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Influence of Perceived Risk on Online Purchase Intentions

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Abstract: ***This study investigates the impact of various types of risk perceived (financial risk, product risk, security risk, time risk, social risk and psychological risk) by consumer on his/her online purchase intention by conducting survey method. A total of 370 responses were collected from the respondents Punjab, Haryana and Chandigarh to analyse the critical factors of perceived risk affecting online purchase intention. Analysis was carried out by using Partial Least Square Structural Equation Modelling (PLS-SEM) using SmartPLS software. The results showed that out of six types of risk perceived by consumer, four factors have significant negative effect on the online purchase intentions of the consumer which are financial risk, product risk, security risk and psychological risk. Study also suggests strategies for the e-retailers by which they can minimise consumer's perception about these types of risks.***

Keywords: Perceived Risk, Online Purchase Intention, Online Shopping, Consumer, Online Risk, Risk.

I. INTRODUCTION

Digitalization and advancement of internet technology has opened massive opportunities and experiences for consumers. Internet has become a vital medium for communication and global marketplace which has revolutionised marketing and trade. In recent decades, online shopping has become one of the most popular activities with the growth of internet and technology. Online shopping offers consumers to search information and buy products/services with the use of internet which also facilitates convenience, time saving, avoiding crowd and increased choice from the comfort of their homes. Internet has paved the opportunities not only for the consumers but it has also facilitated various companies and corporations with opportunities to expand their scale by providing increased customer reach through e-commerce (Alkailani and Kumar, 2011). With the easy availability of internet access on phone, computers, and tablets at almost every place like home, office or public places, online shopping has become very common mode of transactions in day to day life. Where most users have embraced online shopping trend enthusiastically, there are some people who are afraid of it due to various perceived risks involved in online shopping.

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Internet penetration rate in India has a substantial increase in recent years from just 4% in 2007 to nearly 47% in 2021 ranking India on second number in the terms of active internet users among the whole world (Statista, 2022a). The number of online shoppers is also increasing from 110 million in 2018 to more than 190 million in 2021 (Statista, 2022b). With the increase in trend of online shopping, challenges and negative aspects associated with online shopping also increases. Due to lack of face-to-face interaction, there are various risk concerns which are perceived by the consumers and are needed to be addressed as compared to offline/physical shopping. People perceive higher risk as compared to traditional offline shopping (Lee & Tan, 2003). Consumer may feel some degree of risk in online shopping like wrong product delivery, monetary loss, product quality risk due to lack of tangible evaluation, data protection, or timely delivery etc. This consumer attitude or perceived risks towards online shopping have a significant influence on the online shopping behavior of consumer (Ariffin et. al., 2018). There are a lot of risks which are perceived by consumers while shopping online which affects the transactions and performance of online retailers. Risks perceived by consumers while shopping online is an important issue having a great impact on e-retailers. This study aims to identify various types of consumers' perceived risks factors that affect their online buying behavior. The section 2 of the paper critically reviews the available literature and development of hypothesis, section 3 discusses the methodology and data analysis and section 4 discusses the results, practical implications and limitation of the study for future research avenues.

II. LITERATURE REVIEW

A. Online Purchase Intention (OPI)

Online purchase intention is the willingness and readiness of a consumer to purchase products through internet (Meskaran et. al., 2013). Iqbal et. al. (2012) defined online purchase intention as a customer's willingness to purchase products with the help of internet or comparing prices of products over internet. Online purchase intention is an important element of the consumer behaviour which impacts the e-retail sale and online purchase intention of consumer is also gets affected by a lot of factors. Perceived risk is one of these factors which impacts negatively on the online purchase intention of the consumer i.e.

higher the perceived risk, lower will be the intention of the consumer to buy online (Almousa, 2011; Meskaran et. al., 2013).

Park and Jun (2003) conducted cross cultural comparison of the association between consumer's perceived risk and online purchase behaviour. Data was collected from 150 Korean respondents and 133 US respondents. According to results showed by study, Korean respondents perceives higher risk than US respondents and a negative relationship was found between perceived risk and online shopping behaviour.

Iqbal et. al. (2012) conducted a study in Pakistan with a sample size of 341 respondents (respondents were professionals, businessmen, civil servants and university students). Data was collected through questionnaire and analysed by applying SEM using AMOS and other analysis through SPSS. Results showed a negative association between perceived risks of consumer on online purchase behaviour.

