

Influence of consumers' perceived risk on consumers' online purchase intention

Online
purchase
intention

Shaizatulaqma Kamalul Ariffin, Thenmoli Mohan and Yen-Nee Goh
Graduate School of Business, Universiti Sains Malaysia, Minden, Malaysia

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Abstract

Purpose – This paper aims to examine the relationship between six factors of consumers' perceived risk and consumers' online purchase intentions. In particular, this study will examine the relationship between financial risk, product risk, security risk, time risk, social risk and psychological risk and online purchase intention.

Design/methodology/approach – Survey method was used for the purpose of data collection, and quantitative analysis was used to test the hypotheses. A total of 350 respondents participated on an online survey, and data were quantitatively analyzed via IBM SPSS Statistics 24.

Findings – The findings from this study suggest consumers' perceived risks when they intend to purchase online. Five factors of perceived risk have a significant negative influence on consumer online purchase intention, while social risk was found to be insignificant. Among these factors, security risk is the main contributor for consumers to deter from purchasing online.

Practical implications – This study provides useful information to online retailers in electronic commerce (e-commerce) activities. Previous studies show that many online retailers are still facing some risks in online business, and this will affect the transaction and performance of the retailers. It is hoped that the findings can help online retailers to formulate strategies to reduce risks in the online shopping environment, especially security risks for better e-commerce.

Originality/value – The development of online shopping has led to some challenges to consumers, which comprise security of payment, data protection, the validity and enforceability of e-contract, insufficient information disclosure, product quality and enforcement of rights. This issue emerged because many online retailers do not understand the main factors that will contribute to consumers' perceived risk. Consumers' perceived risks will influence consumer attitudes toward online shopping and purchase behaviors. Studies on consumers' perceived risks toward online purchase intentions are still inconclusive. Thus, this paper fills the gap in the research area.

Keywords Online shopping, Security, E-commerce, Quantitative research, Online consumer behaviour

Paper type Research paper

Introduction

Online shopping is a viable preference to consumers as the internet has become an essential tool for communication and business worldwide. The [Internet World Stats \(2018\)](#) reported that there are more than four billion internet users in 2017, and it is a 577 per cent growth as compared to the total population of internet users in year 2000. The Asian region conquers 49.2 per cent of the total number of internet users. In 2017, an estimated 1.66 billion people worldwide purchased goods online; the total number of internet users had triggered \$2.3tn of the sales from the internet, and projections show a growth of up to \$4.48tn by 2021 ([Statista, 2018](#)), representing a drastic increase in online shopping ([Paynter and Lim, 2001](#)). It showed that the internet had revolutionized the business to online shopping ([Bourlakis et al., 2008](#)).



With the availability of access to internet-connected computers, as well as mobile phones and tablet computers, be it at home, office or through facilities such as public libraries, restaurants and cybercafés, nowadays, this trend of shopping has become a common mode of transaction. It has become a part of daily life ranging from purchase of flight tickets, booking hotel rooms, movie tickets, fashionable apparel and beauty products and is now also embracing toward online grocery. Among the items bought by e-consumers, travel-related products top the list at 82.2 per cent, followed by books (69 per cent) and general consumer goods (59 per cent) (Ling *et al.*, 2012).

In spite of the momentous growth of online shopping and electronic commerce (e-commerce), this astonishing development has led to some new problems and challenges that the foremost internet users' concern comprises security of payment, data protection, the validity and enforceability of e-contract, insufficient information disclosure, product quality and enforcement of rights (Paynter and Lim, 2001). Compared to the traditional retail form, Lee and Tan (2003) pointed out that when consumers shop online, they tend to perceive higher risks. The method of online shopping conducted is different compared to traditional transactions, whereby it has developed to be more sophisticated, thus exposing and increasing the vulnerability of consumer perception to imbalance online shopping. A consumer may face numerous problems, for example, in placing an order where the wrong product is delivered or no delivery at all in spite of the fact that payment was made to the supplier through the consumer's credit or debit card. There are more risks and less trust in an online setting compared to physical stores because it is likely difficult to assess the product and the security and privacy issues in the purchasing process (Laroche *et al.*, 2005).

Online shopping is known as a risky activity in the e-market place (Almousa, 2011). The probability of an online shopper suffering monetary loss due to unsatisfying product and not being worth the price paid is higher (Featherman and Pavlou, 2003). The product might also not meet the performance of what was displayed originally in the website, for example, its color, shape and outlook (Dai *et al.*, 2014). Online shoppers might feel a certain degree of risk with security tools and time delivery because their expectations of losses on product information quality over the website, transaction over the internet and delivery are higher (Karnik, 2014; Forsythe *et al.*, 2006; Dai *et al.*, 2014). Besides that, online shoppers may perceive the possible loss of self-respect due to the frustration of not attaining a purchasing goal and dissatisfaction in choosing a poor product or service (Ueltschy *et al.*, 2004). Poor product or service may cause a consumer to be negatively judged and evaluated based on his/her preferences (Semeijn *et al.*, 2004).

