Determinants of Consumers' Perceived Risk in Online Shopping : A Study

** Priyanka Sinha*
*** Saumya Singh*

Abstract

India has nearly 74 million Internet users and with this, India has bypassed Japan to become the third largest Internet user in the world. However, only 8-10 million of the Internet users shop online. One of the reasons behind this is the virtual nature of online shops that foster various apprehensions in the minds of the consumers. The risk that consumers perceive in shopping online is multidimensional. Perception of risk by consumers depends upon various factors like their demographics, personality, shopping motivation, and so forth. It is ,therefore, important for the online marketers to not only understand the sub dimension of risks that customers perceive in online shopping, but also the variation in the risk among individuals, so as to design proper risk mitigating strategies. In the present paper, an attempt has been made to understand the impact of various sub dimensions of risk (particularly financial risk, product performance risk, time risk, and delivery risk) on attitude towards online shopping and the variation in the perception of these two sub - dimensions along the two demographic factors, that is, age and income. The research findings revealed that product performance risk, delivery risk, and financial risk negatively impact attitude towards online shopping, while time/convenience risk has no impact on attitude towards online shopping. It was also observed that consumers' perception of all the mentioned sub - dimensions of risk varies with age. However, it was found that income impacts only the perception of a product and financial risk.

Keywords: **perceived risk, online shopping, demographic factors, age, income**

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The use of the Internet as a channel of information and commerce is growing at a fast pace in India. The Indian e-commerce market is estimated to be ₹ 50,000 crore, witnessing a growth rate of 50% annually and has increased 500 % since 2007. However, another important fact to consider is that out of 137 million Internet users in the country, only 25 million shop online, that is just 18 % of the total Internet population (IAMAI Report, 2013). This is because online shopping, besides conferring its consumers with several benefits, also increases the uncertainty involved in purchase decisions. In other words, consumers perceive a higher level of risk while shopping on the Internet. In the words of Mitchell (1999), perceived risk is a powerful index for explaining consumer behavior since consumers are more often motivated to avoid potential loss than to maximize purchasing success. This makes understanding of consumers' perceived risk even more important for managers.

Prior researchers have proved that perceived online risk has a significant negative influence on attitude towards online purchases. In other words, the higher the risk perception of an individual towards an online channel, the lesser is his/her chance of using it for their purchase decisions (Im, Kim, & Han, 2008 ; Mitchell, 1999) . Researchers have also proven that consumer demographics have an important influence on attitude towards online purchases and online purchase intention (Donthu & Garcia, 1999; Li, Kuo, & Rusell, 1999; Slyke, Comunale, & Belanger 2002 ; Stafford, Turan, & Raisinghani, 2004). However, most of the researchers in the past have used summated score method for the perceived risk scale and have ignored the individual impact of its various sub dimensions. Also, there has been little effort to understand the relationship between demographic variables and consumers' perception of different online risks. An understanding of these relationships may help marketers in prioritizing their risk mitigating strategies as per their target audience.

* *Research Scholar,* Department of Management Studies, Indian School of Mines, Dhanbad - 826 004, Jharkhand.
E-mail : sinha.priyanka09@gmail.com
** *Associate Professor,* Department of Management Studies, Indian School of Mines, Dhanbad - 826 004, Jharkhand.
E-mail : saumya.ism@gmail.com

Objectives of the Study

This research paper has two objectives. The first one is to understand the impact of sub dimensions of online perceived risk (financial risk, product performance risk, time risk, and delivery risk) on attitude towards online shopping. The second objective is to analyze the impact of two important demographic factors, that is, age and income on perception of the above-mentioned sub dimensions of perceived online risks.

Review of Literature and Hypotheses Development

In the words of Roselius (1971), when buyers plan to purchase a product or service, they often hesitate to take action because they cannot be certain that all of their buying goals will be achieved with the purchase. Consumer behavior involves risk in the sense that any action of a consumer will produce consequences which one cannot anticipate with certainty, and some of which are at least likely to be unpleasant (Bauer,1960). Perceived risk thus can be considered as a function of the uncertainty of the consequence of a behavior and unpleasantness of the same (Cox & Rich, 1964). For each purchasing decision, consumers have several buying goals or expected outcomes of products or services, and consumers will perceive higher risk if the actual purchasing experience differs from purchasing goals. Consumers perceive certain degree of risk in most purchasing decisions, but non-store purchasing decisions tend to have a higher level of perceived risk associated with them (Bhatnagar, Misra, & Rao, 2000 ; Dollin, B., Dillon, S., Thompson, & Corner, 2005).