Ariffin et. al. (2018) conducted a study in Malaysia to analyse the impact of online perceived risk on the consumer's online purchase intention. Sample of 319 respondents was taken for the study and data was collected through questionnaire designed on 5 point Likert scale. Collected data was analysed by applying various tools including multiple regression through IBM SPSS 24. Study revealed the impact of six variables of perceived risk on the purchase intention of the consumer. Among these six variables, security risk was found to be the main contributor which discourage a consumer to purchase over internet.

B. Perceived Risk

By perceived risk, we mean the expectations of loss from certain things or activity (Schierz et. al., 2010). Higher the risk perception, higher the consumer will expect the chances of loss. Consumers' perceived risk is the perception of consumer about the possibility of undesirable consequences of purchasing a product or service (Bauer, 1967). Studies shows that perceived risk is considered to be the one of the most important factor which stops consumers to shop online (Martin & Camarero, 2008). Risk is perceived by consumers in online purchase when they are uncertain about the consequences of their purchase decision because there is difficulty in evaluation of product with virtual visuals. (Schiffman et. al., 2007). Perceived risk plays a significant role in the purchase intention of the consumer as a consumer who perceives high risk while shopping online would not prefer to shop online (Iqbal, 2019). There is negative relationship between perceived risk and online purchase intentions of the consumer (Ariffin et. al., 2018). Higher the perceived risk, weaker will be the purchase intentions of the consumer (Kim & Lennon, (2013). Studies show that a consumer can perceive risk from various factors while shopping online which are:

Table 1: Factors of Perceived Risk from Literature Review

Author	Title	Journal	Factors of Perceived Risk
Featherman & Pavlou, 2003	Predicting E-Services Adoption: A Perceived Risk Facets Perspective	International Journal of Human Computer Studies	Safety, Performance, Social, Financial, Psychological, And Time Risk
Ko et al., 2004	Cross-Cultural Differences In Perceived Risk Of Online Shopping	Journal Of Interactive Advertising	Financial, Social, Performance, Physical, Psychological, And Time Risks
Bhukya & Singh, 2015	The Effect Of Perceived Risk Dimensions On Purchase Intention: An Empirical Evidence From Indian Private Labels Market	American Journal Of Business	Functional Risk, Financial Risk, Physical Risk and Psychological Risk
Ariffin et. al., 2018	Influence of Consumers' Perceived Risk on Consumers' Online Purchase Intention	Journal Of Research In Interactive Marketing	Financial, Product, Security, Time, Social, Psychological Risk
Iqbal, 2019	Impact Of Perceived Risk On Customer's Online Purchase	Journal Of Marketing Strategies	Product Risk, Financial Risk, Security Risk,
	Intention Towards Branded Apparels		Time Risk, And Social Risk
Amirtha et. al., 2020	Influence Of Perceived Risk Dimensions On E-Shopping Behavioural Intention Among Women—A Family Life Cycle Stage Perspective	Theoretical And Applied Electronic Commerce Research	Performance, Security, Time-Loss, Social, After-Sale, Source, Psychological, Privacy, Delivery, Physical Risk

This study includes six factors of perceived risk have been included which are financial risk, product risk, security risk, time risk, social risk and psychological risk.

C. Financial Risk (FR)

Financial risk has been revealed as the most common risk among all the studies that is associated with the online shopping. Financial risk is the expectation of the consumer, associated with online purchase, that his/her purchase activity may result into monetary loss when product will not be up-to-mark as compared to price paid for it (Featherman & Pavlou, 2003). Perception of financial risk is the one of the major barrier in the online shopping decision of the consumer (Bhukya & Singh, 2015). A consumer may perceive financial risk when he/she does not feel it safe to share their credit card details while purchasing online and is less likely to shop online (Forsythe & Shi, 2003).

Consumer's perception of perceived risk may be like product may not perform well, manipulation of credit card information, online fraud or when he doubts the authenticity of e-retailer. Among which credit card fraud is perceived to be the major risk in online shopping (Gerber et. al., 2014). Thus, proposed hypothesis is:

H1: Financial Risk Affects Negatively to the Online Purchase Intention.