Consumers' perceived risks toward online shopping has become a crucial issue to research because it will directly influence consumer attitudes toward online purchases, and their attitudes will have a significant impact on online shopping behaviors (Ariff *et al.*, 2014). Almousa (2011) stated that perceived risks in online shopping will negatively influence the intention to purchase products online. It is expected that consumers might feel a certain degree of risk when they intend to shop through the internet. However, the perceived risks toward online shopping have not been identified completely as there are a lot of online retailers still facing risks in the online business, and this will affect the transaction and performance of the retailers. Therefore, it is necessary to find out which of the risks will bring the greatest impact to the online retailer, and it is hoped that the findings can contribute to online retailers by helping them to formulate strategies to reduce risks in online shopping environments for better e-commerce business. Thus, this study aims to examine the relationship between six types of consumer perceived risks and consumer online purchase intentions. Six factors, namely, financial risk, product risk, security risk, time risk, social risk and psychological risk, that influence online purchase intentions are

tested. Literature Review is presented next. The review is important to outline the critical findings about online purchase intention and its determinants in view of the fast-changing pace of digital technology in marketing toward consumer purchase intentions.

Literature review

Online purchase intention

The emergence of e-commerce has made online purchase the third most popular activity after email and Web surfing (Jamali *et al.*, 2014). According to Close and Kukar-Kinney (2010), online purchase intention originated from purchase intention. Meskaran *et al.* (2013) defined online purchase intention as the customers' readiness to purchase through the internet. Consumers' willingness to buy a product or service via internet stores is defined as online purchase intention (Li and Zhang, 2002; Salisbury *et al.*, 2001). Close and Kukar-Kinney (2010) also defined online purchase intention as the intention of online shoppers to buy goods and services via the internet or virtual shopping carts. Besides that, Iqbal *et al.* (2012) defined online purchase intentions as the customers' willingness to use internet services, making an actual purchase of goods and services or comparing the prices of products.

Consumer's purchase intention is vital in forecasting consumer behavior that it obviously depends on the influencing factors that make the measurement difficult under different circumstances. Besides that, Schlosser *et al.* (2006) revealed that the existence of strong privacy and security statements would not lead to a higher online purchase intention. The researcher realizes that customer trust in the ability of the company to fulfill their needs and wants is more than just trusting in goodwill to influence consumers' purchasing intentions. Purchase intention is frequently used as a measure to predict the customers' actual buying activities. Earlier studies revealed that consumers' perceived risk will have a negative impact on online consumers' purchase intention for apparel (Almoussa, 2011; Li and Zhang, 2002; Liebermann and Stashevsky, 2002; Meskaran *et al.*, 2013; Suresh and Shashikala, 2011; Zhang, *et al.*, 2012). The higher the perception of risk rises among consumers, the more it would deter consumers purchasing intention. A research by Almoussa (2011) on 300 Saudi Arabian customers investigated perceived risks on apparel online shopping by conducting a Web-based survey that measured the perception of customers' on the six types of risks (performance risk, financial risk, psychological risk, security risk, time risk and privacy risk) connected with online apparel shopping and their influence on purchase intentions. It was found that time risk and performance risk strongly and negatively influenced online shopping intentions; it was also found that privacy risk and security risk have negative effects on online shopping intentions. This research by Almoussa (2011) is a relevant study as it specified and encapsulated perceived risks in apparel online shopping.

A study by Masoud (2013) investigated the effects of perceived risk (time risk, financial risk, information security risk, delivery risk and product risk) on online shopping intentions in Jordan using a sample size of 395 respondents where the majority of the consumers are online shoppers. The study revealed that financial risk, product risk, information security risk and delivery risk negatively affected online shopping intentions, and the study concludes that online merchants should be aware of customers' perceived risks and strategies adequately to avert these risks.

In relation to that, consumers will have a positive online shopping experience if consumers have lesser perceived risk levels on the internet. In the future, an increase in purchase intention will occur if a lower perceived risk level has been achieved. Based on literature, the theoretical framework for this study would be conceptualized based on the

abovementioned findings, using financial risk, product risk, security risk, time risk, social risk and psychological risk, because these variables are vastly recognized as consumer's perceived risk variables that hinder online purchase intentions and these variables had been mostly studied by experts in this field; as such, the variables are well suited for this research.

Perceived risk

Perceived risk according to Schierz *et al.* (2010) is the expectation of losses. The larger the expectations of losses are, the higher the degree of risk consumers will perceive. Laroche *et al.* (2005) specified perceived risk as the negative insights of the unpredicted and changeable results from the purchased products. Meanwhile, Ko *et al.* (2004) defined the concept of perceived risk as the consumers' perception on changeable and contrary outcomes of buying a product or service. The concept includes two elements, which are the indecisions and consequences. Indecisions are defined as the probability of unfavorable outcomes, and consequences are defined as the importance of losses (Laroche *et al.*, 2005). Kim *et al.* (2003) added that consumers' beliefs about the changeable outcomes are derived from online shopping transactions.