Banerjee, Dutta, and Dasgupta (2010) identified factors that influence the attitude of Indian consumers towards online shopping. The authors found that online security is one of the most important reasons that prevents Indians from shopping online. It is obvious also, as in online shopping, consumers do not have the opportunity to physically examine the product (Torkzadeh & Dillion, 2002; Bhatnagar et al., 2000). While shopping, consumers are forced to rely on some limited information and pictures displayed on the sites. They also perceive difficulty in returning the purchased products and also in developing trust on the integrity of the sellers (Bhatnagar et al., 2000; Biswas, D., & Biswas, A., 2004). Apprehensions regarding misuse of account information during online transactions or issues in delivery of products are some other concerns that affect consumers' online purchase actions (Sweeney, Soutar, & Johnson, 1999).

Types of Perceived Risk

Perceived risk is multidimensional (Cunningham, 1967; Jacoby & Kaplan, 1972). Jacoby and Kaplan (1972) indicated five types of risks in product purchase, which are physical, psychological, social, financial, and product performance. Brooker (1984) regrouped the dimensions of perceived risk into two factors. He clubbed physical, financial, product performance, and risk of time loss into non personal risk factors and psychological and social risks into personal risk factors. Several researchers have also tried to identify dimensions of perceived risk in online shopping context (Naiyi, 2004 ; Jarvenpaa & Todd, 1996 ; Torkzadeh & Dillion, 2002; Zhang, Tan, Xu, & Tan,2012). In addition to the traditional dimensions of perceived risk, Jarvenpaa and Todd (1996) added security and privacy risk for online shopping environment and Torkzadeh and Dillion (2002) added source risk. However, in the present research, we have focused only on four types of risks, namely financial risk, product performance risk, convenience/ time risk, and delivery risk, which have been identified as the most prevalent among online shoppers by various researchers (Brooker, 1984; Jacoby & Kaplan, 1972; Mitchell, 1992; Schiffiman & Kanuk, 2003).

↳ **Financial Risk :** Financial risk in the online context is defined as net loss of money to a customer due to the possibility of misuse of credit card information (Oberndorf, 1996; Sweeney et al.,1999). Security considerations regarding transactions over the Internet are very common among online consumers, and media news fosters it. Many consumers believe that it is very easy to get a credit card stolen over the Internet (Caswell, 2000) and hence, is one of the major apprehensions that affects online shopping (Forsythe & Shi, 2003 ; Maignan & Lukas, 1997). Forsythe and Shi (2003) perceived financial risk not only to make online shoppers more selective regarding the websites they patronized, but also to prevent heavy shoppers from spending as much online as they might otherwise spend if they were not concerned with financial risk. Suresh and Shashikala (2011) and Sharma and Sitlani (2013) also supported the fact that among Indian online consumers, there is a dominance of money-related risks and lack of protection for credit

card information. Thus, the hypothesis is as follows :

- **H1: There is a significant negative impact of perceived financial risk on attitude towards online shopping.**

- **Product Risk :** Horton (1976) defined product performance risk as the uncertainty in the mind of the consumer that whether a product will perform as expected. Product performance risk dominates in Internet shopping environment because of the inability of the consumer to physically examine the product by touch, feel, or try. This fosters apprehensions regarding color, size, or quality of the products. The other reason being the nascent stage of online retailers; they have fewer brand capital, and hence, consumers find it difficult to develop trust in them. It has also been claimed by various researchers that product performance risk depends on the type of products, product complexity, and price (Bhatnagar et al., 2000). For example, buying standardized products like computers, books, or other electronic items are assumed to be less riskier than buying products which have experiential value like apparels, fashion accessories, furniture, and so forth (Bhatnagar et al., 2000; Forsythe, Liu, Shannon, & Gardner, 2006). Hence, the hypothesis is as follows :

