004). The consumer may feel that the information they provide online would be vulnerable as they lack control over the access, which others may have, to their personal information during the online navigation process. The psychological risk also restricts some consumers from providing information online. Some consumers are very outgoing and extrovert, they want to socialize; they may perceive risk of isolation by purchasing online; while some customers may be uncomfortable in using internet for shopping. So our hypothesis is:

***Hypothesis 3d:** A consumer's perceived psychological risk of his/her online transaction negatively relates to his/her online purchase intention.*

## **2.5 Perceived Source Risk**

Perceived source risk can be defined as "the possibility that individuals suffer because the businesses from which they buy products are not trustworthy" (McCorkle, 1990; Lim, 2003). Perceived source risk reflects concern over whether or not the prospective shopper can trust the online vendors and feels comfortable in doing business with them and is related to "believability, trustworthiness, and expertise" (Hassan et al., 2006). It involves the set of perceptions that receivers have toward a source. Reputation of selling party, when it is positive, has been considered a key factor for reducing risk (Resnick et al., 2000; Antony et al., 2006) as it alludes to the quality of the online vendor that he has been honoring his commitments to the consumers, in the past. It means that based on its reputation, a consumer is likely to infer that the selling party is likely to continue its behavior with him too (Sharif et al., 2005); a positive reputation would be inferred as the trustworthiness of the selling party, and vice versa. The next hypothesis is:

***Hypothesis 3e:** A consumer's perceived source risk of his/her online transaction negatively relates to his/her online purchase intention.*

## **2.6 Theoretical Model**

On the basis of the above literature review the hypothesized model (Figure-I) to be tested through structural equation modeling, is developed:

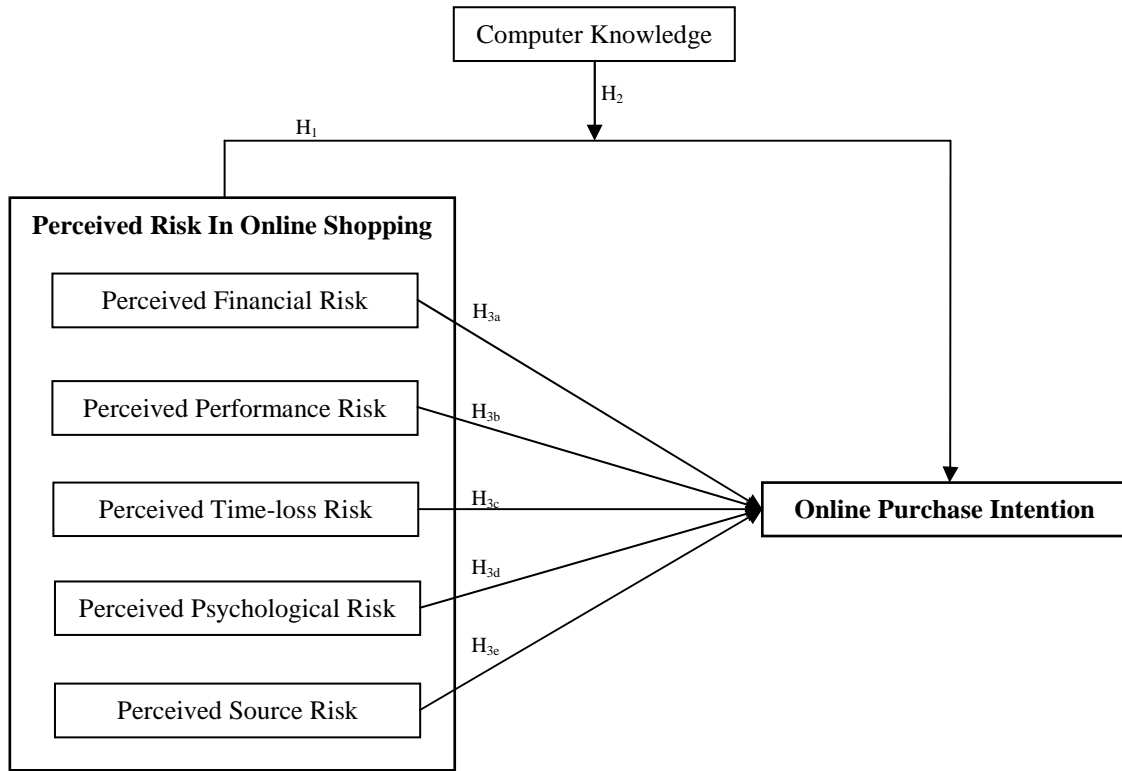


Figure 1: Theoretical Model of perceived risk in online purchase intentions

In this model Perceived risk in online shopping and its dimensions are the independent variables and purchase intention in dependent variable. Computer knowledge is the moderating variable, which is moderating the relationship between perceived risk and purchase intention in online shopping.