Perceived risk has a significant part in determining consumer purchase intentions. Consumers' perception toward risk is crucial in determining their evaluations and purchasing behaviors (Ko *et al.*, 2004). Consumers perceived a higher level of risk when buying online as compared to buying at physical stores. Lee and Tan (2003) stated that consumers with higher perceived risks are not likely to purchase online products or services. It can be concluded that perceived risks have a negative influence on consumer intentions to purchase via the internet (Liu and Wei, 2003). As argued by Kim and Lennon (2013), the greater the perceived risk of shopping at online retailers, the weaker the consumer's purchase intentions toward the online retailer. Akhlaq and Ahmed (2015) found that perceived risk has a negative effect on consumer intentions to purchase online. This suggests that consumers' intention to purchase online is suppressed when consumers find out that the transaction is risky (Akhlaq and Ahmed, 2015). Similarly, in this study, consumers are more likely not to purchase apparel online when they perceived the risk to be high. Past results indicate that perceived risk is negatively related to online purchase intentions, as pointed out by Zhao *et al.* (2017) and Akhlaq and Ahmed, (2015). Thus, it also verified that perceived risk plays a negative role in online purchase intentions.

Featherman and Pavlou (2003) proposed that perceived risk comprises performance, financial, time, safety, social and psychological risks. Besides that, Garner (1986) states that there are an additional six dimensions of perceived risk, namely, includes social, financial, physical, performance, time and psychological risks (Ko *et al.*, 2004). Bhukya and Singh (2015), on the other hand, examined four dimensions of perceived risks in their studies on purchase intention, which includes functional risk, financial risk, physical risk and psychological risk. In the context of online marketplace, Han and Kim (2017) examined a multidimensional perceived risk which includes financial, privacy, product, security, social/psychological and time. With the framework of online shopping as more intensive than other dimensions, Almousa (2011) emphasizes on product, financial and security risks to be the most influential. In this study, six factors, namely, financial risk, product risk, security risk, time risk, social risk and psychological risk, that influence online purchase intentions are tested.

Financial risk

A strong predictor that influences online shoppers' purchase intentions, searching information and frequent purchase activities was identified to be financial risk. Financial

risk is defined as the probability of an internet shopper suffering monetary loss from a purchase when the product does not perform well or if the product is not worth the price paid (Featherman and Pavlou, 2003). Likewise, Popli and Mishra (2015) defined financial risk to include the possibility of repairing costs required for a product purchased online in addition to some hidden maintenance charges to the customers. Masoud (2013) found that any form of financial loss – either through credit card fraud, lesser quality or product that did not perform as expected – deters online shopping and has strong negative effects on online shopping intentions. Pallab (1996) stated that the internet has a low level of security that will make consumers worried to use their credit cards or disclose personal information. Consumers' sense of insecurity concerning online credit card usage was the major barrier to purchase online products (Maignan and Lukas, 1997).

Purchasing sensory products such as apparel via the internet is more risky as compared to the other goods such as books or computer software (Shim *et al.*, 2000). It is difficult for consumers to evaluate and test apparel products via virtual stores (Brown and Rice, 2001). According to Almousa (2011) and Dai *et al.* (2014), financial risk is one of the perceived risks that will negatively influence consumers' online purchase intentions for apparel. Financial risk is also indicated to be a strong forecaster of customers' online purchase intentions for apparel (Bhatnagar *et al.*, 2000). In a similar study on retailers' private labels, the perceived financial risk by a customer is proposed to have a negative influence on their purchase intention as argued by Bhukya and Singh (2015). When consumers perceived higher levels of financial risk, they are less likely to shop via the internet and the total amount spent online or rate of searching with intention to buy will also be affected (Forsythe and Shi, 2003). Thus, based on the findings of several studies, *H1* is proposed:

H1. There is a negative relationship between financial risk and online purchase intention.

Product risk

According to Popli and Mishra (2015), one of the constraints a customer has to overcome when shopping online is there is little possibility to check the product physically before making the purchase. A customer will depend solely on the information provided by the online vendor. Hence, the product risk involves a potential loss if the product did not meet the consumer expectations in terms of product standard and quality. Product risk denotes the possibility of product failure to meet the performance of what it was originally intended for (Zheng *et al.*, 2012). For instance, when the delivered products and the displayed products online were compared, the products' color, shape or outlook may be not be the same, so it is beyond the customer's reach and abilities to examine and check the actual product qualities. Thus, consumers may perceive a product risk based on this condition (Dai *et al.*, 2014). Online shoppers' confidence and intention to purchase products online are easily reduced by the existence of product risks. Once an order has been made and if the product delivered does not match with consumers' expectations, consumer will be more likely to consider that the product is not worth the amount of money spent on the item.

According to a study by Teo (2002), about 25 per cent of consumers are worried about the quality of product that might not fit their expectations. Product risk is the reason why many consumers do not want to purchase products through the internet. Besides that, it is also considered to have a major influence on consumer behavior toward online shopping (Zhang, *et al.*, 2012; Dai *et al.*, 2014). Consumers may perceive product risk if the price of the product is higher with limited information displayed on the website. Consumers may have difficulties to evaluate the products (Forsythe and Shi, 2003). Results from a past study by

Han and Kim (2017) confirmed that product risk negatively influences consumer purchase intention at a major Chinese online marketplace. Based on this discussion, *H2* is proposed:

H2. There is a negative relationship between product risk and online purchase intention.