D. Product Risk (PR)

Product risk is perceived when a consumer expects that a particular purchase decision will not meet his expectations towards that product because a product cannot be judged properly (like quality or performance) just by its visuals. In online shopping, consumer has to purchase products just by relying over the visuals and the information provided by the e-retailer which is one of the main hurdle in the online shopping purchase intention of the consumer (Popli & Mishra, 2015). Studies reveal that product risk is supposed to be high when the product is displayed at a high price with limited information about that product (Forsythe & Shi, 2003). There may be chances that product color, shape or some other dimensions may vary from visuals and actual. There is negative relationship between product risk and online purchase intention i.e. higher the product risk perception, less likely for a consumer to go for online shopping (Ariff et. al., 2014). A study conducted by Bhatti et. al. in 2018 revealed that 82% of the respondents have not completed their online shopping due to high product risk perception. Thus, proposing following hypothesis:

H2: Product Risk Affects Negatively to the Online Purchase Intention.

E. Security Risk (SER)

Customer fears that data/details provided by them might get misused without authentication. While shopping online, customer has to provide a lot of information like delivery address, size, preferences or payment mode/details etc. to complete the transaction. Security risk is perceived by a consumer when he feels that he may face loss due to online hacking or fraud risking privacy of the online user (Karnik, 2014). Security risk is one of the main constraints in the repeated online shopping behavior (Forsythe & Shi, 2003). Due to security reasons some customers avoid sharing their credit card number or some other details while shopping online (Martin & Camarero, 2008). Some studies also revealed that some customer provide false details while shopping online when they doubt the goodwill or authenticity of the website (Kayworth & Whitten, 2010). Martin & Camarero (2008) also revealed that customer avoid online shopping as they don't want to lose their any details about credit or debit card. In order to increase online apparel shopping, e-retailer has to implement appropriate measures to reduce perceived security risk (Adnan, 2014). Hypothesis is:

H3: Security Risk Affects Negatively to the Online Purchase Intention.

F. Time Risk (TR)

Time risk is associated with the perception of customer about delayed delivery, time involved in replacement when product is not up to mark, after sale services, time involved in searching appropriate website etc. According to Forsythe & Shi (2003), customer might prefer visiting outlet rather than wasting time on searching suitable product online and waiting for the delivery afterwards. Time risk involves the time involved in online purchase procedure (browsing, searching, and completing online transaction) and then waiting for the delivery (Gerber et. al., 2014). It also includes time involved in returning and replacement of the product when it does not meet the expectation of the buyer (Ariff et. al., 2014). Purchase intention of a customer gets influenced negatively when a consumer perceives that his time might get wasted in searching product online and in taking delivery (Forsythe & Shi, 2003; Gerber et. al., 2014). Thus, hypothesizing:

H4: Time Risk Affects Negatively to the Online Purchase Intention.

G. Social risk (SR)

Social risk means the deterioration of reputation and status in the family or social group due to shortcoming or inappropriateness in the decision made, product selected or inappropriate channel selection for the online shopping. It can be also resulted due to choosing online platform for shopping (Gerber et. al., 2014). Time risk effects negatively to the customer purchase intention towards online shopping (Ariffin et. al. 2018). But study conducted by Iqbal (2019) showed that there is no relationship between social risk and online purchase intention as online shopping is now becoming norm and purchasing product is individual's personal choice rather than getting approval from his social group. Based on the studies conducted by Stone and Grønhaug (1993); Zielke and Dobbelstein (2007) we propose that

H5: Social Risk Affects Negatively to the Online Purchase Intention.

H. Psychological Risk (PHR)

Psychological risk refers to the mental dissatisfaction arising due to perception of wrong decision while shopping online (Amirtha et. al., 2020). It could possibly be defined as potential ego loss which may result due to inconsistency of reaching online purchase goal (Sharma, 2017). In other words, it can be defined as potential mental frustration causing due to not meeting the expectation in future from the online purchase decision. It can be also due to mental dissatisfaction due to choosing a cheap product among huge variety of products (Ueltchy et. al., 2004). Study conducted by Bhukya & Singh (2015) showed a negative relationship between psychological risk and online purchase intention. It is presumed that:

H6: Psychological Risk Affects Negatively to the Online Purchase Intention.