- **H2 : Perceived product risk negatively impacts attitude towards online shopping.**

- **Time/Convenience Risk :** Time risk was traditionally defined as the risk associated with loss of time in the purchase process (Roselius,1971). Consumers who are new to Internet technology find it difficult to browse or navigate across sites to locate their desired product (Forsythe et al., 2006). Delay in downloads of images or videos, time loss in transaction process, and confusing websites are some other reasons of perceived convenience risk. Although convenience risk decreases, to some extent, with Internet experience, it is seen as a major obstacle in adoption of online shopping. Hence, the hypothesis is as follows :

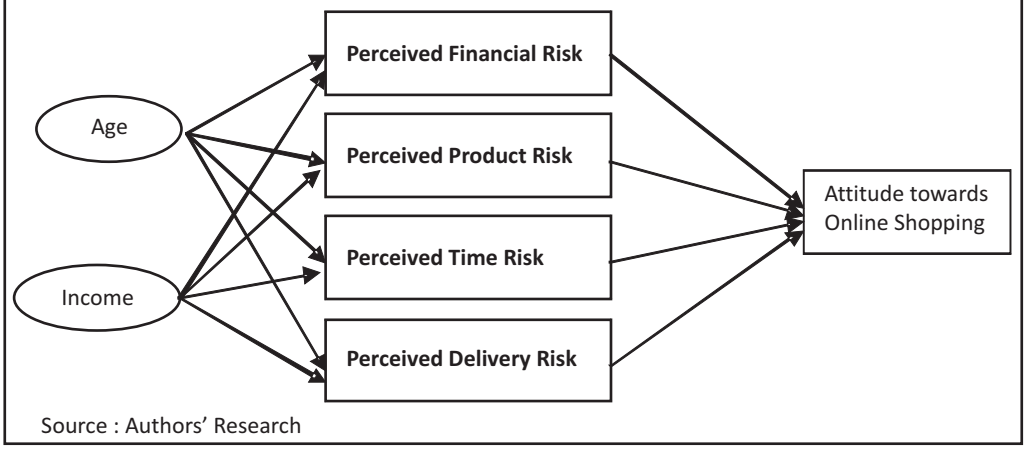
- **H3 : There is a significant negative impact of time risk on attitude towards online shopping.**

- **Delivery Risk :** Delayed and wrong delivery is one of the prime concerns and complaints of Indian online shoppers. (Saroja, 2010). Because the sellers are often anonymous and have no geographical location or address, consumers find it difficult to identify a suitable channel which will address their complaints. In the present scenario, there are a plethora of websites that open and shut down each day, which is magnifying the risk of delivery of the product (Torkzadeh & Dillion, 2002). Hence, the hypothesis is as follows :

- **H4. The fear of non delivery or delivery of damaged or inappropriate products has a negative impact on attitude towards online shopping.**

On the basis of two demographic variables, that is, age and income on different categories of perceived risk affecting attitude towards online shopping , a research framework for the present study is presented in the Figure 1.

Figure 1. Research Framework



Source : Authors' Research

As perceived risk of purchasing decreases, willingness to buy increases (Shimp & Bearden, 1982; Mitchell, 1999). Hence, in order to design risk mitigating strategies, it is important to understand risk perceived by online consumers. While several factors may play a role in individual perception of risk, previous researchers have suggested that demographics have a significant impact on perceived online risk and attitude towards online purchases (Cunningham, 1967 ; Philips & Sternthal,1977; Spence, Engel, & Blackwell, 1970). Dowling (1986) also suggested that perceived risk depends on personal factors of consumers.