Security risk

Consumers learn about the value of goods over the website features that offer product information quality, transaction and delivery capability and competent service quality. Nevertheless, without sufficient information of security tools in place, purchase intention will be discouraged. According to Karnik (2014), due to internet vendors existing globally, consumers' perceived risk toward online shopping has also increased, especially when they feel that internet security is inadequate. Security risk is defined as a potential loss due to online fraud or hacking, which exposes the security of an internet transaction or online user (Soltanpanah *et al.*, 2012). Azizi and Javidani (2010) stated that security is linked with disclosure of financial information such as credit card number, account number and safe pin number. It is agreed that one of the barriers for online shopping is security fears (Teo, 2002). Though online shopping brings ease of purchase and usage to consumers, conversely, the absence of security mechanism will badly affect consumers' purchase intention (Tsai and Yeh, 2010; Karnik, 2014; Meskaran *et al.*, 2013).

Consumers fear providing their shipping information, credit card information or complete an online purchase transaction (Leeraphong and Mardjo, 2013). However, it is necessary to provide more personal information when consumers are buying online apparel, such as the delivery address, size they required and personal preferences for styles and prices (Dai *et al.*, 2014). Youn (2005) revealed that insecurity of the information and privacy is related to personal information data management that is handled by the online companies and consumers' history of authentication of accounts.

Hsu and Bayarsaikham (2012) pointed out that security risks have a negative impact on online purchase intentions for apparel. When customers are not confident with the website, they will avoid giving their personal data and tend to provide false or incomplete information (Kayworth and Whitten, 2010). A study by Thompson and Liu (2007) also found that there is a significant relationship between security risks and intention to purchase online. Martin and Camarero (2009) showed that customers avoid online shopping not because of inconvenience but because most customers are scared of losing their credit card information to credit card theft. Thus, they conclude that security risk has a significant influence on online shopping intention. Adnan (2014) suggested that privacy policies are needed to reduce security risk perceived by customers and thus enhance purchase intention of online apparel. Following the discussion above, *H3* is proposed:

H3. There is a negative relationship between security risk and online purchase intention.

Time risk

Time risk is one of the influential factors on consumers' purchasing behavior via the internet (Zhang *et al.*, 2012; Ye, 2004). Time risk comprises the troublesome experience through online transactions that are often caused by the struggle of navigation and/or submitting the orders and delays of getting the products (Forsythe *et al.*, 2006). It refers to the time that consumers take to make a purchase, waiting time for the products to be delivered at their

home and the time that consumers had spent for browsing product information (Dai *et al.*, 2014; Forsythe *et al.*, 2006; Ko *et al.*, 2004).

Time risk also includes when products did not meet consumers' expectation levels and consumers have to return the product for a new replacement (Ariff *et al.*, 2014). Time, accessibility or effort might be fruitless when a purchased product has to be repaired or replaced (Hanjun *et al.*, 2004). It is a time-consuming process for consumers to search, browse, purchase and wait for the product to arrive (Leeraphong and Mardjo, 2013; Hsiao, 2009; Hassan *et al.*, 2006). Furthermore, when there are no photos of the actual product on the website, consumers may have to opt for the products' images by searching them in a separate website, and the time spent for the images to load will be considered as time risk (Forsythe *et al.*, 2006). Sometimes, consumers might just leave the website without buying anything because they are unable to search their desired products on the website or have problems in navigating to the right sites for the products (Gudigantala *et al.*, 2011; Popli and Mishra, 2015). The time that customers spent to search for the information of unfamiliar products and more time waiting for downloading high-pixel images can decrease their intention to shop online. Time risk will also deter the consumers' purchase intention to buy online when it requires a lot of time to find a suitable apparel or website (Forsythe and Shi, 2003; Forsythe *et al.*, 2006). Based on the discussion, *H4* is developed:

H4. There is a negative relationship between time risk and online purchase intention.

Social risk

Social risk is a key element of perceived risk as it interprets society influences on a consumer's decision. Social risk refers to the perceived judgment on the product purchased that creates dissatisfaction among family, friends or communities (Dowling and Staelin, 1994). Besides, social risk may involve the feeling of fear, especially from family and friends who disapprove their online purchases (Popli and Mishra, 2015). Additionally, social risk could prevent a consumer from making a purchase, especially when there is potential disapproval from the consumer's family or friends who play a significant role in discouraging consumers from making decisions to their purchase (Shang *et al.*, 2017). Moreover, social risk is also recognized as the degree of a customer's trust that the consumer will be negatively evaluated and judged due to his/her product (brand) preferences (Semeijn *et al.*, 2004). Previous researchers mentioned that social risk also means the potential loss of reputation in consumers' social groups due to inappropriateness of the product or unsuitability of the product and dissatisfaction of using internet as a shopping channel (Stone and Grønhaug, 1993). According to Zielke and Dobbstein (2007), a probability of perceived loss on social image or status over the purchase of a specific brand or products via internet is stated as social risk. Usually, consumers try to get guidance or approval from their social groups to reduce social risk. Based on the discussion, *H5* is developed:

H5. There is a negative relationship between social risk and online purchase intention.