I. Theoretical Framework

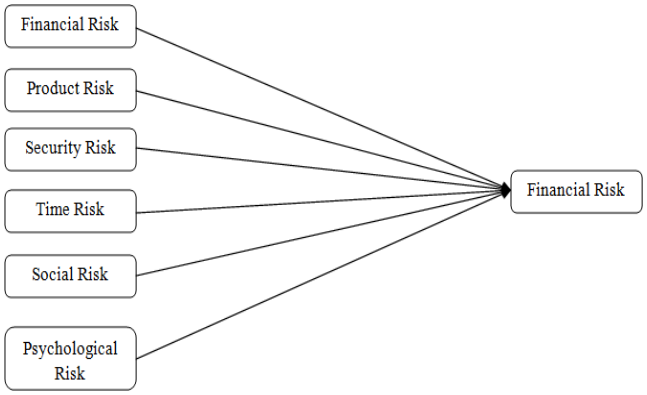

Figure 1: Study model

J. Objective of the Study

The objective of the study is to measure the influence of perceived risk on online purchase intentions of the consumer in the north region of the country India.

III. RESEARCH METHODOLOGY

A. Data Collection

In present study, survey method was used to collect data from the respondents located in the major cities of Punjab, Haryana and Chandigarh region to represent the behaviour of online shoppers with the help of structured questionnaire. A total sample size of 340 complete responses was used for final data analysis which was above the suggested sample size of 300 suitable for using structural equation modelling (Hair et. al., 2017).

The questionnaire was written in English and it was divided into two sections. The first section covered the respondents' demographics. The second section covered all the items of the

construct placed on five-point Likert scale. To measure the constructs, questions were taken from the literature (Ariffin et. al., 2018; Alreck & Settle, 2002; Pappas, 2015). The language of some questions was rephrased to make them better understandable.

B. Data Analysis

a. Descriptive analysis

The descriptive analysis of the study is well reported in Table 2. This table depicts the demographic profile of the respondents. 58.24% were male and 41.76% were women. Majority of the respondents were below 30 years old followed by the age group of 30-40 and then above 40. The demographic figures showed that majority of the respondents were having monthly income below 30,000 pm (44.71%) and 39.41% were having monthly income lying between 30,000-50,000 Rs.

Table 2: Sample Demographics

	Frequency	Percent
Gender		
Male	198	58.24
Female	142	41.76
Total	340	
Age (Years)		
Below 30	178	52.35
30-40	114	33.53
Above 40	48	14.12
State		
Punjab	143	42.06
Haryana	131	38.53
Chandigarh	66	19.41
Income		
Below 30,000 p.m.	152	44.71
30,000-50,000 p.m.	134	39.41
Above 50,000 p.m.	54	15.88

C. Measurement Model

Data analysis was done by using SmartPLS software to analyze the conceptual model through PLS-SEM approach. At first stage, measurement model was examined to investigate that if variables meet the required criteria for reliability and validity for applying structural model (Hair et. al., 2017). The model was measures through reliability checks i.e. Cronbach alpha, Henseler's rho_A, composite reliability and Average variance extracted (AVE). The calculated values of all the reliability indicator was above the recommended level i.e. ≥0.70 (Hair et. al., 2017; 2020) and convergent validity should be ≥0.50 (Fornell and Larcker, 1981)

Table 3: Assessment Results for Measurement Model

Constructs	Items	Loadings	Cronbach's alpha	Rho_A	Composite Reliability	AVE
Financial Risk	FR1	0.706	0.839	0.838	0.893	0.677
	FR2	0.858				
	FR3	0.878				
	FR4	0.838				
Product Risk	PR1	0.525	0.763	0.782	0.843	0.526
	PR2	0.586				
	PR3	0.806				
	PR4	0.829				
	PR5	0.821				
Security Risk	SER1	0.843	0.903	0.906	0.932	0.775
	SER2	0.884				
	SER3	0.878				

	SER4	0.916				
Time Risk	TR1	0.867	0.851	0.86	0.899	0.691
	TR2	0.813				
	TR3	0.784				
	TR4	0.859				
Social Risk	SR1	0.83	0.854	0.865	0.901	0.694
	SR2	0.812				
	SR3	0.85				
	SR4	0.84				
Psychological Risk	PHR1	0.847	0.86	0.866	0.905	0.704
	PHR2	0.824				
	PHR3	0.87				
	PHR4	0.814				
Online Perceived Risk	OPI1	0.883	0.864	0.868	0.917	0.786
	OPI2	0.912				
	OPI3	0.863				