Expected Influence of Age on Perceived Risk : There are mixed findings on the impact of age on perception of risk. Cunningham (1967), Spence et al. (1970), and Reinecke and Ronald (1993) found no influence of age on perceived risk across a range of goods and services. In contrast to this, Philips and Sternthal (1977) suggested that people in their old age are more cautious in making decisions than people of other age groups. In the words of Fogg et al. (2000), the younger generation is less concerned about the security and reliability issues of Internet technology as compared to older ones. Bhatnagar and Ghose (2004) in their research claimed that there is a decrease in product risk with the increase in age of the consumers. On the contrary, Zhao, Pugh, Sheldon, and Byers (2002) found that younger consumers are less concerned about online security and trust issues and are more likely to shop online. Hence, in order to verify whether age has an impact on perception of online risks, the following hypotheses were formulated:

- **H5a : There is a significant influence of age on perception of financial risk in online shopping.**
- **H5b : There is a significant influence of age on perception of product performance risk in online shopping.**
- **H5c : There is a significant influence of age on perception of time risk in online shopping.**
- **H5d : There is a significant influence of age on perception of delivery risk in online shopping.**

Expected Influence of Income on Perceived Risk : According to Cunningham, I. and Cunningham, W. (1973), higher income group people are more oriented towards online shopping than people belonging to lower income categories. This finding is supported by some other researchers like Furr and Bonn (1998) and Donthu and Garcia (1999). Higher the income and occupation, lesser are the apprehensions towards an online channel (Li et al., 1999). Similar findings are supported by the study of Bhatnagar and Ghose (2004), who said that lower income group people possess the maximum level of financial and product risk. Hence, the hypotheses are as follows :

- **H6a : There is a significant influence of income on perception of financial risk in online shopping.**
- **H6b : There is a significant influence of income on perception of product risk in online shopping.**
- **H6c : There is a significant influence of income on perception of time risk in online shopping.**
- **H6d : There is a significant influence of income on perception of delivery risk in online shopping.**

Methodology

The data for the study was collected from February - April 2013 via a structured non disguised questionnaire, which was useful for analyzing perceived risk (Forsythe & Shi, 2003). A 12 item scale with 3 items for each dimension, that is, financial risk, product risk, time risk, and delivery risk was developed to measure the degree of perceived risk while purchasing a product online. Attitude was measured with the help of a two item scale adopted from the study of George (2004) (Table 1). For each dependent variable in the study, a 5- point Likert scale ranging from 1= *strongly agree* to 5= *strongly disagree* was used. The sample area was Dhanbad and Ranchi districts of Jharkhand state in India comprising of students and employees. The questionnaire was dispersed via email so as to ensure that the respondents were familiar and had access to the Internet. The sample was drawn using convenience sampling method. Out of 180 questionnaires that were sent out, 107 usable responses were received, indicating a response rate of 59.4%. Attempt was made to get responses from different age and income groups. The descriptive statistics of the sample are mentioned in the Table 2.

Data Analysis Consists of Two Parts

(a) In the first part, an attempt has been made to understand the relationship between different dimensions of

Table 1. Items Taken to Measure Perceived Online Risks, Attitude, and their Reliability Test

Dimension	Item References	Items	Cronbach's Alpha
Financial Risk	Swinyard & Smith (2003), Forsythe & Shi (2003)	I feel that my credit card details may be misused if I shop online. I might be overcharged if I shop online as the retailer has my credit card information. I feel that my credit card information may be compromised to 3rd party.	.752
Product Risk	Swinyard & Smith (2003), Forsythe & Shi (2003)	I might not get what I order through online shopping. I might receive malfunctioning merchandise. It is hard to judge the quality of the merchandise over the internet.	.675
Time/ Convenience Risk	Cases (2001), Pavlou (2003)	Finding the right product online is difficult. It is not easy to cancel the orders when I shop online. I will have problem in returning the product bought online.	.889
Delivery Risk	Cases (2001)	I might not receive the product ordered online. I am concerned about the reliability of online shippers. I might not receive the product at the appropriate time.	.837
Attitude	George (2004)	Using the Internet for online shopping is pleasant. Using the Internet for online shopping is helpful.	.798

Source : Authors' Research

Table 2. Sample Distribution on the Basis of Age and Income

Age	Frequency	Percentage	Income (₹)	Frequency	Percentage
18 -20 yrs	11	10.2	0 - 20,000	36	33.6
20-29 yrs	29	27.1	20,000-40,000	18	16.8
30-39 yrs	32	29.9	40,000-60,000	19	17.3
40-49 yrs	15	14.0	60,000-80,000	24	22.4
>50 yrs	20	18.6	>80,000	10	9.3
Total	**107**	**100**	**Total**	**107**	**100**

Source : Authors' Research

Table 3. Regression Output

Predictor	Standardized Beta	*t* -value	*P* - value
Financial Risk	-.301	-3.224	.002*
Product Risk	-.298	-3.178	.002*
Time Risk	-.048	-.493	.623
Delivery Risk	-.555	-6.839	.000*

Criteria: Significance level = <.05 Source : Authors' Research

perceived risk and attitude towards online shopping. Simple linear regression was used for this purpose. Dimensions of perceived risk (financial risk, product risk, time risk, and delivery risk) were taken as predictor (independent variables) while attitude towards online shopping was taken as the dependent variable.