### 3 Method

#### 3.1 Sample

Web surveys are becoming quite popular and this technique is consistent with the habitual research practice in the online context (e.g. Steenkamp and Geyskens, 2006). An Internet snowball sampling procedure prompted responses from 258 participants. Out of this, 13 invalid responses containing atypical cases, repeated or incomplete responses were eliminated, finally obtaining 245 completed questionnaires. Out of 245 respondents, 154(62.9%) were males and 91(37.1%) were females. There were 113(46.1%) respondents with high computer knowledge and 132(53.9%) with beginner level of computer knowledge. All of the respondents were above 20 years of age.

### **3.2 Instrument**

The scale was developed based upon recent literature. The scales for measuring the five dimensions of perceived risk in online shopping were adopted from Hassan et al. (2006). All the dimensions were measured on 3-item scale. Whereas the purchase intention was measured using an adopted version of the 3-item scale; one item adopted from Gefen D. (2000) and two items from Jarvenpaa et al. (2000) details can be seen in appendix.

## **4 Measurement**

The validation process started with an initial exploratory analysis of reliability and dimensionality as proposed by Anderson and Gerbing (1988). All scales used to examine the effect of perceived risk on purchase intention in online shopping were 7-point (1=strongly disagree to 7= strongly agree) likert scales and Cronbach Alpha's reliability coefficients ( $\alpha$ ) ranged from 0.763 to 0.905, which is higher than the cutoff value of 0.70 proposed by Nunnally (1978). For each scale, an exploratory factor analysis (EFA) was conducted to make sure that it was unidimensional, which was confirmed by a scree plot test, eigen value greater than one, vilcer map test and the percentage of variance explained by first factor that ranged from 67.841% to 84.175% across scales.

The CFA, using AMOS with maximum likelihood (ML) estimation method, was conducted to evaluate the measurement properties of the six factors. All items loaded on the appropriate factors and all loadings were significant ( $p < 0.01$ ). Results for the proposed model revealed an adequate fit ( $\chi^2 = 170.836$ ,  $df = 120$ ,  $GFI=0.930$ ,  $AGFI= 0.900$ ,  $TLI=0.966$ ,  $CFI= 0.973$  and  $RMSEA= 0.042$ ). Jöreskog  $\rho$  values, ranging from 0.766 to 0.906, indicated reliability of the scale. For convergent validity, the average variance extracted (AVE) were assessed and found to be greater than 0.5 for each construct. Thus convergent validity was present. Moreover, the average variance extracted for each dimension was greater than the shared variance (Fornell and Larcker, 1981), which shows the discriminant validity of the scale.

### **4.1 Effect of Perceived Risk on Purchase Intention in Online Shopping**

To verify the first hypothesis concerning the relationship between perceived risk and purchase intention a structural regression model was designed. Results for the regression model revealed an adequate fit ( $\chi^2 = 204.55$ ,  $df = 129$ ,  $GFI=0.917$ ,  $AGFI= 0.891$ ,  $TLI=0.953$ ,  $CFI= 0.961$  and  $RMSEA= 0.049$ ). The value of standardize regression estimate (-0.32) from

perceived risk to purchase intention was consistent with the hypothesized one in the proposed model. Thus, H1 was supported because standardized coefficient was significant at  $p < 0.01$ .

#### ***4.2 Moderating Effect of the Computer Knowledge on the Relationship between Perceived Risk and Purchase Intention***

To test H2, we employed multiple sample structural equation modeling technique to analyze the moderating role of computer knowledge of the consumers on the relationship between the perceived risk and purchase intention in e-transactions. The total sample of the size of 245 was divided into two groups, having 132 and 113 respondents respectively, of computer beginners and computer experts on the basis of computer knowledge of the respondents. The fit indexes indicated overall adequate fit to the data, as evidenced by ( $\chi^2 = 357.40$ ;  $df = 258$ ,  $GFI = 0.870$ ,  $AGFI = 0.827$ ,  $TLI = 0.939$ ,  $CFI = 0.949$  and  $RMSEA = 0.04$ ).

To examine the significance of the relationship between perceived risk and the purchase intention in both the groups the regressions estimates were analyzed. The results of the unstandardized regression estimates are shown in the Table-II.

Table-II: Unstandardized regression estimates for moderating role of computer knowledge

<b>Group</b>	<b>From</b>	<b>To</b>	<b>Estimate</b>	<b>S.E.</b>	<b>C.R</b>	<b>P Value</b>
<b>Beginner</b>	Perceived Risk	Purchase Intention	-.574	.236	-2.433	.015
<b>Expert</b>	Perceived Risk	Purchase Intention	-.475	.170	-2.797	.005

There was a significant difference between the regression estimates of the two groups having high and low computer knowledge. Therefore, it was concluded that computer knowledge of the consumer does have a moderating effect on the relationship of their perceived risk and purchase intention. The relationship between perceived risk and purchase intention was comparatively more negative for the beginners than that for the experts, so hypothesis 2 was supported.