Table 3 represents the item loadings as well as constructs reliability measures including Cronbach alpha, Henseler's rho_A, composite reliability and Average variance extracted (AVE). The outer loadings of the items ranged between 0.525-0.912 and composite reliability ranges between 0.843-0.932 which is falls in the limit of satisfactory to good (Hair et. al., 2019). Some of the items were deleted from analysis due to low loading. For the investigation of discriminant validity of the construct, traditional method Fornell and Larcker's criterion (1981) and new criterion of Heterotrait-Monotrait ratio of correlations was also analysed. Table 4 shows the calculations of Fornell and Larcker's criterion for the disciminant validity of construct which shows that square root of AVE of the construct is greater than inter-item correlation values diagonally. Thus, model is fit for further analysis.

Table 4: Discriminant Validity Assessment (Fornell and Larcker's Criterion)

	FR	OPI	PR	PHR	SER	SR	TR
FR	0.823						
OPI	0.536	0.886					
PR	0.441	0.397	0.725				
PHR	0.489	0.394	0.362	0.839			
SER	0.687	0.596	0.613	0.623	0.88		
SR	0.411	0.283	0.329	0.306	0.5	0.833	
TR	0.598	0.312	0.343	0.334	0.465	0.283	0.831

In addition to Fornell and Larcker's criterion, modern method of Discriminant validity assessment i.e. Heterotrait-Monotrait ratio of correlations (HTMT) was also used in the study. As per the threshold limit, HTMT values must be less than 1. Whereas, Henseler et. al. (2015) suggested that HTMT ratio should be maximum of 0.85. In this study, $HTMT_{inference}$ of all the constructs were within the permissible value depicting uniqueness of all the constructs as per table 5.

Table 5: HTMT Ratio of Correlations for Discriminant Validity Assessment

	FR	OPI	PR	PHR	SER	SR	TR
FR							
OPI	0.614						
PR	0.539	0.491					
PHR	0.552	0.453	0.456				
SER	0.755	0.673	0.747	0.706			
SR	0.468	0.324	0.411	0.352	0.565		
TR	0.707	0.359	0.426	0.391	0.53	0.324	

D. Structural Model Assessment

After getting desired reliability and validity of the model, the next step of PLS-SEM is to assess the coefficients of structural model in order to explain the relationship between the constructs. As per the recommendations of Hair et. al. (2020), this process was completed by bootstrapping with 5000 subsamples using PLS Algorithm. Table 6 shows the results of structural model relationships. The relationship between FR and OPI ($t = 5.994$, $\beta = -0.269$, $p < 0.001$), PR and OPI ($t = 3.571$, $\beta = -0.052$, $p < 0.001$), SER and OPI ($t = 7.980$, $\beta = -0.414$, $p < 0.001$), PHR and OPI ($t = 1.997$, $\beta = -0.016$, $p < 0.05$) were found significant. Thus, H_1, H_2, H_3 and H_6 were accepted. But the relationship between TR and OPI ($t = 1.343$, $\beta = -0.053$, $p > 0.05$), SR and OPI ($t = 1.160$, $\beta = -0.039$, $p > 0.05$) was found insignificant resulted in rejecting H_4 and H_5.

Table 6: Hypothesis Testing

	Path Relationship	Sample mean (M)	T statistics	P values	Decision
	Financial Risk -> Online Purchase	-0.269	5.994	0.000*	Accepted
H1	Intention				
	Product Risk -> Online Purchase	-0.052	3.571	0.000*	Accepted
H2	Intention				
H3	Security Risk -> Online Purchase	-0.414	7.98	0.000*	Accepted
	Intention				
	Time Risk -> Online Purchase	-0.053	1.343	0.179	Rejected
H4	Intention				
	Social Risk -> Online Purchase	-0.039	1.16	0.246	Rejected
H5	Intention				
	Psychological Risk -> Online	-0.016	1.997	0.046**	Accepted
H6	Purchase Intention				
Note: * and ** Significant at 1% and 5%					

IV. CALCULATIONS DISCUSSION

This study was conducted to investigate the factors of perceived risk which effects the decision of consumer while shopping online. It highlights the relationship of various perceived risks i.e. financial risk, product risk, security risk, time risk, social risk and psychological risk with online purchase intention. Thus, hypothesizing the negative relationship of perceived risk factors with online purchase intention (H_1, H_2, H_3, H_4, H_5 and H_6). The findings of the study revealed that only four out of six factors have significant impact on the online purchase intentions of consumer which are financial risk, product risk, security risk and psychological risk. Meanwhile, others two factors of perceived risk i.e. social risk and time risk were found insignificant. The total explained variance of OPI for the proposed model was 38.4%.