(b) In the second part, an analysis was made through ANOVA to determine the significant differences in perception of online risk between online shoppers of different ages and income groups. Here, perceived risk (product, financial, time/convenience, and delivery risk) was taken as the dependent variable and demographic variables (age and income) were taken as the independent variable.

↳ **Data Analysis and Hypotheses Testing :** In order to check the internal reliability of the questionnaire, a reliability

test was constructed. The value of alpha for all the five dimensions of the questionnaire was significant (Table 1), and no further modification was indicated. Hence, we continued with our existing scale. Our first objective was to investigate the relationship between perceived risk and attitude towards online shopping. To test the hypotheses H1,H2,H3,H4 , simple linear regression analysis was used with perceived risk (financial risk, product risk, time risk, and delivery risk) taken as the independent variable and attitude towards online shopping taken as the dependent variable. The results obtained are presented in the Table 3.

Table 4. Results of ANOVA test

	Product Risk		Financial Risk		Time risk		Delivery Risk	
	***F* Value**	***P* value**	***F* Value**	***P* Value**	***F* Value**	***P* Value**	***F* Value**	***P* Value**
Age	12.248	.000*	19.885	.000*	4.066	.004*	2.582	.042*
Income	7.393	.000*	5.363	.001*	3.123	.080	1.842	.127

Criteria: - significance level = <.05 .Source : Authors' Research

The Table 3 indicates that financial risk, product risk, and delivery risk have a significant negative impact on attitude towards online shopping, suggesting the acceptance of H1, H2, and H4. This result is in accordance with a previous study which suggested that an increase in perception of risk decreases attitude towards online shopping (Mitchell, 1999). However, the value of Beta for time risk is very low, indicating little evidence to support H3. Our second objective is to analyze the impact of demographic variables, that is, age and income on perception of risk in online shopping. This will help us in understanding whether the respondents of different age and income groups had same or different perceptions about the given four types of online risks. The results thus obtained are presented in the Table 4.

The Table 4 represents a significant difference in perception of product risk, financial risk, time risk, and delivery risk with respect to consumers of different age groups (p <.05), suggesting acceptance of hypotheses H5a, H5b, H5c, and H5d. There is also a significant difference in perception of product risk and financial risk between respondents of different income classes, leading to the acceptance of hypotheses 6a and 6b. However, ANOVA results indicate no difference in perception of time and delivery risk (p >.05) on the basis of income and hence, the results provide no sufficient evidence to accept the hypotheses H6c and H6d. The Table 5 provides a summary of hypotheses testing.