#### ***4.3 Direct Effect of the Dimensions of the Perceived Risk on the Purchase Intention***

According to Anderson and Gerbing (1988) the proper specification of the measurement model is necessary to achieve meaningful relationships in the structural model that is to distinguish between formative and reflective measures. As the objective was to see the effect of individual dimensions of perceived risk on the purchase intention so a reflective first-order and formative second-order measurement model was used following the guidelines of Jarvis

et al. (2003). The fit indexes indicated overall adequate fit to the data ( $\chi^2 = 170.836$ ,  $df = 120$ ,  $GFI=0.930$ ,  $AGFI=0.900$ ,  $TLI=0.966$ ,  $CFI=0.973$ ,  $RMSEA= 0.042$ ). The results are reported in Table-III.

Table-III: Standardized estimates for direct effects

Hypothesis	From	To	Estimate	S.E.	C.R.	P Value	Result
H <sub>3a</sub>	Financial Risk	PI	-0.320	0.080	-4.000	< 0.01	Supported
H <sub>3b</sub>	Performance Risk	PI	-0.046	0.127	-0.362	not sig.	Not Supported
H <sub>3c</sub>	Time-loss Risk	PI	0.132	0.096	1.375	not sig.	Not Supported
H <sub>3d</sub>	Psychological Risk	PI	-0.367	0.099	-3.707	< 0.01	Supported
H <sub>3e</sub>	Source Risk	PI	0.168	0.093	1.806	not sig.	Not Supported

## 5 Discussion and Conclusions

The findings demonstrate the negative effect of perceived risk on online purchase intention. The previous research also supports this finding as consumer's perceived risk reduces the consumer's intention to purchase (Kim et al., 2008). The perceived risk has a negative effect on consumer's intention to adopt online purchasing (Choi and Geistfeld, 2004). The study also suggests that the increase in perceived risk decreases the likelihood of making online purchase; this finding is also consistent with prior research (Jarvenpaa and Tractinsky, 1999). Perceived risk has been found to have a negative influence on consumers' attitudes or intentions to purchase online (Novak et al., 2000; Lopez-Nicolas and Molina-Castillo, 2008).

The results suggest that computer knowledge does moderate the relation between perceived risk in online shopping and consumer purchase intention. The consumers with greater computer experience are found to be more favorably inclined to shopping in cybermalls in particular (Bhatnagar et al., 2000).

The results of the study show that there was significant negative effect of perceived financial risk on purchase intention, meaning that the consumers feel anxiety about giving their financial details while purchasing online. This finding is in line with the previous research which shows that perceived financial risk may prevent heavy shoppers from spending as much online as they might otherwise spend if they were not concerned with financial risk (Forsythe and Shi, 2003). The negative effect of performance risk on purchase intention was found not to be significant. This limited effect of product performance risk on shopping behaviors suggests that if taken in isolation performance risk does not significantly affect the consumer's purchase intention. The insignificant effect of time-loss risk on the purchase

intention shows that the consumers don't feel much risk concerning the time delay involved in online shopping as in some cases this might be quicker and time-saving as compared to in-store shopping. The effect of perceived psychological risk was found to be significant on the consumer's purchase intention, suggesting that the consumers undergo mental stress because of online shopping; it can be because of the feeling of tension, isolation or uneasiness while shopping online. There was no evidence of significant effect of source risk on the consumer's purchase intention. It refers to the finding that the online shoppers can easily verify the trustworthiness and believability of the online vendors before making their transaction.

### ***5.1 Theoretical and Managerial Implications***

The consumers should be provided with information about product quality, warranties and money-back guarantees, coupon or free trial (Teo and Yeong, 2003) which will reduce the consumers' concerns. Some organizations give incentives to their consumers to shop online which include: discounts, free home delivery, etc. This strategy helps to attract a large number of consumers. Doolin et al. (2005) recommended internet retailing web sites to include certain features that reduce the perceived risk. For instance, "a discussion forum" hosted on the corporate web site allows users "to exchange comments, recommendations and word of mouth about the product, the company and the site", and are thus an important mechanism to reduce consumers' perceived risk (Garbarino and Strahilevitz, 2004; Lopez-Nicolas and Molina-Castillo, 2008).

The study provides researchers and practitioners with a set of factors that are perceived to affect the consumer's intention to purchase online. Information technology enables consumers to compare benefits and prices with ease and accuracy never seen before. In order to cater to a large number of consumer's needs the online vendors have to diminish the perceived risks amongst consumers. In order to resolve the risks identified by the study the vendors can paste the security policies on the site to lessen the consumer's perceived risks. As the awareness about shopping online increase so would the perceived risks regarding online shopping decrease. The study stresses that the vendors must ensure network reliability and data security which will definitely turn the potential consumers into regular consumers shopping online.