Psychological risk

Psychological risk is acknowledged as the possible loss of self-respect due to the frustration of not attaining a purchasing goal (Stone and Grønhaug, 1993). Psychological risk may also be defined as a consumer's dissatisfaction in choosing a poor product or service despite having a huge array of varieties (Ueltschy *et al.*, 2004). Psychological risk is associated with

consumer perception on how his/her wrong judgment after making a wrong purchase leads to social risk, referring to his perception of how others will react to his purchase. Moreover, consumers' contentment or satisfaction over defective products can cause a negative effect (Jacoby and Kaplan, 1972). Possible regrets and frustration may result in consumers experiencing mental pressure in the future due to their purchased decisions that did not meet their expectations. The uncertainty or stress may be the reason for psychological risk occurring and affecting their purchase decision. As suggested by Bhukya and Singh (2015), to increase a customer purchase intention, the psychological risk has to be minimized significantly. In addition, social or psychological risks are negatively related to consumers' purchase intentions toward Taobao, a Chinese online marketplace, as supported by Han and Kim (2017). Thus, H6 is developed:

H6. There is a negative relationship between psychological risk and online purchase intention.

Theoretical framework

Figure 1 illustrates the model of the study that is built from previous research. Dai et al. (2014) included three variables, product risk, financial risk and privacy risk, because according to previous studies, these risks are the determinant factors for online purchase intention. However, the findings show that privacy risk is not related to online purchase intentions. Therefore, for this current study, only product risk and financial risk were included. Meanwhile, in the research done by Masoud (2013), it included time risk, social risk and security risk in a study of Jordan's e-commerce market environment. Besides that, Jacoby and Kaplan (1972) stated that psychological risks are also one of the factors that have a negative influence on online purchase intentions. The theoretical framework for this study is shown in Figure 1.

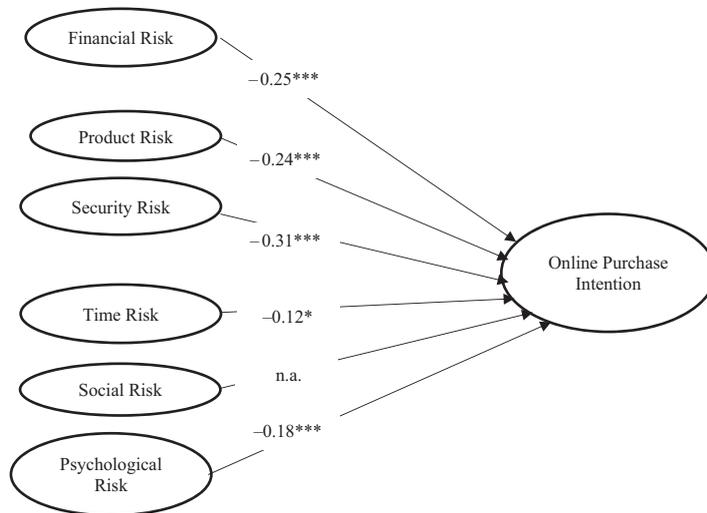


Figure 1.
Theoretical
framework

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, n.a.: not significant

Research methodology

A total of 350 survey questionnaires were distributed to internet users that do online shopping in Malaysia over a period of three months. A questionnaire was used to measure the following variables of the study: financial risk (five items) and security risk (five items) were developed from Featherman and Pavlou (2003) and Masoud (2013), product risk (five items) were developed from Dai *et al.* (2014) and Masoud (2013), time risk (four items) were developed from Masoud (2013) and Marcelo *et al.* (2014), social risk (four items) were developed from Masoud (2013) and Yang *et al.* (2016), psychological risk (four items) were developed from Bhukya and Singh (2015) and Featherman and Pavlou (2003) and online purchase intention (three items) were developed from Pappas (2016). A Likert scale was used to measure (1 = strongly disagree to 5 = strongly agree) five item statements on financial risk, five item statements on product risk, five item statements on security risk, five item statements on time risk, four item statements on social risk and four item statements on psychological risk. The data were analyzed using the Statistical Package for Social Science 24 (IBM SPSS Statistics 24).

Results

Of 350 electronic questionnaires, only 316 (90 per cent) were successfully returned and usable for further data analysis. Respondents' profiles revealed that the majority of them are women (63 per cent) as compared to men (37 per cent) and most of them are from the age category of 36 years and above (37.7 per cent), which represents the typical age of working adult population and a relatively adult segment of the online shopper population. This was followed by 31-35 years (26.6 per cent), 26-30 years old (21.2 per cent) and the rest were below 25 years (14.5 per cent). The majority of the respondents are working people (86.4 per cent), while the rest are retired (6 per cent), students (4.7 per cent) and job seekers (2.8 per cent), 50.3 per cent of the respondents possess a bachelor's degree, followed by diploma (19.3 per cent), high school (16.5 per cent) and master's degree (13.9 per cent). With regard to internet usage per day, the majority of the respondents (57.6 per cent) stated that they have spent more than 4 h per day on the internet, whereas the rest spent less than 4 h (42.4 per cent). Some of the respondents (50.3 per cent) reported that they are at the beginner level of online shopping experience, while the rest were at intermediate (37.7 per cent) and expert (12 per cent) levels. The majority of the respondents (39.2 per cent) had purchased less than three times per year from the internet, followed by three to five times per year (29.4 per cent), five to ten times per year (21.8 per cent) and the rest were more than ten times per year (9.5 per cent) (Table I shows the profile of respondents).