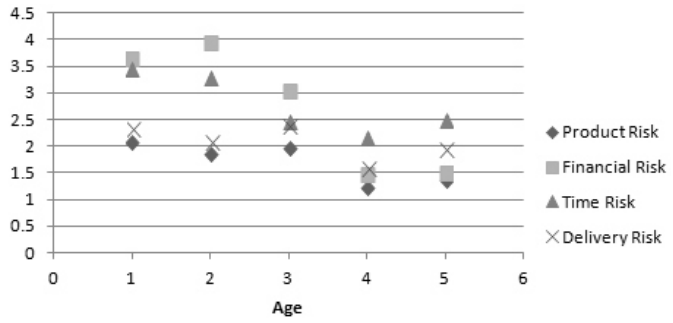
Table 5. Summary of hypotheses testing

Hypothesis	Particulars	Result
H 1	There is a significant negative impact of perceived financial risk on attitude towards online shopping	Accepted
H2	Perceived product risk negatively impacts attitude towards online shopping.	Accepted
H3	Perceived product risk negatively impacts attitude towards online shopping.	Rejected
H4	The fear of not delivery or delivery of damaged or inappropriate products has a negative impact on attitude towards online shopping.	Accepted
H5a	There is a significant influence of age on perception of financial risk in online shopping.	Accepted
H5b	There is a significant influence of age on perception of product performance risk in online risk.	Accepted
H5c	There is a significant influence of age on perception of time risk in online shopping.	Accepted
H5d	There is a significant influence of age on perception of delivery risk in online shopping.	Accepted
H6a	There is a significant influence of income on perception of financial risk in online risk.	Accepted
H6b	There is a significant influence of income on perception of product risk in online shopping.	Accepted
H6c	There is a significant influence of income on perception of time risk in online shopping.	Rejected
H6d	There is a significant influence of income on perception of delivery risk in online shopping.	Rejected

Source : Authors' Research

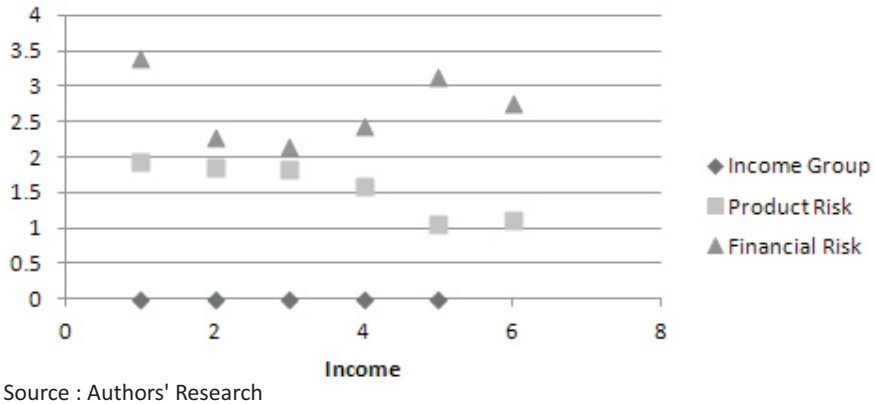
Figure 2 and Figure 3 are based on mean value of different perceived risks across age and income groups respectively. Since this mean value was obtained by using questionnaires that used the 5-point Likert scale, where 1

Figure 2. Distribution of Mean of Online Risk Along Age



Source : Authors' Research

Figure 3. Distribution of Mean of Online Risk Along Income Group



Source : Authors' Research

was for *strong agreement* and 5 was for s*trong disagreement* for a particular online risk, therefore, the higher is the mean value, the lower is the perception of that risk. The scatter plot graph presented in the Figure 2 represents a positive movement of means of all the four perceived risks with age, that is, with an increase in age, perception towards online risk (product, financial, time, and delivery) increases. In case of income, as represented in the Figure 3, product risk decreases with increase in income. It is evident from the Figure 3 that financial risk was less in respondents who belonged to the income group of less than ₹ 20,000 per month but it increases subsequently with an increase in income. The Figure 3 does not show any trend by movement of means of delivery and time risk as there is no significant difference in perception of these risks on the basis of income as indicated by the ANOVA test ($p < .05$).

Managerial Implications

It has been found that perception towards online risk varies with age. This is in accordance with findings of previous researchers (Fogg et al., 2010 ; Nayyar & Gupta, 2010), who suggested that young generations are less concerned about security and reliability issues of Internet technology and are more oriented towards online shopping than older counterparts. With an increase in age, consumers become more risk averse. Analyzing the mean values of various risk perceptions of respondents from different age groups (Figure 1), it can be said that although product risk and delivery risk were the most dominating among the respondents of all age groups, it became more significant in respondents of older age groups.

