DIMENSIONS OF PERCEIVED RISK IN ONLINE SHOPPING - A FACTOR ANALYSIS APPROACH

Sreya R., Junior Research Fellow-UGC (Sreya.r222@gmail.com)
Dr. P. T. Raveendran, Professor (ravindranpt@gmail.com)
Department of Management Studies, Kannur University, Thalassery campus, Palayad, Kannur, Kerala-670661, INDIA

Abstract

Objectives : *The purpose of this paper is to explore the dimensions of risk that consumers perceive during their online shopping process.*

Methodology : *An online survey procedure was used to collect data from 105 respondents who have made online purchases at least once. A structured questionnaire was used as the data collection instrument. Principal Component Analysis was used to determine the dimensions of perceived risk during online shopping process.*

Findings : *The exploratory factor analysis revealed that online shoppers perceive five types of risk namely 'Payment and Transaction Risk', 'Risk of hidden charges', 'Product Risk', 'Privacy Risk' and 'Time risk'. Findings of this study provide online retailers with insights on how to reduce perceived risk during the online shopping process.*

Keywords : *E-commerce, Perceived risk, Shoppers, Online shopping, Factor analysis.*

Introduction

1. E-commerce in India

E- Commerce is emerging as the new 'sunrise sector 'in India. Increasing mobile and internet penetration, exciting discounts, advanced shipping and payment options, favourable demographics have ushered in the growth of e-commerce (Deloitte, 2015). Customers are attracted to e-commerce on account of superior value proposition offered by e-retailers on several factors such as broader assortment of products, higher discounts and greater convenience etc (BCG,-IAMAI, 2015). According to a study by RAI–KPMG (2014) on emerging consumer segments, rapid urbanization and lifestyle changes have increased the number of time starved consumers who emphasize on convenience as a deciding factor for their purchases. Hectic urban lifestyles coupled with growing incomes have led to the growth of time starved consumers who derive value from the quality of service. This explains the emergence of online grocery stores such as Bigbasket.com, Aaramshop.com through which consumers are relieved of the mundane chores such as grocery shopping. The e-commerce companies have offered convenient payment options and introduced technological innovations and customer friendly policies to capture online time and wallet share. Concepts such as flash sales, 'by invite only' sales, India 'Cyber Monday' or the 'The Great Online Shopping Festival' plays an important role in promoting online shopping (KPMG-IAMAI, 2013).

2. Perceived risk in online shopping

Bauer (1960) is attributed with the development of perceived risk theory in marketing literature who proposed that consumer behaviour should be analysed as a risk handling activity. Perceived risk was first analysed in the context of offline consumer behaviour. The early contributors at this stage were Cunningham (1967), Jacoby & Kaplan (1972). During this stage perceived risk was divided into five dimensions- social, psychological, physical, performance and financial risk. Later Peter & Tarpey (1975) added one more dimension – time risk. With the emergence of e-commerce, three more dimensions of perceived risk – privacy risk, security risk, and source risk or e-retailer's risk were added. Featherman & Pavlou (2003) found that in the e-service context, performance, financial, privacy and time risk were the main causes of concern. Lim (2003) identified four sources of perceived risk in relation to online shopping i.e. technology, vendor, consumer and product. Yen (2010) identified that there are different types of perceived risk such as channel related risk, product related risk and social related risk. Channel related risk

perception refers to the risk related to the channel or the place where the product is offered. In online buying the channel related risk is associated with negative results due to security and privacy problems, inability to touch, smell or feel the product. These factors which are not found in traditional channels enhance the perception of risk.

Even though online shopping is convenient in some ways, visual inspection is not easy as in brick and mortar establishments. Consumers are unable to touch or try on products such as clothes and shoes. Lack of knowledge about security and privacy issues of website transactions are major considerations for the online purchaser (Smith & Rupp, 2003). Lack of return and exchange policies and lack of customer service of the e-retailers were also acting as a disadvantage to online shoppers (Monsuwé, et al., 2004; Rajamma et al., 2005). Consumers view the internet as deceptive and untrustworthy, particularly when faced with extra charges and they are less aware of what they spend online and ultimately feel cheated (Ruane & Wallace, 2013).

Literature review

Naiyi (2004) explored consumer's perception of risk in online shopping in China. A model for measuring consumer's perceived risk in online shopping was developed which identified the following dimensions of perceived risk – purchasing process risk, time loss risk, delivery risk, financial risk, product performance risk, asymmetric information risk, privacy risk and e- retailer source risk.

Cunningham et al. (2005) investigated whether the use of internet airline reservation system is perceived to be riskier than traditional airline reservation shopping. Types of perceived risk that influence the consumer during the five stages of consumer buying process of airline reservations under the internet versus traditional shopping contexts were investigated. The study on airline reservation services demonstrated that perceived risk occurred at each stage of consumer buying process regardless of delivery method (online & traditional). Performance risk was the most important factor in case of online airline reservation. The study also revealed that perceived risk is inversely related to usage of internet online reservation services.