The online vendors can educate the consumers, who are greatly influenced by the risks, about the high level of internet security on their sites; this will increase the consumers' confidence facilitating their purchase intention. Various risk relievers, as discussed above, must be utilized by the managers of virtual stores to reduce consumers' perceived risk.

In this information-replete society each consumer receives and deciphers a lot of information every day, so they are not that much patient to read poorly presented information. This establishes the need for innovative techniques to attract consumers' attention and elicit a positive response leading to definite purchase by using perceived risk-relieving techniques. No doubt this has become an important challenge for managers.

## ***5.2 Limitations and Future Research***

Although the results presented by the study are helpful in understanding consumers' risk perceptions and concerns regarding online shopping yet it is not without certain limitations that need to be addressed with future research. The data was collected using internet survey; the medium used may have affected the quality. Precautionary measures had been taken to ensure mitigation of these problems; these measures include JavaScript programming to ensure necessary data has been entered. To ensure that the same respondent should not submit more than one response, responses were screened for duplication from the same IP address. Another limitation of the present study is the cross-sectional data collection. Longitudinal or experimental research is needed to observe the difference computer knowledge can make on consumers' online purchase intention with the passage of time.

The effect of moderating variable "Computer Knowledge" has been explored in the present study, the future studies can work on the moderating role that gender, age, income, cultural background, occupation, family status, and education can play on the relation between consumer's perceived risk and purchase intention; for example, the older consumers may be not much comfortable with online purchasing because of being deficient in having familiarity and skill with computers and the internet; men typically buy hardware, software and such electronics while women are interested or inclined to buy food, beverages and stuff like clothing.

Further research may be conducted to understand how the risk dimensions that the consumers perceived may differ among various products; for example, the perceived risk of purchasing a cell phone may be different from that of purchasing a book (Gupta et al., 2004; Lee, 2007). The same can be explored for product versus services in online environment.

The online consumers can be divided into four groups: those who perceive risk but still shop online; those prospective consumers who perceive risk and are not ready to shop online; those who don't perceive risk and enjoy shopping online; those who neither perceive risk nor shop

online. The focus of the study was the first group; future study can conduct a comparison regarding perception of perceived risk among all these groups.

To conclude the discussion we can say that the individual effect of some of the dimensions of perceived risk on consumers' purchase intention was not significant but these are an integral part of the perceived risk in online transactions. Further, the consumers' risk related concerns do have a direct effect on their purchase intention while making a transaction online. Many risk-relievers can be used to alleviate the consumers' concerns. Moreover, the higher levels of internet experience can lead to lower risk perceptions regarding online shopping. Quite obviously, more research work is required to increase our understanding regarding behavior of the consumers shopping online as compared to in-store shopping, and ultimately, to improve our ability to predict their behavior.

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## **Appendix: Survey Instrument**

### **Perceived Financial Risk (adapted from Hassan et al. 2006)**

1. I am concerned that my financial records might not be adequately protected if I shop online.
2. It is not safe to give my credit card number when I order online.
3. I am concerned about the ultimate price of the on-line product because there might be hidden costs.

### **Perceived Performance Risk (adapted from Hassan et al. 2006)**

4. It is difficult to determine the characteristics of the products such as quality, size, color, and style by just looking at pictures on the web.
5. It is difficult to feel, try or/and experience the product prior to purchase during online shopping.
6. I am concerned that the product delivered may not be exactly as it appeared when displayed on the computer screen.

### **Perceived Psychological Risk (adapted from Hassan et al. 2006)**

7. The thought of online shopping makes me feel uncomfortable.
8. The thought of online shopping causes me to experience unnecessary tension.
9. Online shopping will lead to too much social isolation.

### **Perceived Time-Loss Risk (adapted from Hassan et al. 2006)**

10. I would have to spend much time if I want to return online purchased products.
11. I am afraid that products purchased from online vendors will not be delivered on time.
12. I am concerned for the time lost between ordering and receiving products bought online.

### **Perceived Source Risk (adapted from Hassan et al. 2006)**

13. It is difficult to determine the reliability and expertise of some online companies.
14. It is difficult to determine the reputation of some online companies.
15. I am concerned about the trustworthiness and believability of some online companies.

### **Purchase Intension**

16. I am likely to purchase the products(s) online. (adapted from Gefen D., 2000).
17. I am likely to recommend this online purchase to my friends (adapted from Jarvenpaa et al., 2000).
18. I am likely to make online shopping if I need the products that I will buy. It is difficult to determine the reliability and expertise of some online companies. (adapted from Jarvenpaa et al., 2000).