Goodness of measures

This study used measurements that were adapted from previous studies that were conducted in Western countries. This study, conducted in the Malaysian context, may therefore be different from those conducted in the Western countries. Therefore, the "goodness" of the measurements must be assessed prior to conducting any analysis. This is to ensure that the measurements do indeed measure the variables they are supposed to measure and they measure them accurately. There are at least two important methods to assess the goodness of measure, namely, factor analysis and reliability analysis (Sekaran and Bougie, 2009). This study performed factor analysis using principle components and the Varimax rotation technique. Besides that, this study evaluated reliability by assessing the internal consistency of the items representing each construct using Cronbach's alpha, which has been widely used in many studies (Hair *et al.*, 2006).

Item	Option	Frequency	%
Gender	Male	117	37
	Female	199	63
Age	16-20	15	4.7
	21-25	31	9.8
	26-30	67	21.2
	31-35	84	26.6
	Above 36	119	37.7
Position	Student	15	4.7
	Employee	273	86.4
	Job Seeker	9	2.8
	Retired	19	6
Education level	High School	52	16.5
	Diploma	61	19.3
	Bachelor	159	50.3
	Master	44	13.9
Internet usage per day	Less than 1 h	13	4.1
	1-2 h	31	9.8
	2-3 h	48	15.2
	3-4 h	42	13.3
	More than 4 h	182	57.6
Level of online shopping experience	Beginner	159	50.3
	Intermediate	119	37.7
	Expert	38	12
Frequency of online shopping per year	Less than 3 times	124	39.2
	3-5 times	93	29.4
	5-10 times	69	21.8
	More than 10 times	30	9.5

Table I.
Profile of
respondents

Factor analysis was conducted on the 31 items used to measure independent variables to ensure that they fall into the six components of perceived risk as shown in [Table II](#). Several runs are needed because some items had violated the six assumptions recommended by [Hair et al. \(2006\)](#). The second run of the factor analysis yielded six factors: the KMO value is 0.94 and Bartlett's test of sphericity is significant ($p = 0.00$). Anti-image correlation is greater than 0.50, and eigenvalues are above 1. The factor loading ranged from 0.51 to 0.98, and communalities ranged from 0.64 to 0.84, which is sufficient for the validity of the study. After the second run, 30 items were maintained to make up the six factors, while one item was deleted (complicated process to place an order). The six factors explained 74.51 per cent of the perceived risk. Therefore, the claim that the result of the second run had fulfilled all the six assumptions by [Hair et al. \(2006\)](#) can be made.

The results of the factor analysis for the dependent variable (online purchase intention) indicate that the condition of factor analysis was satisfactorily met. KMO value is 0.61 and the Bartlett's test of sphericity is significant ($p = 0.00$). Communalities ranged from 0.50 and 0.75. The factor loading ranged from 0.687 to 0.738. The factor explained 52.25 per cent of online purchase intentions. Thus, the items were retained.

This study evaluates reliability by assessing the internal consistency of the items representing each construct using Cronbach's alpha coefficient, which has been widely used in many studies ([Hair et al., 2006](#)). Reliability is an indication of the stability and consistency

Construct	Items	F1	F2	F3	F4	F5	F6
Financial risk	I tend to over spend	0.55					
	I might get overcharged	0.51					
	Product may not be worth the money I spent	0.77					
	Shopping online can involve a waste of money	0.76					
	I do not trust the online company	0.72					
Product risk	I am unable to find the desired product		0.70				
	I might not receive the exact quality of a product that I purchased		0.87				
	The size description may not be accurate			0.80			
	It is difficult for me to compare the quality of a similar product			0.75			
	I cannot try online product		0.63				
Security risk	I feel that my credit or debit card details are not secured			0.97			
	The website can be insecure			0.98			
	The online shopping company may disclose my personal information			0.97			
	I may be contacted by other online shopping companies			0.80			
	Information about the online shopping company may be insufficient			0.94			
Time risk	Buying a product online can involve a waste of time				0.91		
	Difficult to find appropriate websites				0.91		
	Finding the right product through online is difficult				0.75		
	Impatient to wait for the product arrived				0.84		
Social risk	The purchased product may result in disapproval by family					0.82	
	Online shopping may affect the image of people around me					0.90	
	Online products may not be recognized by relatives or friends					0.76	
	Online shopping may make others reduce my evaluation					0.83	
Psychological risk	I cannot trust the online company						0.79
	I fear that the apparel will not be delivered appropriately						0.77
	I could be frustrated if I am dissatisfied with the quality of the product						0.90
	I may get addicted to online shopping						0.90

Table II.
Factor analysis on variables

Notes: $N = 316$; *** $p < 0.01$; items with factor loading less than 0.40 were deleted

with which the instrument measures the concept and helps to assess the goodness of measure (Sekaran and Bougie, 2009). The results of the reliability analysis summarized in Table II affirmed that all the scales displayed satisfactory levels of reliability, with Cronbach's alpha values more than the minimum threshold (Cronbach's alpha > 0.50). This indicates that the instrument is stable and consistent in measuring the concept of the respective variables. Besides that, it is possible to say that the respondents really understood the survey questions.

Pearson correlation indications shows that financial risk, product risk, security risk, time risk, social risk and psychological risk are positively correlated with online purchase intention. The correlation between all variables is significant ($r > 0.3, p = 0.05$) for further analysis. Thus, the multiple regressions will be carried out to test the hypotheses proposed.