The young generation will be an easy target for online marketers. Since product risk perception was high even in youth, it can be suggested that online shopping in our country is still not prepared for products that require touch and feel inspection. Standardized products like movies, CDs, and tickets that contain little product and delivery risk will

remain in demand in the years to come. Electronic goods, video games, gift items, or trendy accessories that are targeting young generations are likely to sell more in comparison to home furnishing and home décor items that target people in their late 30s or above. Senior people are used to traditional shopping and find it more comfortable as it provides surety of product quality and proper delivery. Lack of touch and feel inspection of products, trust, and non availability of proper shipment facility magnifies product and delivery risks among consumers in case of online shopping. The study also indicates that time risk negatively impacts attitude towards online shopping. However, mean values obtained for time risk indicate it to be comparatively low across all the age groups. This may be because our respondents were Internet users, and with an increase in Internet experience, perception of time risk decreases. As also suggested by Schiffiman and Kanuk (2003), younger generations have always exhibited a positive disposition towards adoption of new innovations. They enjoy searching or browsing websites or a product on the Internet which decreases perceived time risk in this age group. Financial risk, that is the risk of monetary loss during online transactions, has been found to have a significant impact on consumer attitude. Fear of loss of credit card information or being overcharged by the online shopping sites prevented the respondents from going online. The Figure 3 indicates that respondents in the older age groups were more prone to financial risk. Strategies like cash on delivery or displaying proper return policies on sites will be useful to reduce financial as well as product and delivery-related issues of this target group.

It was observed that income has a significant impact on product risk and financial risk, but has no impact on delivery and time risk in online shopping; that is, with change in income, there is a significant change in product and financial risk, but no perceptual change was observed in delivery or time risk. People with higher income are less concerned about product risk, and this presents the reason that previous researchers have also suggested that income is directly proportional to online buying intentions (Donthu & Garcia 1999; Korgaonkar & Wolin, 1999). Financial risk, however, in this study indicates a very different pattern. While it was very less in respondents who were earning less than ₹ 20,000 per month, it increases subsequently, and falls thereafter. Impact of age may be a cause for this type of movement as respondents earning less than ₹ 20,000 per month were mostly youngsters. As the combined impact of age and income has not been taken into consideration, proper judgment cannot be arrived at with regards to this parameter. However, the Figure 3 indicates a significant increase in financial risk with an increase in income. This may be because with an increase in income, people become cautious about their account/personal information. Since higher-income class people are the major target of Internet marketers, they need to take this fact into consideration. Online marketers should try not to collect any account or credit card-related information on the site; rather, the consumers should be directed to safe payment gateways of standardized banks for all transaction purposes. Insurance regarding security of their personal and financial information should be displayed on websites mentioning the intermediary role of standardized banks. Future researchers can take all the demographic variables and risk factors into account and can examine the combined influence of these demographic factors on online risk perception that will help in segmenting consumers on the basis of risk profile.

Conclusion

The primary goal of this study was to analyze the impact of sub dimensions of perceived risk on attitude towards online shopping and to find the influence of age and income on online risk perception. The research findings revealed that product performance risk, financial risk, and delivery risk had a significant negative impact on attitude towards online shopping, while consumers were not much influenced by time risk. Furthermore, with the help of one-way ANOVA test, it was revealed that age has a significant impact on all the four dimensions of the study (financial, product, time and, delivery), but income influenced perception of only product and financial risk. It was found that with an increase in age, perception of online risk also increases, indicating that older consumers in the country will be less motivated towards online shopping. In case of income, product risk has a negative impact, that is, with an increase in income, product risk decreases, while the financial risk indicated a positive influence, which clearly indicates that there is an increase in financial risk with an increase in income.

Hence, we can conclude that young consumers are easy targets for online marketers. Standardized and trendy products will be in demand on the Internet. Also, respondents belonging to the higher income group are big buyers of online products as product risk is less evident in their case, but they have apprehensions of financial risk. Internet

marketers should take proper steps regarding security of credit card information in order to mitigate this risk.

Limitations of the Study and Scope for Further Research

This study, as any other research work, has some limitations. Sample size of the study was small, and besides, convenience sampling method was used. The respondents were of the same location, and hence, may not be representing the viewpoint of the entire country. We considered only four dimensions of online risk in our study, ignoring social and other non personal risk factors, the study of which is crucial. One way ANOVA was conducted to find the individual impact of age and income on risk perception, but no attempt was made to find a combined effect of these two demographic variables, which can be fruitful for segmenting the consumers. Similarly, future studies can examine the impact of other demographic variables like gender, education, and culture, which can aid marketers in designing proper risk mitigating strategies.

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