According to the findings of the study, relationship of financial risk and online purchase intentions was found to be significant negative which is H_1 of the proposed model. This result is consistent with the findings of previous studies (Cemberci et al., 2013; Ariffin et. al., 2018; Forsythe & Shi, 2003). This factor is critical for the Indian consumers who intend to shop online, as found elsewhere. For a consumer who intends to buy online, tends to overspend even though there are discounts and offers. Results also indicate that consumer is easily perceived by financial risk in determining online purchase intention.

In the testing of hypothesis H_2, it can be seen that product risk has a significant negative relationship with online purchase intentions of consumer. The results are consistent with the earlier studies (Ariff et. al., 2014; Bhatti et. al., 2018). Due to lack of physical examination, consumer feels that there might be the probability that product may fail to perform as expected. Online shopping totally depends on the description of the seller and there might be miscommunication about product size, quality, dimensions and color etc from the visuals and information provided. Failure in meeting the expectation may result into dissatisfaction and reduced frequency of further online shopping. Hypothesis testing shows that security risk has a significant negative relationship with online purchase intention of the consumer which is H_3 of the study model. This result is in line with the previous studies (Martin & Camarero, 2008; Kayworth & Whitten, 2010). Although there is advanced technology and updated security patches, people still fear to shop online because it involves disclosure of some sensitive information related to debit or credit card, account number and security pin etc. Most of the consumers prefer to shop online and payment processing through cash mode at the time delivery. Thus, security risk is the hindrance in online purchase intention of the consumers.

Proposed hypotheses H_4 (time risk) and H_5 (social risk) were found to be insignificant in influencing the online purchase decision of the consumer. H_4 is in line with Iqbal (2019) but not with Forsythe & Shi (2003); Gerber et. al. (2014) and Ariffin et. al.(2018). Due to improved search engine optimization and AI time involved in online shopping has reduced. Delivery period for shopping products has been short for example the average delivery time per order of Amazon in India was around 3.5 days in 2020 (Mint, 2020). Customers don't have to wait much for their orders and for searching the right product which reduces the time risk in online purchase. There was also no significant relationship was found between social risk and online purchase intention in today's technologically inclined society. Hypothesis H_6 is also consistent with earlier conducted studies Amirtha et. al. (2020); Ueltchy et. al. (2004); Bhukya & Singh (2015). Disappointment from inappropriate product selection, not meeting expectation, addiction to online shopping may cause negative impact on online shopping intentions of the consumers.

A. Practical Implications

India has become the 8th largest market for e-commerce with 3rd largest online shopper base in 2020 which is also expected to grow more (IBEF, 2022). But the share of online retail sale as compared to total retail sale is much lower as compared to other countries i.e. 1.6% for India, 15% for China and global average 14% (World Bank, 2019). In order to increase online sales, it is significant to get aware of various risks perceived by online shoppers and strategies should be made to minimise their perception about these risks.

This study shows the various types of risks perceived by the online shoppers and extent of concerns towards each risk dimension. It suggests marketers the importance of each risk dimension perceived by consumers so the marketer can adopt adequate risk reduction strategies and attracts online shoppers. For example by providing better information and description of the product, avoiding delays in delivery, better and easy return policy, better customer support, offering guarantees and warrantees on products perceived risk of the consumer can be reduced.

B. Limitations and Future Research Avenues

This study was designed to evaluate the different factors of perceived risk that influence the decision of a consumer while shopping online. Firstly, study was conducted on sample respondents who are potential consumers for online purchase and in future other stakeholders can be the potential respondents. Second, this study does not considered as mediating effect between perceived risk and online purchase intentions of a consumer which can be demographic variables, trust, loyalty, past experiences and other personality traits etc. These dependent constructs can also be incorporated to the model. Third, studies can also take into account cross sectional data or longitudinal aspects in the study.

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Authors Contributions	I am only the sole author of the article.

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