Chen & Barnes (2007) investigated the development of online initial trust by consumer's in the context of online bookshops in Taiwan and found that perceived security and perceived privacy had a positive influence on consumer's online initial trust.

Biswas & Burman (2009) examined how product digitalization influences consumers search intentions across offline and online shopping interfaces and how this relationship might be mediated by consumer's perceived risk. It was also examined how perceived performance risk and transaction risk would differentially influence search intentions across the two shopping interfaces. Perceived performance risk was found to be lower for digitalized than for non-digitalized products with the effects being to a greater extent in the online environment. It was found that higher performance risk leads to higher online search behaviour while higher perceived transaction risk reduces online search behaviour.

Rajamma et al. (2009) explored the factors leading to consumer's propensity to abandon the shopping cart at the transaction completion stage. The three factors that influenced shopping cart abandonment were found to be perceived risk in online shopping, transaction inconvenience and perceived waiting time. The results of the logistic regression revealed that perceived risk and perceived transaction inconvenience were positively related to shopping cart abandonment whereas perceived waiting time was negatively related. Perceived transaction inconvenience due to complex shopping procedures, lengthy registration forms and hidden charges had the greatest influence on shopping cart abandonment. Perceived risk with regard to revealing personal and financial information was also identified as a reason for shopping cart abandonment. Propensity to abandon the shopping cart is negatively associated with delay in completing online transactions.

Martin & Camarero (2009) studied the firm and website characteristics that consumers use to infer the quality of the product or performance of the store thus affecting satisfaction and trust. The firm characteristics studied are reputation of the online retailer and brick and mortar experience (whether they run an offline store).The website characteristics studied are service quality, warranty , security and return policy and design and interactivity of the website. It was found that buyers who perceive less risk, trust is determined firstly by satisfaction with previous purchases and secondly by

quality of service and security and privacy policies. Buyers who perceive more risk need to perceive that firm has good reputation, brick and mortar experience apart from other signals.

High perceived risk not only destroys customer's purchase intention towards the website, but it will also increase the possibility of switching to other websites (Yen, 2010).

D'Alessandro et al. (2012) investigated the impact of perceived risk and trust on online purchasing behaviour of expensive and high risk product such as gemstone. The authors identified three antecedents of perceived risk- privacy concern, security practices and type of internet marketing strategy used by the seller. It was found from their study that the type of internet marketing strategy used by sellers, privacy concern and security policies influence buyers perceived risk to purchase gemstones online. The study also showed perceived risk reduces trust and perceived risk reduces online purchases.

Zhang et al. (2012) identified eight dimensions of perceived risk for the overall process of B2C commerce which are social risk, economic risk, privacy risk, time risk, quality risk, delivery risk, health risk and after sales risk. The results of empirical testing proved that the five dimensions- health risk, quality risk, time risk, delivery risk and after sales risk significantly influenced online consumer's purchasing behaviour. These five dimensions of perceived risk were found to have a negative influence on online consumer's purchasing behaviour. The other three dimensions were found to be less relevant factors.

Objectives

The study is primarily conducted to explore the various dimensions of risk that consumers feel or perceive during their online purchases.

Research methodology

A structured questionnaire was used to elicit responses. The questions for the study were derived from previous literature. The notable among them are Miyazaki & Fernandez (2000), Jarvenpa & Todd (1999), Forsythe et al. (2006), Martin & Camarero (2009), Zhang et al. (2012), Bertea(2010), Yen(2010), Chen & Barnes (2007).The questionnaire included 20 statements regarding various risk associated with online shopping. The respondents had to mark their responses on a Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree and 5 = Strongly Agree).The reliability of the research instrument was measured using Cronbach alpha. The value of Cronbach alpha for the study questionnaire was found to be .895 which is a high value of reliability.

Primary data was collected from 105 respondents who had previous experience with online shopping. A mailed questionnaire was used for data collection by means of snowball sampling procedure. The study was conducted during November- December 2015. Out of the 105 questionnaires received, 3 were discarded and hence 102 respondents were used for final analysis. The study was conducted in Kannur district of Kerala state.

Table 1: Respondents' Back-ground

Particulars	Details	Respondents	
		(Number)	(Percentage)
Gender	Male	65	63.72
	Female	37	36.27
Age in years	Below 20	5	4.9
	20-25	28	27.45
	26-30	44	43.13
	31-35	11	10.78
	Above 35	14	13.72
Employment status	Salaried	62	60.78
	Self employed	3	2.94
	Not employed	4	3.92
	Students	33	32.35
Educational status	Up to higher secondary	1	0.98
	Graduates	45	44.11
	Post graduate	53	51.96
	Doctorates	3	2.94

Source: Survey data

Results and Discussions

Exploratory factor analysis was used to explore the underlying dimensions. The necessary sample size for factor analysis is based on many rules of thumb (Field, 2009). Kass & Tinsley (1979) recommended having between 5 and 10 participants per variable up to a total of 300 beyond which test parameters tend to be stable regardless of the participant to variable ratio. Another alternative is to use the Kaiser Mayer Olkin measure of

sampling adequacy. Field (2009) recommends that values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb

Table 2: KMO and Bartlett's Test

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Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.868
Bartlett's Test of Sphericity	Approx. Chi-Square	646.777
	Df	153
	Sig.	.000

It is found that the K.M.O measure of sampling adequacy for the present study is .868 which is 'great'. Also Bartlett's Test of sphericity is used to find out if there exist significant correlations. In the present study Bartlett's Test of sphericity $\chi 2\ (153) = 646.777$, $p < .001$, indicated that co relations between variables were sufficiently large for Principal Component Analysis. An initial analysis was carried out and variables which had communality less than 0.5 were eliminated and factor analysis was re-run to extract the factors. Accordingly 3 items were removed from further analysis. Five factors emerged which had an Eigen value more than 1 explaining 64.402% of the variance.

The questions that load highly on factor 1 relates to 'Transaction and payment risk' incurred during online shopping process. Payment related risk during online shopping occurs when consumers perceive that online payments are not safe, that they may lose money if same product is available at lower prices in physical stores and no refund of money is issued when orders are cancelled. The questions that load highly on factor 2 relates to 'Risk of hidden charges' in online shopping. The variables included in the factor concerns with consumer's perceived risk of hidden charges incurred during online shopping. These include charging of delivery service with additional fee, additional fees that might be incurred in online payment services and charges that might have to be incurred when products purchased online misses the after sale guarantee. The questions that load highly on factor 3 relates to 'Product Risk'. The variables include receiving of used /tampered goods, issues relating to consumers inability to touch, feel or see the product,

Table 3: Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.977	35.159	35.159	5.977	35.159	35.159	3.726	21.919	21.919
2	1.409	8.287	43.446	1.409	8.287	43.446	2.428	14.281	36.199
3	1.317	7.745	51.191	1.317	7.745	51.191	2.213	13.015	49.215
4	1.184	6.962	58.154	1.184	6.962	58.154	1.316	7.742	56.956
5	1.062	6.249	64.402	1.062	6.249	64.402	1.266	7.446	64.402
6	.925	5.440	69.842						
7	.689	4.051	73.893						
8	.635	3.736	77.629						
9	.568	3.343	80.972						
10	.545	3.206	84.179						
11	.489	2.876	87.055						
12	.459	2.703	89.758						
13	.417	2.455	92.213						
14	.390	2.296	94.508						
15	.380	2.237	96.745						
16	.311	1.831	98.576						
17	.242	1.424	100.000						
Extraction Method: Principal Component Analysis.									

Table 4: Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Contacting customer service is difficult for online purchases	.748				
I may not get reimbursement of money if I cancel my order	.729				
I may get the same product at a lower price from physical stores	.703				
I find it too complicated to place an order	.654				
Online payments are not safe	.624				
Delivery service will be charged with additional fee		.789			
Use of online payment services will be charged with additional fee		.694			
Products purchased online may miss after sales service guarantee	.406	.638			
For warranty of the products I may need to pay additional fee		.520			
Products delivered might be different from what was shown on the website			.726		
Size may be a problem for clothes			.724		
I might receive used / tampered goods	.544		.594		
I am unable to touch, feel or see the actual product to assess the quality			.587		
The online store may fail to deliver the ordered goods	.442		.453		
Online retailers may track my shopping habits and past purchases				.810	
The online retailer may ask for irrelevant personal information	.532			.537	
I don't like to wait for products to arrive					.815
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 7 iterations.					

sizing issues. Products which are delivered might be different from what was shown on the website and in extreme cases non delivery of products. The questions that load heavily on factor 4 relate to 'Privacy risk' and include the risk that consumers feel about online retailers asking for irrelevant personal information and tracking shopping habits and past purchases. The last factor which contains a standalone variable of consumers not wanting to wait for products to arrive is termed as 'Time risk'. Before rotation, factor 1 accounted for considerably more variance than the remaining four (35.19% compared to 8.287, 7.745, 6.962 and 6.249%), but after extraction it accounts to 21.919% of variance (compared to 14.281, 13.015, 7.742 and 7.446 % respectively).

Conclusions and implications

Consumers are still wary about financial transactions online. Secure payment gateways need to be established to gain consumer confidence. Retailers can also go in for innovative methods such as mobile payments etc. The study indicated that consumers perceive that online shopping has some 'hidden charges'. Retailers need to be specific regarding their guarantee and warranty policies. Also the inability of the consumer in using the senses of touch and feel poses risk with regard to the product purchased. Hence product descriptions must be clear. Product visual information in the form of zoom functions; alternative images etc must be put on the websites to aid the consumer. Privacy policies should also be mentioned on their websites.

Limitations and scope for future research

The sample selection followed in the study 1is non random in nature. In future studies, a more representative sample by means of random sampling procedure can be used. Perceived risk depends on the type of product purchased. In this study, product category was not mentioned. So in further studies the effect of product categories on perceived risk of online shopping can be found out to ascertain if certain categories of products carry more risk when purchased online.

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