Regression analysis

A multiple regression analysis was carried out to analyze the direct relationship between independent variables and online apparel purchase intention. To test *H1, H2, H3, H4, H5* and *H6 (H6)*, which proposed a negative and significant relationship between perceived risk and online apparel purchase intention, the regression equation would test the impact of the six factors of perceived risk (financial risk, product risk, security risk, time risk, social risk and psychological risk) on online purchase intention.

The result of the multiple regression analysis is presented in [Table III](#), which suggests that there are only five out of six factors, namely, financial risk ($\beta = -0.25, p < 0.01, t = -6.38$), product risk ($\beta = -0.24, p < 0.01, t = -5.83$), security risk ($\beta = -0.31, p < 0.01, t = -7.34$), time risk ($\beta = -0.12, p < 0.10, t = -2.76$) and psychological risk ($\beta = -0.18, p < 0.01, t = -4.46$), that were found to negatively and significantly influence online purchase intentions, whereas the influence of social risk on online purchase intentions was found to be insignificant ($\beta = -0.01, p > 0.10, t = -0.13$) ([Table IV](#)).

Therefore, it can be concluded that *H1* (a relationship between financial risk and online purchase intention), *H2* (a relationship between product risk and online purchase intention), *H3* (a relationship between security risk and online purchase intention), *H4* (a relationship

Table III.
Reliability analysis

Construct	No. of items	Cronbach alpha
Financial risk	5	0.65
Product risk	5	0.68
Security risk	5	0.84
Time risk	4	0.87
Social risk	4	0.81
Psychological risk	4	0.67
Online purchase intention	3	0.52

Table IV.
Multiple regression
analysis of perceived
risk and online
purchase intention

Dependent variable	Independent variable	Unstandardized coefficient B	std. error	t	β
Online purchase intention	Financial risk	-0.16	0.03	-6.38	-0.25***
	Product risk	-0.21	0.04	-5.83	-0.24***
	Security risk	-0.22	0.03	-7.34	-0.31***
	Time risk	-0.09	0.03	-2.76	-0.12*
	Social risk	-0.00	0.02	-0.13	-0.00
	Psychological risk	-0.14	0.03	-4.26	-0.18***
	R^2				0.63
	Adjusted R^2				0.62
	Sig. F				88.08***

Notes: Significant levels *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

between time risk and online purchase intention) and *H6* (a relationship between psychological risk and online purchase intention) were supported. Meanwhile, *H5* (a relationship between social risk and online purchase intention) was not supported. The coefficient of determinant (R^2) of perceived risk is 0.63, indicating that 63 per cent of the variance in online purchase intention has been significantly represented by the perceived risk (financial risk, product risk, security risk, time risk and psychological risk).

In addition, the results also suggested that among the six factors of perceived risk, security risk ($\beta = -0.31, p < 0.01, t = -6.38$) is statistically the most important in explaining the variance in online apparel purchase intention. Thus, it is possible to say that there is a negative and significant relationship between perceived risk and online purchase intention.

Discussion

The main goal of this study is to identify factors that influence consumer perceived risk toward online purchase intentions. In addition, this study aims to examine the relationship between the perceived risks (financial risk, product risk, security risk, time risk, social risk and psychological risk) of consumers toward online purchase intention. The perceived risk factors of consumers have been hypothesized to have a significant and negative impact on consumers' online purchase intentions (*H1, H2, H3, H4, H5, H6*). The result of this study indicated that only five factors have a significant negative impact on consumer online purchase intentions, which are the financial risk, product risk, security risk, time risk and psychological risk. Meanwhile, the social risk factor is insignificant.

The finding of *H1* is in line with the previous research by [Cemberci et al. \(2013\)](#) stating that financial risk is a factor that prevents consumers' intention to shop online and is critical in determining online purchase intention. Besides that, researchers such as [Pires et al. \(2004\)](#) revealed that financial risk has the greatest impact for goods purchased online. Findings showed that all the elements of financial risk lead to a negative relationship with online purchase intention. Consumers tend to spend more money when they are browsing through websites that offers discounts and promotions. By having more discounts, consumers have the tendency to purchase products that they did not intend to buy; hence, illusion of discounts have allowed consumers to unnecessarily overspend. These situations show that consumers' purchase intention to shop online is easily perceived by financial risk.

The finding of *H2* is aligned with previous research that mentioned product risk has a negative relationship with online purchase intention. Product risk is defined as product failure to meet the performance of what initially it was intended for ([Zheng et al., 2012](#); [Ye, 2004](#); [Masoud, 2013](#)). Due to the limited amount of apparel that exists in the internet, online consumers are unable to find the desired products as they could easily find at local retail shops. By purchasing online, consumers will not receive the exact quality of the products purchased. For example, by ordering nylon clothing, if the delivered product turns out to be synthetic nylon or otherwise, it would dissatisfy the consumer instantly. Consumers could also be dissatisfied when the size of products ordered is not accurate. For example, due to the abundance of clothing size standards such as US standard sizes and European standard sizes, it would incur miscommunication when the standards used are not clearly mentioned to the customer in the size description of the apparel. Furthermore, the limitation of online purchasing is that the consumers are unable to try out the apparels themselves. Consequently, these reasons show that consumers' online purchase intentions are easily perceived by product risk.

The finding of *H3* is in line with previous research that stated security risk has a negative relationship between online purchase intentions. Security risk is defined as a potential loss due to online fraud or hacking, which exposes the security of an internet

transaction or online user (Soltanpanah *et al.*, 2012). Karnik (2014) claimed that due to internet vendors existing globally, consumers' perceived risk also increases when they feel that internet security is scanty. Meanwhile, Azizi and Javidani (2010) specified that security is linked with disclosure of financial information such as credit card number, account number and safe pin number. According to the research done by Teo (2002), one of the barriers for online shopping is security fears. Consumers fear that the credentials of their banking account such as credit or debit card used for the payment of the products online are not sufficiently secured. Moreover, consumers are also worried that the website used for online apparel shopping is insecure and easily hackable. Consumers are afraid that the online shopping companies are able to extract and leak their personal information for the purpose of promoting and advertising relatable products based on the search history. Consumers fear that they are unable to have full information of online shopping companies when the placed order did not arrive on time. Thus, these reasons show that consumers' purchase intention to shop for online apparel is easily perceived by security risks.

The findings of *H4* are aligned with previous research that revealed time risk has a negative relationship with online purchase intention. Time risk is the time that consumers take to make a purchase and wait for the product to be delivered and the amount of time to browse for the information about the product (Dai *et al.*, 2014; Forsythe *et al.*, 2006; Ko *et al.*, 2004). According to the research done by Zhang *et al.* (2012), time risk has been very influential on online consumers' purchasing behavior. Consumers find that buying products online can be a waste of time. This is because there is no proper search engine optimization to cater the specific desired products. Hence, consumers spend most of their time to search websites to satisfy their desires and needs. Moreover, a complicated way of placing the order results in more wastage of time. Consumers are impatient to wait for their products to reach their address right away after placing their order. As a result, these situations show that consumers' online purchase intention is easily perceived by time risk.

On the other hand, the finding of *H5* is contrary with the previous research that stated social risk has a negative relationship with online purchase intentions. The findings of this study reveal that social risk is not related to online purchase intentions. Consumers will not be negatively assessed and judged due to his/her product (brand) choice. It shows that online shopping does not result in family member's judgment or approval as it is solely the consumer's decision to make the purchase via online stores. The act of online shopping also does not determine the characteristics of the people around the consumer because it is becoming a norm for everyone from different walks of life to be technologically inclined to perform online shopping. On top of that, it is not necessary that the product that is purchased through an online store needs to be recognized by relatives and friends as it based on individual preferences and tastes. This, however, will not reduce consumers' value in front of others just because he/she does online shopping. Hence, it can be concluded that consumers' purchase intention to shop online is not perceived by social risk.

Finally, the finding of *H6* is aligned with the previous research that claimed psychological risk has a negative relationship with online purchase intention. Psychological risk is defined as a consumer's disappointment in making a poor product or service selection despite having a huge array of choices (Ueltschy *et al.*, 2004). Consumers fear that the product purchased online will not be delivered appropriately. For example, the packaging of the product is done poorly, which eventually causes the received parcel to be in bad condition. Consumers would be frustrated and disappointed with the quality of the product purchased if it did not meet the expectations as advertised. Finally, consumers may be at risk of getting addicted to online shopping easily due to the eye-catching offers and

discounts being advertised to them continuously. Hereafter, it can be concluded that consumers' online purchase intention is easily perceived by psychological risk.

Practical implications

This study has several practical contributions. First, it points to online retailers where they could provide detailed information about their company and their security policy considerations to avoid cyber fraud. For example, Zalora, being one of the leading online fashion retailers, understand about the perceived risk for an online transaction which might deter potential customers to make a purchase. They stated in their website about the security systems they are using such as PCI Security Standard, cardholder protection and encrypted network to reassure to customers that their purchase account are safe guarded. Online retailers should improve the safety and privacy implementation mechanisms that do not disclose credit or debit card information. Second, online retailers can reduce the financial risks that occur by acknowledging the risks and offering trade-in plans for unfitting products. Besides that, they should place the pricing competitively among other available online shops. Next, to increase online purchasing, online marketers should offer guarantee and warranty for the purchased products to the consumers to reduce the financial risk. To reduce time risk, online retailers should avoid delays in delivering the ordered product through online website as consumers tend to be impatient and should be able to provide money back guarantee for damaged and faulty products.

Conclusion

The findings from this study suggest consumers' perceived risk when they intend to purchase online. There are several factors that respondents in this study agreed upon, such as financial risk, product risk, security risk, time risk and psychological risk. Meanwhile, social risk was found to be insignificant. Five factors of perceived risk have a significant negative influence on consumer online purchase intention. Among these factors, security risk is the main contributor for consumers to deter from online purchases. The findings show that it is crucial to understand the factors of perceived risk that influence consumer online purchase intentions because it provides useful information to the online retailers in e-commerce activities. Previous studies show that many online retailers are still facing some risks in online business, and this will affect the transaction and performance of the retailers.

The current study was not specifically designed to evaluate factors related to the moderator and mediator effects of perceived risk and online apparel purchase intentions. Future studies may include the moderating effects of profession, personality traits or past experiences in the model to see how moderating variables may influence the relationship of both independent variable and dependent variable. The mediating role of trust is also suggested for future research.

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Corresponding author

Shaizatulaqma Kamalul Ariffin can be contacted at: shaizatulaqma@usm.my

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